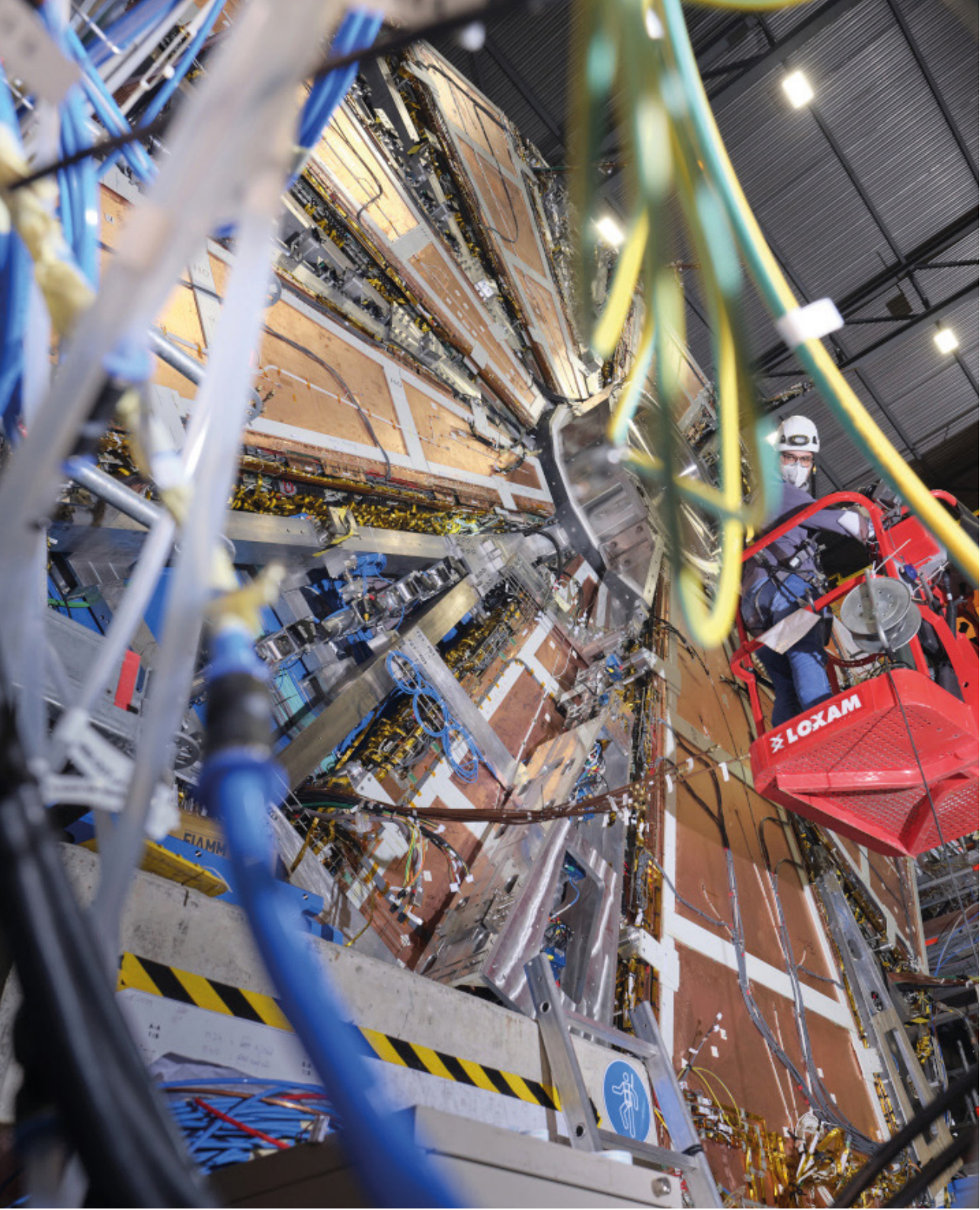


The **Swedish** Guide

Big Science Suppliers and Partners • 2021



JOIN US IN DRIVING BIG SCIENCE TECHNOLOGY



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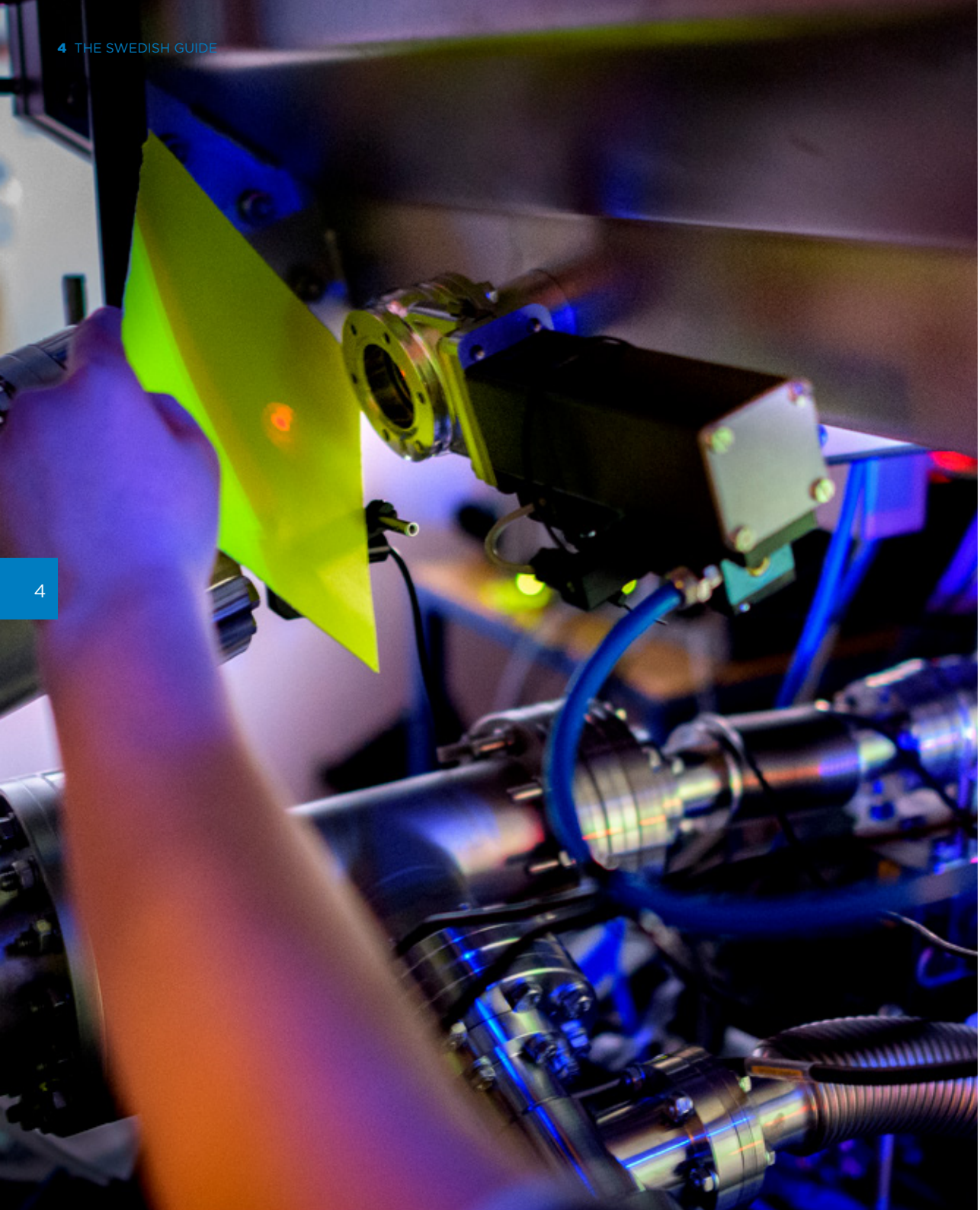


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EDITORIAL

Big Science Sweden – an arena for business, collaboration, high-tech development, and innovation

At the beginning of 2020, when the last edition of the Swedish Guide was published, who could imagine that it would be such an unusual year? That we would not be able to travel, that all our meetings would be digital, and that much of Europe would be in lockdown. Without doubt, 2020 was a special year.

You're holding in your hand the fourth edition of The Swedish Guide, which we hope you will enjoy and find useful. We're proud to present 229 companies with the capacity and competencies to supply goods, services, and solutions to the leading research facilities, enabling them to carry out state-of-the-art research. ESS and MAX IV are under construction in Sweden, a clear indication that Swedish supplier networks, skills, and expertise are moving forward and continuing to develop.

The companies in the guide are presented according to technology and expertise sectors, making it easy for you to find companies in areas in which you are particularly interested. You will also find information about 87 Swedish academic contributions to various research facilities. We welcome the collaboration and knowledge exchange between universities, institutes, and industry, and observe how boundaries can be extended with high-tech content in large national and international collaborations.

We can see that the network around Big Science Sweden is blooming. Swedish companies are receiving orders from both Swedish and international research facilities, such as ESS, MAX IV, CERN, ESO, and FAIR. Sweden is deepening collaboration with several research facilities, and our industrial return is increasing significantly.

Working closely with the research facilities, we also see potential for technology and knowledge transfer from the research facilities to industry and society. This year, we have started a collaboration programme with CERN in which we are exploring how Swedish companies can work more closely with CERN's experts. We see great opportunities for collaboration in fields such as digital solutions for tomorrow's industry, solutions for sustainable transportation, and materials science.

At the end of 2019, we arranged an AIMday with the aim to foster collaborations between Swedish industry, academia, and international research facilities. The day generated no fewer than five feasibility studies exploring solutions to challenges identified by the research facilities. One such study led to the formation of a Småland cluster to work on superconducting 'cold' magnets. The feasibility study concluded with a project application for which funding of SEK 19 million has recently been awarded. Three high-tech companies and two universities will now be working together.

We look forward to continuing our work with pioneering solutions. Please don't hesitate to ask us more about Swedish collaboration partners, and please contact me or any of our team members if you have any questions.

Best wishes
Anna Hall
Programme Director, Big Science Sweden





CONTENTS

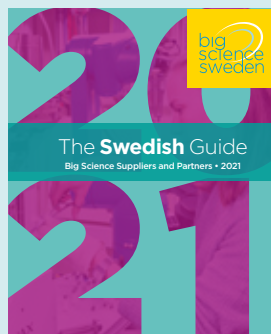


BIG IN RESEARCH

Sweden – a Big Science nation.....	9
Swedish Knowledge Transfer Office	11
AIMday Big Science Technology	13
Big Science research facilities.....	14

SWEDEN'S OFFICIAL ILO

Welcome to Big Science Sweden.....	22
Contact information.....	24
European research facilities.....	26



THE SWEDISH GUIDE

SUPPLIERS AND PARTNERS

Quick guide: How to navigate.....	30
Index, alphabetical.....	31
Index, by procurement code	33
Suppliers and partners.....	36

ACADEMIC CONTRIBUTIONS

Quick guide: How to navigate.....	252
Index, by Big Science facility	255
Index, by coordinating university	256
Academic contributions.....	258



SUCCESS STORIES

How some Swedish companies have grown with Big Science	366
<i>Go Virtual Nordic • HUURE • MCT Brattberg • Omnisys Scanditronix Magnet • Studsvik Nuclear • Teledyne SP Devices</i>	



ACTIVITY REPORTS

Partnership, Business, and Knowledge Transfer	384
Big Science Sweden Conference 2020.....	389, 392
Big Science Sweden Award 2020	391
Facts & Figures.....	395
Communication.....	400



Sweden – a Big Science nation



Big Science Sweden is Sweden's official Industrial Liaison Office (ILO) and the link between Swedish high-tech industry, academia, institutes, and the large-scale research facilities in which Sweden is a member. In practical terms, we help Sweden supply equipment, materials, and services to Big Science research facilities around the world.

ESS



MAX IV



Two of the world's most powerful and renowned research facilities are located in Sweden.

Big Science Sweden is mandated by the Swedish Government, and funded by Vinnova (Sweden's Innovation Agency) and The Swedish Research Council (Vetenskapsrådet).

Superconducting magnet technology is the backbone of the PET/MR scanner, and this technology has evolved thanks to research centres like CERN and within industry teams like General Electric.

Photo: GE Healthcare

SIGNA
PET/MR





Swedish Knowledge Transfer Office

The cutting-edge expertise and infrastructures of Big Science facilities represent a unique opportunity to advance technology with great potential for commercial exploitation.

Our Knowledge Transfer Office (KTO) is making scientific and technological development accessible to a wider range of users, both in academia and industry.





AIMday Big Science Technology

AIMday Big Science Technology is a challenge-driven innovation process involving a workshop. Research facilities are given an opportunity to discuss their challenges with scientists at Swedish universities and institutes and with representatives from high-tech companies that deliver to Big Science.

Ahead of the event, the research facilities identify the challenges they are facing in a number of categories, and submit them to Big Science Sweden. Workshop teams with the relevant expertise for each category are then put together to discuss the challenges.

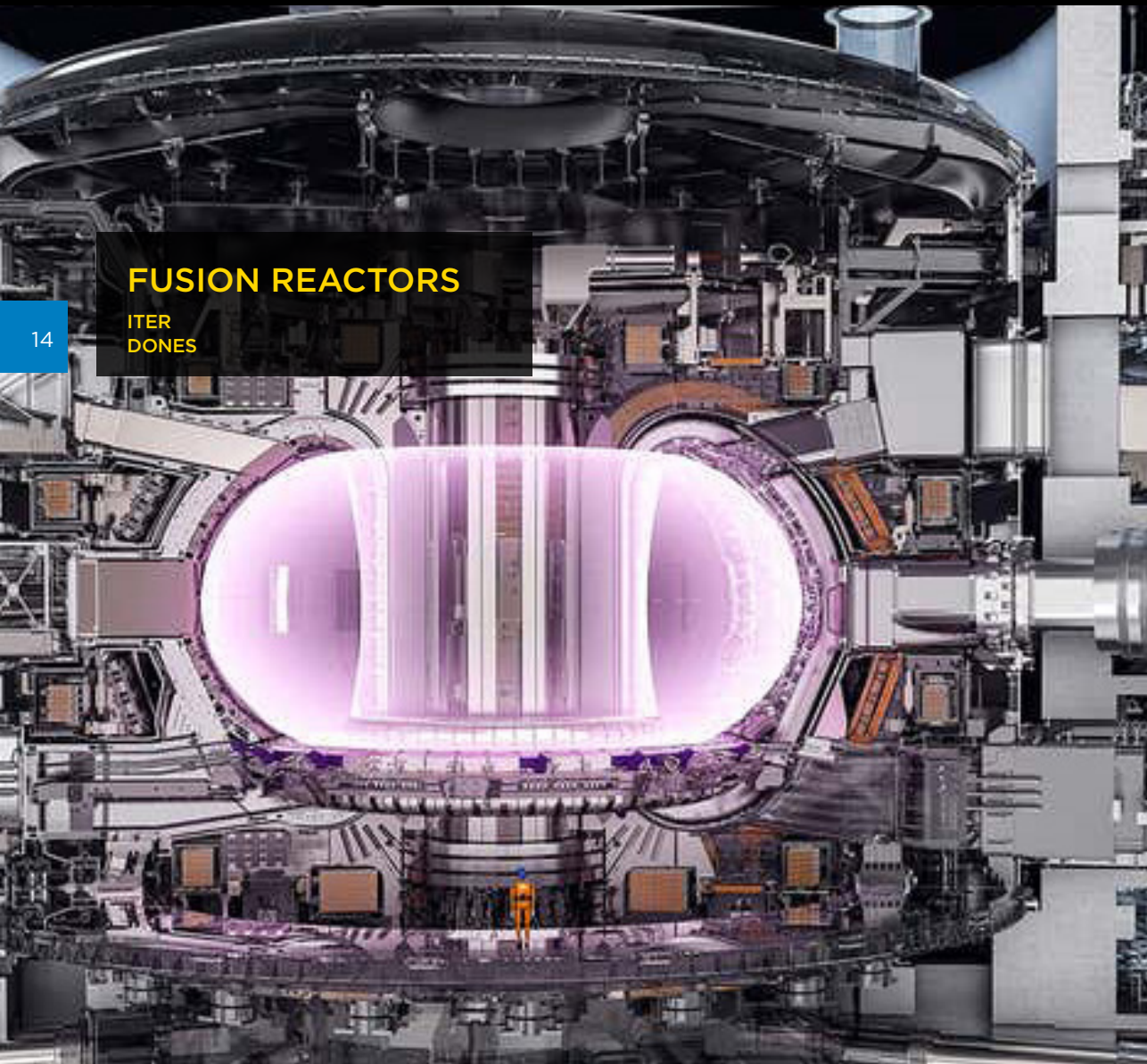
BIG SCIENCE

Official Swedish Industrial Liaison Office (ILO)

An important part of the ILO work is to build networks between Swedish companies and relevant contacts at the research facilities. Big Science Sweden works actively to match Swedish companies with tangible needs and current procurements at the facilities.

FUSION REACTORS

ITER
DONES





PARTICLE ACCELERATORS

CERN, ESS, MAX IV, ESRF, ILL, ISIS, XFEL,
DESY, FAIR

CERN: CMS event display of candidate event
with a lepton and high jet multiplicity.

15



SPACE RESEARCH FACILITIES

ESO, SKA, EISCAT

The antennas of the
Atacama Large Millimeter/
submillimeter Array (ALMA),
set against the splendour of
the Milky Way.

Photo: ESO/B. Tafreshi





LUND, SWEDEN

ESS – a world leading science and technology infrastructure

The multi-disciplinary research facility European Spallation Source, ESS, based on the world's most powerful neutron source, will enable scientific breakthroughs in a wide range of areas, such as environment, health, materials and energy. ESS is a European partnership, with member countries all over Europe that have committed to collectively build and operate the world's leading facility for research using neutrons. The facility is currently under construction in Lund, Sweden, and will deliver world-class science from 2023.

17

**World's most powerful neutron source
Lund, Sweden (data centre in Denmark)**

First science: Pre-Covid-19 planned for 2023 (TBD)

Full operation: Pre-Covid-19 planned for 2025 (TBD)

Construction budget: EUR 1,8 billion

Estimated operation cost: EUR 140 million/year (TBC)

Employees: 550

Users/researchers: 3000 per year

No. of member countries: 13

Host countries: Sweden and Denmark

Construction 47.5% **Cash investment** ~ 97%

Operation 15% (TBD)


Other member countries

Construction 52.5% **In-kind contribution** ~ 70%

Operation 85% (TBD)

Photo: Roger Eriksson/ESS



The background image shows the MAX IV synchrotron facility at night. A large, modern building with a glass facade is illuminated. A prominent feature is a large, blue, light-up sculpture of a human face, composed of many small lights, positioned in front of the building. The sky is a deep orange and red, suggesting sunset or sunrise. The overall scene is a blend of modern architecture and artistic lighting.

LUND, SWEDEN

MAX IV makes the invisible visible

The MAX Laboratory is a synchrotron light facility that has been in operation for more than 35 years, and construction of the new synchrotron facility was completed in 2016. Hosted by Lund University, it is the world's most brilliant synchrotron light source, capable of viewing material structures atom by atom. MAX IV facilitates discoveries of new structures at nanolevel, and scientists are able to monitor chemical processes in real time. The facility can house up to 26 beamlines.

19

Operational start: 2016

Construction cost: SEK 4.5 billion

Operational budget: SEK 530 million/year

Employees: 280

Guest researchers: 2000 per year

No. of member countries: N/A (Swedish national facility, hosted by Lund University).

Co-located in South Africa and Australia

The Square Kilometre Array (SKA)

The Square Kilometre Array (SKA) project is an international effort to build the world's largest radio telescope, with a square kilometre (one million square metres) of collecting area. The scale of the SKA represents a huge leap forward in both engineering and research & development towards building and delivering a unique instrument, with the detailed design and preparation now well under way. As one of the largest scientific endeavours in history, the SKA will bring together a wealth of the world's finest scientists, engineers and policy makers to bring the project to fruition.

The world's most advanced SKA telescope in South Africa will consist of 197 dish antennas, each with a diameter of 15 m.

Photo: SKA

Representing Sweden in the SKA project

Onsala Space Observatory is Sweden's national infrastructure for radio astronomy, giving scientists access to equipment for studying the Earth and the rest of the universe. Run by Chalmers University of Technology, the observatory operates radio telescopes and other instruments for both astronomy and geodesy.



FINLAND, NORWAY AND SWEDEN

EISCAT – ionospheric and atmospheric measurements

EISCAT is an international scientific association that conducts ionospheric and atmospheric measurements using a technique called ‘incoherent scatter radar’. An example is studies of the Northern Lights.

The association operates equipment in three countries – Finland (Sodankylä), Norway (Tromsø and Longyearbyen), and Sweden (Kiruna) – and all the facilities are located north of the Arctic circle. In Tromsø the facility comprises a combined ionospheric heating and short-wave radar facility.

EISCAT is currently building a next-generation research radar facility, called EISCAT_3D. The radar will replace the systems in Sodankylä, Tromsø, and Kiruna. EISCAT_3D will also be located in the three countries.

Operational start: 1981

Construction cost (current systems): SEK 300 million (1976-1998). EISCAT_3D: SEK 650 million (2017-2022)

Operational budget: SEK 8 million (1981) SEK 26 million (2021)

Employees: 26 (2021)

Researchers: 200 per year

No. of member countries: six (China, Japan, Norway, Finland, United Kingdom, and Sweden), plus institutes from five other countries (France, Germany, Ukraine, US, and South Korea).

Welcome to Big Science Sweden

Funding bodies

Big Science Sweden is funded by Sweden's largest and most important organisations for supporting and funding Swedish research and high-tech research and growth: Vinnova (Sweden's Innovation Agency) and The Swedish Research Council (Vetenskapsrådet).

Natasa Pahlm is Strategic Programme Manager, International Cooperation, at Vinnova.

"It's vital that Swedish companies have the necessary expertise and skills to deliver services and products to research facilities, both nationally and globally," she says. "Big Science Sweden opens doors and creates new contacts, enabling us to establish Swedish innovation on a global market."

Management

Big Science Sweden is led by a consortium comprising the Association of Swedish Engineering Industries (Teknikföretagen), the industrial development centre (Industrikluster IUC Syd), Chalmers University of Technology, Lund University, Luleå University of Technology, Uppsala University, RISE, and Region Skåne.

"A company may feel that entering the Big Science market and contacting research facilities would be too big a step," says Kjell Möller, Chair of the Big Science Sweden Steering Committee and representing the Association of Swedish Engineering Industries.

"However, many Swedish companies definitely have both the expertise and the capacity to meet

the requirements of the facilities. Big Science Sweden provides guidance, and facilitates the first important contacts that can lead to a business relationship."

ILO

Big Science Sweden is Sweden's official ILO (Industry Liaison Office), which means it has the national responsibility for facilitating contacts and business between Swedish companies and the European research facilities that Sweden is involved in funding. An important part of the ILO work is to build networks between Swedish companies and relevant contacts at the research facilities. Big Science Sweden works actively to match Swedish companies with tangible needs and current procurements at the facilities.

A designated member of the Big Science Sweden team is responsible for each facility, maintaining contacts, building relationships, and getting to know the facility's organisation and needs.

Fredrik Engelmark, Business Development and Project Management, Big Science Sweden, is responsible for contacts with CERN.

"By networking with representatives at the research facilities, I can match a facility with a relevant Swedish company, and with researchers who can complement the company's existing expertise," he explains. "In this way, we put together a team that can run high-tech innovation projects."

The Big Science Sweden National Team, here during the Strategy Days in Luleå, spring 2020. Fredrik Engelmark, Frida Tibblin Citron.





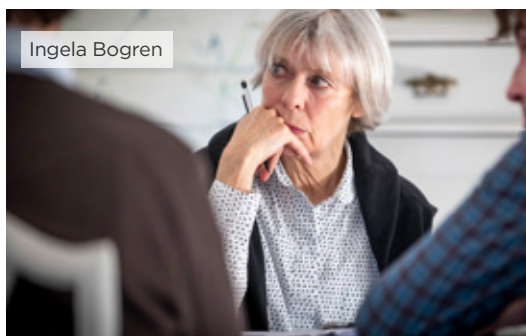
Sven-Christian Ebenhag



Ekaterina Osipova



Adam Wikström



Ingela Bogren

Big Science Sweden works from a national perspective and has four nodes around the country, with offices in Lund, Uppsala, Göteborg and Kiruna/Luleå.



Industrial Liaison Officers and Purchasing Advisors – Support and Contact Points

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Contact point: EISCAT, ISIS, DESY, XFEL

Patrik Carlsson

ILO: ITER, ESO, SKA

Fredrik Engelmark

ILO: CERN

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Several of our part-time staff are shared with universities and institutes, which gives us a broad coverage.

UPPSALA

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The Swedish ILOs, Patrik Carlsson, Anna Hall and Fredrik Engelmark, and Håkan Nilsson, discussing collaborations between the Swedish company Studsvik and various research facilities. In the background, Niklas Snis, General Laboratory Manager at Studsvik.

European research facilities

We are Sweden's official ILO organisation, serving European Big Science research facilities in which Sweden is a member. The focus is on Big Science facilities and fields important for Swedish science, innovation, technology and business.

26

ESS

Lund, Sweden

ESS (European Spallation Source) will be a world-leading multi-disciplinary research facility, based on the world's most powerful spallation source. ESS will enable scientific breakthroughs in research related to materials, energy, health and the environment, addressing some of the most important societal challenges of our time. ESS, currently under construction and hosted by Sweden and Denmark, is a collaboration between 13 European countries that are building and will operate the facility jointly. ESS expects to welcome its first researchers in 2023.

MAX IV

Lund, Sweden

MAX IV is a synchrotron light facility that began operations in 2016. Hosted by Lund University, it is the world's most brilliant synchrotron light source, capable of viewing material structures atom by atom. MAX IV facilitates discoveries of new structures at nanolevel, and scientists are able to monitor chemical processes in real time. The facility can house up to 26 beamlines. At full capacity, more than 2000 scientists are expected to conduct experiments at MAX IV every year.

CERN

Geneva, on the border between Switzerland and France

CERN (Conseil Européen pour la Recherche Nucléaire) is a European research facility set up in 1954 by 12 founder states, one of which was Sweden. CERN now has 23 Member States and a number of Associate Member States. At CERN, 2500 staff and some 15,000 external scientists advance the boundaries of knowledge regarding the origins of our universe and its smallest building blocks, subatomic particles. The heart of the CERN facility is the Large Hadron Collider (LHC), a 27-kilometre circular particle accelerator. The High Luminosity project, due to come into operation in 2025, will increase the luminosity of the LHC by a power of ten. The materials budget of the High Luminosity project is nearly CHF 950 million.

ITER

Cadarache, France; European procurement organisation F4E in Barcelona, Spain

ITER (International Thermonuclear Experimental Reactor) is a global cooperation project, funded by 35 nations, to build the world's largest Tokamak reactor for research into fusion energy. It will be the largest fusion experiment facility in the world and the first to produce net energy, producing 500 MW of power from an input of 50 MW. It will be the first plant that integrates all the various technologies needed to operate a fusion reactor. Experiments at ITER are scheduled to begin in 2025, and the construction budget is EUR 20 billion. F4E (Fusion for Energy) is the EU organisation responsible for the EU contribution to ITER.

ILL

Grenoble, France

The Institut Laue-Langevin (ILL) is an existing spallation facility that has been in operation for more than 45 years. ILL was founded in 1972 by France, Germany, and the UK, and there are ten further Scientific Member countries. Sixty percent of the capacity of ILL is dedicated to fundamental research and 40% is dedicated to research into societal challenges. The facility is undergoing a modernisation programme that has increased the detection rate of the instruments by a factor of 25, and the programme is about to move into its second phase.

ESRF**Grenoble, France**

ESRF (European Synchrotron Radiation Facility), opened in 1989, is operated as a partnership between 22 countries. The facility welcomes almost 9000 visiting scientists every year, conducting research using the X-ray beams that are 100 billion times more powerful than the X-rays used in hospitals. An extensive upgrade, the Extremely Brilliant Source, is under way, with a budget of EUR 330 billion. This will provide new storage rings that can produce more intense, coherent, and stable X-ray beams.

DESY**Hamburg, Germany**

DESY (Deutsches Elektronen Synchrotron), set up in 1959, is a national research centre in Germany, operating particle accelerators used to investigate the structure of matter. Three thousand guest scientists from 40 countries conduct research at the facility each year. Three large accelerators dominate the DESY site: PETRA III, Flash and XFEL. Research ranges from nanomaterials and semi-conductors to pharmaceuticals and materials for solar panels. Technologies developed at DESY can also be used for detailed diagnosis of tumours and for developing less invasive cancer therapies.

European XFEL**Hamburg, Germany**

European XFEL (X-ray Free Electron Laser) is the world's most powerful X-ray laser facility, opened in 2017. The project is funded by 12 European countries. The facility is powered by a 3.4-km linear accelerator, which can generate 27,000 flashes of light per second, each of a duration of less than 100 quadrillionths of a second.

FAIR**Darmstadt, Germany**

FAIR (The Facility for Antiproton and Ion Research) is currently under construction in Darmstadt at a cost of EUR 1.7 billion. At the facility, matter that only exists in outer space will be produced in a lab for research, and it will be possible to accelerate ions of all the natural elements in the periodic table, as well as antiprotons. Ten countries are shareholders of FAIR and more countries are partners. Three thousand scientists will visit and use FAIR each year.

ISIS**Harwell, UK**

ISIS Neutron and Muon Source is a national spallation source financed by the Science and Technology Facilities Council, and is based at the Rutherford Appleton Laboratory in Harwell, near Oxford. Research at ISIS spans a wide range of disciplines, from magnetism to cultural heritage, engineering to food science, and from chemistry to environmental science. The facility houses 32 instruments.

ESO**HQ Munich, Germany and telescopes in Chile**

ESO (The European Southern Observatory) consists of telescopes at three sites in the Atacama Desert in Chile. The Very Large Telescope can view objects at the edge of our universe and help answer fundamental questions, such as whether we are alone. A new Extremely Large Telescope (ELT) with a 39-m mirror is under construction, with a budget of EUR 1.2 billion. It will be the world's largest telescope and will address some of the most pressing unresolved issues in astronomy.

EISCAT**Kiruna, Sweden**

EISCAT (European Incoherent SCATter) is a facility for astronomy research using radar. A new facility, EISCAT 3D, is under development. This will comprise three sites in the north of Sweden, Norway, and Finland, each consisting of 10,000 antenna elements. The facility will be used for research, for example, into how the earth's upper atmosphere is connected to space, and also for forecasting space weather and for detecting and tracking space debris. The EISCAT system will use several different measurement techniques that have never before been combined in one system.

SKA**Co-located in South Africa and Australia**

The Square Kilometre Array (SKA) project is an international effort to build the world's largest radio telescope, with a square kilometre (one million square metres) of collecting area. The scale of the SKA represents a huge leap forward in both engineering and research & development towards building and delivering a unique instrument, with the detailed design and preparation now well under way. As one of the largest scientific endeavours in history, the SKA will bring together a wealth of the world's finest scientists, engineers and policy makers to bring the project to fruition.

SWEDISH SUPPLIERS AND PARTNERS 29

QUICK GUIDE: HOW TO NAVIGATE

This is a quick guide that will make it easier for you to find your next Swedish high-tech supplier and partner. Feel free to browse around and find out more about the 200+ qualified Swedish suppliers presented in the catalogue.

There are different ways to search, depending on your preferences. One option is to search by procurement code when you are looking for suppliers within a specific area of interest. We use the Procurement codes developed and used by CERN.

If you already know the name of a supplier, you can search alphabetically.

A third option is to search in our online database at www.bigsciencesweden.se, where you can also search using free text.

ALPHABETICALLY

1

Search alphabetically by company name.

PROCUREMENT CODES

2

Search by Procurement code when you are looking for suppliers within a specific area of interest.

ONLINE DATABASE

3

Search in our online database at www.bigsciencesweden.se, where you can also search using free text.

Company size definitions

Small >49 employees

Medium 50-249 employees

Large <250 employees

INDEX PROCUREMENT CODES

To make it easier for you to find the right supplier, we use the procurement codes according to CERN.



INDEX ALPHABETICAL

2B Best Business	36	Conex Engineering	81	Hamamatsu Photonics Norden	127
ABB	37	CoorsTek Sweden	82	Hamek	128
ACP	38	Coromatic	83	Harald Pihl	129
Additive Composite Uppsala	39	Corona Control	84	Hemi Heating	130
Advanced Integration Technology Umeå	40	CrystOpt-X	85	Herrströms mekaniska	131
Advanced Vacuum Distribution	41	CUAV	86	Hexatronic Cables & Interconnect Systems	132
AFRY	42	Daikin Sweden	87	Huurre Sweden	133
Air Liquide Gas	43	Digital Mechanics Sweden	88	Hydroscand	134
AirSon Engineering	44	Divisoft	89	Innovative Materials Arena (IMA)	135
Airwatergreen	45	DVel	90	Intab Interface-Teknik	136
Aisle Systems Sweden	46	E.ON SWEDEN	91	Höganäs	137
Alfa Laval	47	EC Konsult	92	JOBSAB Interpiping System	138
Aliaxis Utilities & Industry	48	EcoDataCenter	93	JOIN Business & Technology	139
Aluflex	49	Eitech Electro	94	Karlskoga CNC Quality	140
Amokabel	50	EK Power Solutions	95	KG FRIDMAN	141
APR Technologies	51	Elajo Mekanik	96	KISAB	142
AQ Elautomatik	52	Electro Heat Sweden	97	Kungsörs Mekaniska Verkstad	143
Asensor Technology	53	Element Metech	98	Labkontroll Syd	144
Atlas Copco	54	Elitkomposit	99	Larsson & Kjellberg	145
Automation Region	55	EMV Holding	100	Laser Nova	146
Axis Communications	56	Enably	101	Liedholms Maskinteknik	147
Azpect Photonics	57	Enoc System	102	LK Precision Parts	148
Beckhoff Automation	58	Entangly	103	Low Noise Factory	149
BergmanLabora	59	Entech	104	Low2High Vacuum	150
Bergvik Sweden	60	Epiluvac	105	Luma Metall	151
BitSim	61	Examec	106	Löwener Vacuumservice	152
Bluewave	62	Exir Broadcasting	107	M A Kapslingsteknik	153
Bodycote Hot Isostatic Pressing	63	Fagerström Industri Konsult	108	Malmö Münsterkort	154
Boliden Electro	64	FieldRobotiX	109	Mann Teknik	155
Bomans Lackering	65	Finepart Sweden	110	Maskinteknik i Oskarshamn	156
Brogren Industries	66	Finverko	111	MB Scientific	157
Bröderna Carlsson	67	FLIR Systems	112	MCT Brattberg	158
Bumax	68	Fredriksons	113	Medicast	159
Busch Vakuumenteknik	69	Furhoffs Rostfria	114	Merx Svenska	160
Carlsson & Möller	70	Gammadata Instrument	115	Microbas Precision	161
Carpenter Powder Products	71	Gefyr Cool & Energy	116	Micropol Fiberoptic	162
CIM Consult Solution Sweden	72	GKN Aerospace Sweden	117	Mikroponent	163
CEJN	73	Glenair Nordic	118	Mikroverktyg	164
Cervitrol	74	Go Virtual Nordic	119	Modellteknik	165
Cesium	75	GoalArt	120	MP bolagen Industri	166
CGit	76	Graniten	121	Nanovac	167
Combinova	77	Grepit	122	Naverviken Logistic	168
Combitech	78	Gränges	123	Nelson Created	169
Compliq IT	79	Habia Cable	124	Neonest	170
Composite Service Europe	80	Hagama	125	Nordbergs Tekniska	171
		Halmstads Gummifabrik	126		

INDEX ALPHABETICAL

Nordic Furnaces	172	RISE, Research Institutes of Sweden	198	Svep Design Center	225
NOTE	173	Rowaco	199	SvetsMekano	226
NSS Water Enhancement Technology	174	Rydverken	200	Svetstjänst i Höganäs	227
Nuvia Nordic	175	RZ Gruppen	201	Swedish Microwave	228
nVent Nordic	176	RZ Kils Verkstad AB	202	Swerim	229
Omnisys instruments	177	Sandvik	203	Teledyne SP Devices	230
Optonyx	178	ScandiNova Systems	204	Tessella	231
Pfeiffer Vacuum Scandinavia	179	Scanditronix Magnet	205	Texor	232
PhotonicSweden	180	Scanmast	206	The Quantum Group	233
Pickering Interfaces	181	Scanmatic In Situ	207	Tre-Mek i Trelleborg	234
Pilz Skandinavien	182	Schneider Electric	208	Uniteam	235
Polyamp	183	Scanscot Technology	209	Univrses	236
Power Heat Piping South	184	Scienta Omicron	210	Unnaryd Modell	237
Proact IT Group	185	Semcon Sweden	211	Uponor	238
Produktionsteknik i Lund	186	Sigma	212	VBN Components	239
Promech Lab	187	Sigma Lundinova	213	Ventana Hackås	240
Protolabs	188	Silver Weibull Production	214	Vertical Wind	241
Provexa Surface Technology	189	SKF Sverige	215	Vibe IT	242
Qamcom Research and Technology	190	Smoltek	216	Viflow Group	243
QMT Science	191	SOLECTRO	217	VTT	244
Qtech Group	192	South Pole	218	Wallins Mekaniska	245
Recab	193	Specialteknik i Sverige	219	Wiretronic	246
Rejlers Sverige	194	Stavanger Steel	220	WM Press	247
ReQuTech	195	Stream Analyze Sweden	221	X-officio	248
Resinit	196	Studsvik	222	Zert	249
RFR Solutions	197	Sundbybergs mekaniska verkstad	223	Åkerstedts Verkstads	250
		Svennes Verktygsmekaniska	224	Österby Gjuteri	251

INDEX PROCUREMENT CODES

Civil engineering, building and technical services

2B Best Business	Conex Engineering	Huurre Sweden	Provexa Surface Technology
ACP	Coromatic	Jobsab	Rejlers Sverige
Air Liquide Gas	Corona Control	Kungsörs Mekaniska Verkstad	RISE Research Institutes of
AirSon Engineering	Danubia Metallkontor AB	Labkontroll Syd	Sweden
Åkerstedts Verkstads AB	E.ON Sweden	Larsson & Kjellberg	Rowaco
AluFlex	Eitech Electro	Luma Metall	Rydverken
Automation Region	Element Metech	MCT Brattberg	RZ Gruppen
Bergvik Sweden	Elitkomposit	Medicast	Sandvik
Bluewave Microsytems	Emv Holding	Mikroverktyg	Scanmast
Boliden Electro	Enably	Nanovac	Scanmatic In Situ AB
Bomans Lackering	Enoc System	Naverviken Logistic	Scanscot Technology
Bröderna Carlsson	Entech Energiteknik	Nordholms	Sigma
Brogren Industries	Fagerström Industrikonsult	Industriinstallationer AB	Studsvik
Bumax	Flir Systems	Nordic Furnaces	Swerim
Cesium	Gefyr Cool & Energy	Nordisk industrioptimering	Uniteam
Combitech	Glenair Nordic	Note	Uponor
Compliq IT	Hexatronic Cables &	Nuvia Nordic	
Composite Service Europe	Interconnect Systems	Proact IT Group	

Electrical engineering and magnets

ABB	Danubia Metallkontor AB	Malmö Münsterkort	Sweden
Advanced Integration	DVel	Medicast	Rowaco
Technology Umeå	E.ON Sweden	MP bolagen	Scanditronix Magnet
Aliaxis Utilities & Industry	EC Konsult	Nelson Created	Scanmatic In Situ AB
AMO Kabel	EK Power Solutions	Nordic Furnaces	Semcon Sweden
APR Technologies	Element Metech	Note	Sigma
AQ Elautomatik	Enoc System	nVent Nordic	Sigma Lundinova
Asensor Technology	Flir Systems	Pickering Interfaces	Smoltek
Automation Region	Glenair Nordic	Pliz Scandinavia	Solectro
Beckhoff Automation	Grepit	Polyamp	Swedish Microwave
Boliden Electro	Habia Cable	Produktionsteknik i Lund	Teledyne SP Devices
CCS Group	JOIN Business & Technology	Qamcom Research and	The Quantum Group
Cervitrol	Kraftpowercon Sweden	Technology	Vertical Wind
Combinova	Low Noise Factory	Rejlers Sverige	Wiretronic
Combitech	Luma Metall	ReQuTech	
Conex Engineering	M A Kapslingsteknik	RISE Research Institutes of	

Electronics and radio frequency

APR Technologies	Enoc System	Mikroponent	ReQuTech
AQ Elautomatik	Epiluvac	Nanovac	RISE Research Institutes of
Automation Region	Exir Broadcasting	Nelson Created	Sweden
BitSim	Gammadata Instrument	Note	Rowaco
Bluewave Microsytems	Glenair Nordic	NSS Water Enhancement	ScandiNova Systems
Cervitrol	Grepit	Technology	Semcon Sweden
Combinova	Habia Cable	nVent Nordic	Sigma
Combitech	Hexatronic Cables &	OmniSys Instruments	Sigma Lundinova
CUAV	Interconnect Systems	Pickering Interfaces	Smoltek
Danubia Metallkontor AB	INTAB, Interface Technology	Polyamp	Solectro
Divisoft	JOIN Business & Technology	Produktionsteknik i Lund	Svep Design Center
EC Konsult	Kraftpowercon Sweden	Promech Lab	Swedish Microwave
EK Power Solutions	Low Noise Factory	Qamcom Research and	Teledyne SP Devices
Element Metech	M A Kapslingsteknik	Technology	The Quantum Group
Elitkomposit	Malmö Münsterkort	Recab	Wiretronic

INDEX PROCUREMENT CODES

Gases, chemicals, waste collection and radiation equipment

Additive Composite Uppsala	Carlsson & Möller	Hydroscand	Qmt Science
Air Liquide Gas	CEJN	Jobsab	Rowaco
Airwatergreen	Combitech	Liedholms Maskinteknik	Schneider Electric Sverige
Alfa Laval	Corona Control	Mann Teknik	Studsвик
Bodycote Hot Isostatic	CUAV	Neonest AB (Buyisotope)	Zert
Pressing	Epiluvac	Nuvia Nordic	
Bumax	Gammadata Instrument	Provexa Surface Technology	

Health, safety and environment

ABB	Conex Engineering	Hydroscand	Optronic
ACP	Coromatic	INTAB, Interface Technology	Pickering Interfaces
Additive Composite Uppsala	Corona Control	Labkontroll Syd	Schneider Electric Sverige
Air Liquide Gas	CUAV	MCT Brattberg	Sigma
Airwatergreen	FieldRobotiX	Nanovac	Skoogs Maskin & Svets
Aisle Systems Sweden	Gammadata Instrument	Neonest AB (Buyisotope)	Zert
Axis Communications	GoalArt	NSS Water Enhancement	
CEJN	Hamamatsu Photonics	Technology	
Combinova	Norden	Nuvia Nordic	

Information technology

ABB	EcoDataCenter	Technology	Stream Analyze Sweden
Aisle Systems Sweden	Eitech Electro	Proact IT Group	Svep Design Center
Automation Region	Enoc System	Provexa Surface Technology	Tessella
Axis Communications	Go Virtual Nordic	Recab	Univrses
Boliden Electro	Huurre Sweden	RISE Research Institutes of	Vibe IT
CGit	INTAB, Interface Technology	Sweden	X-officio
Combitech	JOIN Business & Technology	Schneider Electric Sverige	Zert
Compliq IT	LOAD System AB	Semcon Sweden	
CUAV	Micropol Fiberoptic	Sigma	
EC Konsult	NSS Water Enhancement	South Pole	

Mechanical engineering and raw materials

2B Best Business	Cervitrol	Hagama	Microbas Precision
ABB	Combitech	Halmstads Gummifabrik	Mikroponent
Additive Composite Uppsala	Composite Service Europe	Hamek	Mikroverktyg
Advanced Integration	Conex Engineering	Harald Pihl	Modellteknik
Technology Umeå	CoorsTek Sweden	Hårdservice i Halmstad	MP bolagen
Åkerstedts Verkstads AB	Corona Control	Herrströms Mekaniska	Nanovac
Alfa Laval	Danubia Metallkontor AB	Verkstads	Naverviken Logistic
Aliaxis Utilities & Industry	Digital Mechanics	Höganäs	Nordbergs Tekniska
AluFlex	EC Konsult	Hydroscand	Nordholms
Alumeco	Elajo Mekanik	Innovative Materials Arena	Industriinstallationer AB
AP&T Sweden	Electro Heat Sweden AB	(IMA)	Nordic Furnaces
APR Technologies	Element Metech	Jobsab	Nordisk industrioptimering
Automation Region	Emv Holding	JOIN Business & Technology	Nuvia Nordic
Bergvik Sweden	Enoc System	Karlskoga CNC Quality	nVent Nordic
Blomdahls Mekaniska AB	Examec	KG Fridman	Österby Gjuteri
Bodycote Hot Isostatic	Fagerström Industri Konsult	KISAB	Power Heat Piping South
Pressing	Finepart Sweden	Kungsörs Mekaniska Verkstad	Produktionsteknik i Lund
Bomans Lackering	Finverko	Larsson & Kjellberg	Promech Lab
Bröderna Carlsson	Flir Systems	Laser Nova	Protolabs
Brogren Industries	Fredriksons Verkstad	Liedholms Maskinteknik	Provexa Surface Technology
Bumax	Furhoffs Rostfria	LK Precision Parts	Qmt Science
Carlsson & Möller	GKN Aerospace Sweden	Maskinteknik i Oskarshamn	Qtech Group
Carpenter Powder Products	Gränges	Medicast	Resinit
CEJN	Graniten	Merx Svenska	RFR Solutions

INDEX PROCUREMENT CODES

RISE Research Institutes of Sweden	Sigma	verkstad	Uniteam
Rowaco	Silver Weibull Production	Svennes Verktygsmekaniska	Unnaryd Modell
Rydverken	SKF Sverige	SvetsMekano	VBN Components
RZ Gruppen	Skoglund's Mekaniska	Svetstjänst i Höganäs	Ventana Hackås
RZ Kils Verkstad	Skoogs Maskin & Svets	Swerim	Viflow group
Sandvik	Solectro	Tandem Laboratory/Ion	VTT
Scanmast	Specialteknik i Sverige	Technology Center	Wallins Mekaniska
Scanscot Technology	Stavanger Steel	Texor	WM Press
Semcon Sweden	Studsvik	Tranemo Metal	X-officio
	Sundbybergs mekaniska	Tre-Mek i Trelleborg	

Optics and photonics

Automation Region	Gammadata Instrument	MB Scientific	PhotonicSweden
Azpect Photonics	Glenair Nordic	Microbas Precision	Proact IT Group
BergmanLabora	Grepit	Micropol Fiber optic	Qamcom Research and Technology
Combitech	Hamamatsu Photonics	Mikroponent	RISE Research Institutes of Sweden
Crystopt-X	Norden	Note	Scientia Omicron
CUAV	Hexatronic Cables &	Omnisys Instruments	Swedish Microwave
Entangly	Interconnect Systems	Optonyx	
Flir Systems	M A Kapslingsteknik	Optronic	

Particle and photon detectors

Azpect Photonics	Gammadata Instrument	MB Scientific	Promech Lab
Bluewave Microsystems	Grepit	Mikroponent	Scientia Omicron
Combitech	Hamamatsu Photonics	Neonest AB (Buyisotope)	Tandem Laboratory/Ion
CUAV	Norden	Note	Technology Center
DVeI	KG Fridman	Optonyx	
Entangly	Luma Metall	Proact IT Group	

Vacuum and low temperature

Advanced Vacuum	Corona Control	Jobsab	Power Heat Piping South
Distribution	Daikin Sweden	KG Fridman	Produktionsteknik i Lund
Air Liquide Gas	EC Konsult	Low2High Vacuum	Promech Lab
Aliaxis Utilities & Industry	Electro Heat Sweden AB	Löwener Vakuumservice	Qmt Science
APR Technologies	Element Metech	M A Kapslingsteknik	RFR Solutions
Asensor Technology	Epiluvac	Mann Teknik	RISE Research Institutes of Sweden
Atlas Copco	Gefyr Cool & Energy	MB Scientific	Rowaco
Bumax	Glenair Nordic	Nanovac	Scientia Omicron
Busch Vakuumenteknik	Grepit	Nordholms	Semcon Sweden
Carlsson & Möller	Hårdservice i Halmstad	Industriinstallationer AB	Viflow group
CEJN	Hemi Heating	Omnisys Instruments	
Combitech	Hydroscand	Pfeiffer Vacuum Scandinavia	

2B BEST BUSINESS

Company profile

2B was founded 2005 and has since then grown organically to a turnover of SEK 123 million. 2B is a company with a wide range of production methods to offer such as high tech machining for medical industry, casting parts in all materials and methods with high demands of tightness, complete assembled units etc.

We are used to handle all types of material like tungsten, molybden, titan, magnesium, Lanthanum hexaboride (Lab6) and everything you can come up with. The higher demands the better. Sizes from diameter 0,1 mm to parts with weight of several tons.

Core competencies

- Mechanical components for vacuum environment
- High demands casting
- Production methods
- Best method for each part

Industry sectors

- Medical
- High power
- Low power
- Automotive
- General industry

References

- ABB
- NKT
- Parker

Company size

Small



www.2bab.se

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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

ABB

Company profile

ABB is a technology leader that is driving the digital transformation of industries. With a history of innovation spanning more than 130 years, ABB has four customer-focused, globally leading businesses: Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation, supported by the ABB Ability™ digital platform. ABB's Power Grids business will be divested to Hitachi in 2020. ABB operates in more than 100 countries with about 147,000 employees.

Core competencies

ABB is a pioneering technology leader in electrification products, robotics and motion, industrial automation and power grids serving customers in utilities, industry and transport and infrastructure globally.

Industry sectors

Power generation, oil & gas, marine, pulp & paper, mining, metals.

References

- CERN – SVC for voltage support of a large pulsating load.
- More references to be found here: www.new.abb.com/facts

Company size

Large



www.abb.com

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Procurement code(s)

Electrical engineering and magnets
Information technology
Mechanical engineering and raw materials
Health, safety and environment



ACP

Company profile

ACP AB has been supplying textile based ventilation in Sweden from Danish manufacturer KE Fibertec for over 25 years. We do all the calculations and technical consultation in close dialogue with our clients and every installation is custom made for each case and demand. We deliver over 10 000 orders all over Sweden in all applications of schools, offices, stores, supermarkets, shopping centers, gyms, sports arenas, warehouses. Our textile ducts and high impulse nozzles can provide draft-free, even air distribution in isothermic, cooling and heating applications.

Core competencies

- Custom made solutions for each project to ensure optimal ventilation
- Superior air distribution for draft-free, even indoor climate
- Capable of heating large facilities from ceiling over 25 meters height with less than 1°C difference floor to ceiling
- Unbeatable performance for even distribution of cooled air in condensation resistant ducts
- Available in all diameters and lengths
- Low noise, low weight, high performance.

Industry sectors

- Ventilation
- Cooling
- Heating

References

- Max IV, Accelerator/Microscope and science lab
- Astra Zeneca, Medical labs
- Medicon Village, Medical labs
- Arrhenius Lab, Science lab
- Forsmark Nuclear Power plant, Control room
- Oskarshamn Nuclear Power plant, Control room

Company size

Small



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Procurement code(s)

Civil engineering, building and technical services
Health, safety and environment

ADDITIVE COMPOSITE UPPSALA

Company profile

Additive Composite Uppsala AB exploits the latest technologies in 3D-printing with composite materials and plastics. We work with customers to optimise design and to exploit new materials in high technology sectors. There is specific expertise in radiation absorbers (X-rays, neutrons, gamma) for shielding, masks, etc. We are the World's only supplier of components printed in composites with a high load of boron carbide. Our new materials can replace toxic or environmentally damaging alternatives.

Core competencies

- Additive manufacturing with plastics and composites
- Design for additive manufacturing

Industry sectors

- Research equipment
- Nuclear
- Plastics and composites

References

Supplied custom neutron absorbing electrical insulators to European Spallation Source

Company size

Small



Additive Composite

www.additivecomposite.com

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Procurement code(s)

Gases, chemicals, waste collection and radiation equipment
Health, safety and environment
Mechanical engineering and raw materials

ADVANCED INTEGRATION TECHNOLOGY UMEÅ

Company profile

AIT develops automated and custom made mobile solutions for material handling in aerospace sector and other industries with high demand for precision and high load capacity.

Our products are designed to transport and position precision tools, equipment used for assembly, operators and whole airplane structures during manufacturing.

We can also offer custom made automation solutions as robot cells, fixtures and welded constructions.

All necessary skills under the same roof, we design, project manage, manufacture, assemble and install and commission on customer's sites.

Core competencies

- Mechanical engineering
- Electrical engineering
- Software development
- Project management
- Machining
- Welding
- Assembly

Industry sectors

- Aerospace industry
- Automotive industry

References

- Aerospace industry – AGV:s (Automated Guided Vehicles), MGVS (Manually Guided Vehicles), tools to move aircraft during manufacturing. Totally more than 200 machines delivered.
- Automotive industry – Complete automation solutions, custom made >50.

Company size

Small



www.aitumea.se

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Procurement code(s)

Electrical engineering and magnets
Mechanical engineering and raw materials

ADVANCED VACUUM DISTRIBUTION

Company profile

Advanced Vacuum is a Swedish distributor of Edwards Vacuum, and seven other well-known manufacturers within the vacuum area. Since 1995 we have delivered products and services in vacuum and thin films. Continuously, we have built up a network of world-leading suppliers that complement each other. With a solid range, we can cater to our customers' needs from the food industry to space research. We have expertise in all processes and applications where vacuum is used. Most of our suppliers have been working for over 15 years. We know how important it is to minimize production stoppages, whether in research or production. Since its inception, we have learned that better technology produces better results.

Core competencies

- Vacuum Pumps, both dry and oilsealed
- Turbo Molecular Pumps
- Cryo Pumps
- Mass Flow Controllers from Horiba
- High Power Supplies from Advanced Energy
- Leak Detector
- Vacuum measurement instruments
- Gas Purifiers from Entegris
- Scrubber and abatement systems
- Vacuum Systems
- Plasma Process Systems



www.advancedvacuum.se

Advanced Vacuum Distribution AB

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Industry sectors

- Research & Development
- Semiconductor
- Industrial Solutions
- Chemical & Food Processing
- Renewable Energy
- Power Generation Solution
- Analytical Instruments

References

We supply the major Swedish companies and universities with Products, solutions and service.

- ABB
- Sandvik
- Scania
- AstraZeneca
- Tetra Pak

Company size

Small



Procurement code(s)

Vacuum and low temperature

AFRY

Company profile

AFRY is an engineering and design company within the fields of energy, industry and infrastructure. We create sustainable solutions for the next generation through talented people and technology. We are based in Europe and our business and clients are found all over the world.

AFRY – Making Future.

Core competencies

Engineering and design

Industry sectors

- Energy
- Industry
- Infrastructure

References

- Automotive
- Defence
- Energy & Power
- Infrastructure
- Architecture & Design
- Life Science
- Food & Pharma
- Manufacturing
- Process
- Real Estate
- Telecom & IT

Company size

Large



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AFRY

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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment; Information technology
Mechanical engineering and raw materials
Optics and photonics
Particle and photon detectors
Vacuum and low temperature

AIR LIQUIDE GAS

Company profile

One of the leading companies world wide in more than 80 countries.

Core competencies

Gas related products and services.

Industry sectors

- Pharma
- Food
- Welding
- Laboratories

References

- Nuclear
- Oil & Gas
- Laboratories
- Manufacturing sites

Company size

Large



www.airliquide.se

Air Liquide Gas AB

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Peter Stjernberg

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Procurement code(s)

Civil engineering, building and technical services
Vacuum and low temperature
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment

AIRSON ENGINEERING

Company profile

AirSon Engineering AB provides contracting and consulting services in energy, building technology and controlled indoor climate. Our focus is mainly on installation- and energy-intensive projects with high demands and tight tolerances. In example Medicine & Pharma, Microelectronics, Food industry, and Research facilities. By promoting a creative engineering culture and to be in the forefront of technological development, the company has become a textbook example for good engineering and innovation. The company has over the years produced an impressive number of patents, new products and commercial ramifications alongside the primary business.

Core competencies

- Mechanical (HVAC) engineering and installation
- Cleanroom design and construction, aerosol and air movement
- Controlled indoor climate and microclimate applications
- Energy Efficiency, Digitalization and Energy optimization
- Project management and turn-key installations

Industry sectors

- Research and laboratory facilities
- Microelectronics
- Pharmaceutical and Medicine
- Food Industry
- Injection moulding and extruding

References

- AirSon developed the framework and specified the requirements for the HVAC installations at the ESS facility in Lund, Sweden.
- Validation of HVAC engineering at ESS facility and other research facilities.
- At our HQ in Ängelholm, we have two air laboratories where we develop tailor made applications and solutions for multiple renowned companies.

Company size

Small



www.airson.se

AirSon Engineering AB

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Dan Kristensson

Chief Executive Officer

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Procurement code(s)

Civil engineering, building and technical services

AIRWATERGREEN

Company profile

Airwatergreen AB is a Swedish air treatment company that offers energy-efficient dehumidification in all climates. We design and manufacture products that effectively remove moisture and odor, which prolongs the life of buildings, goods and equipment, and creates a healthier workplace environment to stay in. The products are designed with a patented technology called warm condensation, a technology that gives the products a number of unique advantages. Advantages are half the energy needed, easy to install and the same efficiency in all temperatures. We have installations in 8 countries.

Core competencies

Our air dehumidifiers are developed and manufactured in Sweden and based on patented technology called warm condensation. This technology was innovated in 2009 and has proved to be a game changer in the dehumidifier industry. Airwatergreen participated in a Uppsala Innovation Centre (UIC) program for start up and are now a UIC Alumni member.

When we say simple installation, this applies especially to underground installations because we

do not need ventilation pipes to remove moisture. We produce dry air and water directly at the machine. Water can easily be led through a floor well or pipe connection, which drastically reduces installation costs.

Industry sectors

We have installations in buildings and infrastructure. In distributed heating, commercial buildings, water & sewage infrastructure, cultural buildings, schools etc. To protect from corrosion and mold but also to create good working conditions.

References

- Stockholm water
- Swedish church
- Göteborgs kretslopp och vatten
- Akademiska hus
- Kraftringen

Company size

Small



www.airwatergreen.com

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Procurement code(s)

Gases, chemicals, waste collection and radiation equipment
Health, safety and environment

AISLE SYSTEMS SWEDEN

Company profile

- Focus on security-related and quality assuring systems
- System supplier (investigation, development, delivery/operation, training, support)
- Main product lines:
 - Identity Governance and Administration
 - Identity Access Management
 - Attribute based central access management system
 - Anti-tamper authoring system
 - Attest issuer administration

Core competencies

- Systems development
- Problem solving
- Breaking down complex problems to simple user interfaces
- Integrate with feeding and receiving systems

Industry sectors

- Health care
- Pharmaceutical
- Nuclear and process industry
- Sites with a large property stock

References

- Karolinska University Hospital
- Region Stockholm (one of Europe's largest healthcare providers)
- Malmö City
- RISE, Research Institutes of Sweden

Company size

Small



www.aisle.se

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Procurement code(s)

Information technology

Health, safety and environment

ALFA LAVAL

Company profile

Alfa Laval is a leading global supplier of products and solutions for heat transfer, separation and fluid handling through our key products – heat exchangers, separators, pumps and valves.

We currently play a vital role in areas that are crucial for society, such as energy optimization, environmental protection and food production. Alfa Laval works to optimize the use of natural resources in both our own and our customers' operations.

Core competencies

Alfa Laval offers heat exchangers that are more efficient than alternative technologies. Higher efficiency not only reduces costs, but also carbon emissions. In most processes, heat transfer solutions are required for heating, cooling, ventilation, evaporation or condensation, which can all be achieved efficiently using Alfa Laval heat exchangers. Most industrial processes use water and generate waste that needs to be treated to meet tough legislation requirements and to maintain a licence to operate. Alfa Laval offers a complete spectrum of technologies for water and waste treatment.



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Carina Resare

Head of R&D GPHE
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Industry sectors

Alfa Laval's products are used in the manufacturing of food, chemicals, pharmaceuticals, starch, sugar and ethanol. We are also used in nuclear power, onboard vessels; and in the engineering sector, mining industry and refinery sector as well as treating wastewater and creating a comfortable indoor climate.

References

- Pressure breakers for tallest buildings in the world
- Free cooling solutions to Data centre hyperscalers
- Oil cooling and temperature control equipment to global OEMS's.
- Hydrocarbon condensers to global chemical producers
- Condensers and Evaporators for chillers and heat pumps to global OEM's.
- Gas treatment and crude oil dehydration processes to LNG plants
- Steam turbine condensers to global end-users

Company size

Large



Procurement code(s)

Mechanical engineering and raw materials
Gases, chemicals, waste collection and radiation equipment

ALIAxis UTILITIES & INDUSTRY

Company profile

Aliaxis Utilities & Industry is a part of the Aliaxis conglomerate along with FRIATEC. Aliaxis Utilities & Industry has a wide range of ceramic products and solutions together with a wealth of know-how and experience to support the Big Science, oil & gas industry, nuclear, chemical and process industry. At your disposal is our vast experience of customer specific manufacturing for these industries, including choice of materials and product design. This makes us an excellent partner already in the development and design phase of a new product or application. If you have the idea, we will find the right ceramic solution for your purpose. Aliaxis and FRIATEC have many years of experience in ceramic products for engineering applications.

Core competencies

Custom-made high-performance ceramic components and ceramic-to-metal assemblies. Our products are manufactured from high purity ceramic materials: alumina, zirconia, silicon carbide and silicon nitride. Whether you have problems with a highly corrosive environment, high vacuum, high pressure, high voltage, high abrasion, extreme erosion, high temperature or steep temperature changes our FRIALIT-DEGUSSIT ceramics can be the solution. We have vast experience and know-how in components like: electrical feedthroughs, insulators, high-vacuum tubes/chambers, sensor components, pistons and plungers for high-

pressure pumps, valve components, impellers, precision balls for valves or bearing applications, slide bearings, full ceramic or hybrid ball and roller bearings, seal rings, bushings and axial sleeves, nozzles and much more.

Industry sectors

Big Science, oil & gas, nuclear, chemical and process, R&D institutes, pharmaceutical, food and automotive industries.

References

- Big Science: electrical feedthroughs, insulators, high-vacuum tubes/chambers, sensor components, high temperature tubes, rods, etc.
- Oil & gas: high-pressure electrical feedthroughs, insulators, sensor components, pistons and plungers for high-pressure pumps, valve components, impellers, precision balls, slide bearings, full ceramic or hybrid ball and roller bearings, seal rings, bushings and axial sleeves, nozzles.
- Nuclear and R&D institutes: high-pressure feedthroughs, insulators, sensor components, seals, high-vacuum tubes/chambers, high-vacuum feedthroughs.
- Chemical and process: sensor components for level and flow metering systems.
- Pharmaceutical and food: bearings, valve components, pistons and cylinders, sensors.

Company size

Small



www.aliaxis-ui.se

Aliaxis Utilities & Industry AB

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Hans Svensson

Technical Support and Sales Support
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Procurement code(s)

Electrical engineering and magnets
Mechanical engineering and raw materials
Vacuum and low temperature



ALUFLEX

Company profile

Aluflex offers a wide range of automation products and automation solutions for industry in Scandinavia. With our 25 years' experience of the automation industry, we look forward to helping you with your automation solutions. We sell everything from item Aluminium Profile Systems to conveyor belts as well as linear products such as guide rails, ball screws, linear modules and telescopic movements.

Core competencies

Aluminum profiles, linear guides, linear modules, conveyors, telescopic rails and pallet systems

- Prototypes and high volume products for automation solutions - Extensive stock for prompt and secure deliveries - Experienced personnel for the best service and solutions for our customers CAD and PDF files on our SolidComponents website
- Declaration on our material - Conformity of the products according Dodd-Franck-act regarding conflict minerals

Industry sectors

- Medical Industry
- Machine builders
- Lean production Automotive
- Industry Research and Development
- Industry Prototype Development

References

- ESS
- Max IV, Lund University
- Chalmers tekniska högskola
- Atos Medical
- Astra Zeneca
- Dentsply IH
- GKN Aerospace Sweden
- Saab
- Volvo
- TePe mouth care
- Axis Communication
- Tetra Pak
- McNeil
- Automationspartner

Company size

Small



www.aluflex.se

Aluflex AB

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Erik Thorén

Sales Engineer
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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

AMOKABEL

Company profile

We provide the world with cable innovations. Our Company has high technical knowledge and strong determination to design cable solutions for challenging applications. Service with short lead time, flexibility and high accessibility reflects our entire organization. Environmental awareness for sustainable development and minimizing our imprint on the climate is our way of doing responsible business.

Core competencies

- Sustainable development
- High level of quality
- Flexibility in production and delivery
- Innovation
- High customer focus
- Corporate social responsibility

Industry sectors

- Airport
- Marine
- Offshore
- Mining
- Automotive
- Submarine
- ROV umbilicals
- Fishfarms
- Renewable
- Shipping industry
- Machine industry
- High-tech industry

Company size

Medium



www.amokabel.com

amokabel AB

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Procurement code(s)

Electrical engineering and magnets

APR TECHNOLOGIES

Company profile

APR Technologies is a high-tech hardware engineering company developing and selling new products for thermal management for various demanding applications. This include liquid cooling based on own-developed pumps without moving parts, for dielectric liquids including liquid nitrogen. Typical customers are from space, medtech, electronics and other industries.

APR Technologies has own cleanroom facilities and design/build vacuum equipment including chambers, thermal vacuum test chamber and process chambers.

Core competencies

- Vibration free and silent liquid thermal management for equipment, sensors, computing, batteries, electronics and power electronics. Either for heat removal or for exact temperature control. Or actively controlled thermal conductance/resistance between two areas.
- Regulation and switching of heat, cooling, temperature regulation.
- Dielectric immersion cooling of electronics etc. Other applications are high volt/low current

power supplies. RF, LNA, low noise applications. Other typical advantages with our systems are vibration-free, silent, long lifetime, radiation tolerance.

- APR has developed "Fireworm" sensor cables for temperature monitoring over long distances, with wired as well as wireless sensor nodes.

Industry sectors

Space, medtech, automotive, electronics, bioenergy, researchers and research organisations.

References

- Currently qualifying our thermal regulation solution for large telecoms satellites ARTES, with Airbus and ESA.
- Recently sold thermal management solution for an instrument to be used on the International Space Station (order from NASA).
- To other industries we have delivered consultancy services as well as custom made products.

Company size

Small



www.aprttec.com

APR Technologies AB

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Peter Nilsson

CEO
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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials
Vacuum and low temperature

AQ ELAUTOMATIK

Company profile

AQ Elautomatik specialises in the design and production of electrical equipment, electric cabinets, control equipment, control desks, and control systems for demanding industrial customers. We have more than 30 years experience of collaborating with customers with the highest requirements for quality and delivery reliability. Our products are delivered world wide. This has given us solid expertise on local as well as global industry requirements on the products design. AQ Elautomatik wants to be the complete partner that develops our customers' electrical systems. With our commitment to total quality our customers become long-term partners. We have broad and long experience of the design and assembly of electrical cabinets and in helping customers develop a cost effective product.

Core competencies

AQ Elautomatik is characterised by high flexibility and quality, we offer our customers the following:

- Series produced products/electrical cabinets
- Project produced products/electrical cabinets
- Product development
- Design using E-plan P8 and Elprocad
- Prototype development, where the focus is on cost & lead-time
- Assembly & design according to UL standard
- Review of the product, where we supply the customer with proposals for how we can lower the cost for material and processing.

- Global production: Sweden, Bulgaria, India and China
- Our own manufactured special enclosures, painted and stainless

Industry sectors

AQ Group consists of about 20 operational subsidiaries divided in 7 business areas. The business areas can deliver entire projects from the initial idea to engineering, purchasing of materials and components, production, assembly and testing. Each subsidiary has an engineering department in close co-operation with the customers and the production. In addition, AQ Group has a number of sites dedicated to engineering services. Electric cabinets, wiring systems, injection molding, sheet metal processing, System products, inductive components, special tech. & engineering

References

- Transportation: electric, telecom
- Automotive: power, general industry & engineering
- Commercial vehicles: automation, defence industry
- Railway: food & drug

Company size

Medium



www.aqg.se

AQ Elautomatik AB

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Patrik Olsson

Marketing Coordinator
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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

ASENSOR TECHNOLOGY

Company profile

We design & manufacture analog Hall sensors

- We produce state of the art analog Hall sensors (Manufacturing is in Sweden)
- They are used from just above 0K to 500K
- Work range uT to approx 20T
- Low noise
- High linearity

Core competencies

- Analog Hall Sensors
- Low/High temperature
- High T-fields

Industry sectors

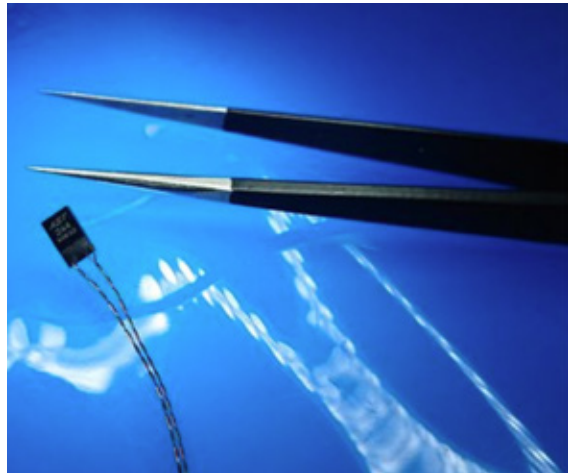
- Space
- Avionics
- Military
- High end industrial

References

- Thales
- Gulfstream
- UTC (USA)
- L-3C (Europe and USA)
- DLR
- Airbus
- Bosch
- ASML
- SKF
- SRON, Netherlands

Company size

Small



www.asensor.eu

Asensor Technology AB

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Procurement code(s)

Electrical engineering and magnets
Vacuum and low temperature

ATLAS COPCO

Company profile

Atlas Copco is a global, industrial company based in Stockholm, Sweden, with approximately 39 000 employees and customers in more than 180 countries. We are pioneers and technology drivers, and industries all over the world rely on our expertise. Our market-leading compressors, and vacuum solutions systems can be found everywhere.

Core competencies

Rough vacuum pumps
Energy-efficient solutions for vacuum

Industry sectors

All Industry sectors using rough vacuum.

Company size

Large



Atlas Copco AB

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Magnus Olsson

Product and Sales Manager, Vacuum Solutions
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Procurement code(s)

Vacuum and low temperature

AUTOMATION REGION

Company profile

Automation Region is a centre of excellence with more than 150 member companies that consist of start-ups, small and medium-sized enterprises and world-leading multinational automation companies. Automation is an important high-technology sector with a significant export ratio. In addition, automation is of great strategic importance to future production and competitiveness. Through collaboration, new contacts, inspiration and skills development, we are working to achieve efficient production, profitable businesses and increased Swedish competitiveness.

Core competencies

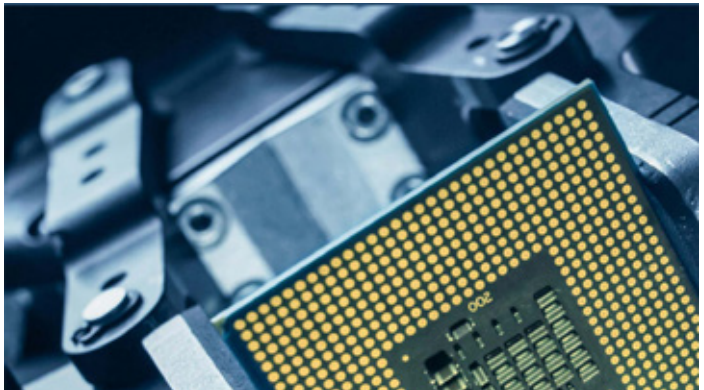
- Automation
- Robotics
- IIoT
- Research and Innovation
- AI/ML
- Industry Sectors
- Automation
- Manufacturing
- Industrial IT

References

Automation Region is since 2007 a leading innovation cluster within automation and digitalization.

Company size

Small



www.automationregion.com

Automation Region

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Daniel Boqvist

Program Manager, Research and Innovation
daniel.boqvist@automationregion.com

Procurement code(s)

Civil engineering, building and technical services
 Electrical engineering and magnets
 Electronics and radio frequency
 Information technology
 Mechanical engineering and raw materials
 Optics and photonics

AXIS COMMUNICATIONS

Company profile

Our experience working with network video and audio solutions, analytics and access control contributes to the protection of people and property, and increases process optimization, business efficiency and information access. We enable a smarter and safer world by creating network solutions to improve security and to find new ways of doing business. The world is changing fast, and we make sure we stay ahead of those changes. While security is still our main focus, we are gradually expanding into related markets using new network-based products and solutions.

Core competencies

Network surveillance cameras, network audio, physical access control etc. When you are responsible for a critical facility, you need to be prepared for all sorts of threats. Everything from incidents and theft to terrorism and natural disasters can cause process disruption and safety hazards. With Axis solutions, you can manage these challenging situations – optimizing your operations and ensuring your facility runs as smoothly as possible.

Industry sectors

- Industries
- Critical infrastructures
- Transportation
- Healthcare
- Banking
- Smart cities
- Big Science facilities
- Oil & Gas,
- Nuclear
- Manufacturing

References

- Big Science
- Oil & Gas
- Nuclear
- Critical infrastructure
- Manufacturing plants

Company size

Large



www.axis.com

Axis Communications AB

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Johan Åkesson

Global Business Development Director Industry
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Procurement code(s)

Health, safety and environment
Information technology

AZPECT PHOTONICS

Company profile

Azpect Photonics AB is a distributor acting in the market segment traditionally labelled Photonics, e.g. in the area of lasers, optics and electro-optics, including motion control. We are serving all the Nordic countries: Sweden, Denmark, Finland, Norway and Iceland. Azpect is representing more than 20 specialist suppliers that cover a full spectrum of photonic products. Among our main suppliers are: Newport Corporation, Spectra Physics, Andor Technology, LabSphere, Excelitas, Avantes etc. Azpect Photonics AB was founded in 1994 and is today the largest and leading supplier of photonics equipment to the Nordic market. Since January 2012, Azpect is 100% owned by the pan-European distributor AMS Technologies, with headquarters in Munich, Germany.

Core competencies

The policy of Azpect Photonics is to help our customers in a quick and efficient way. Our sales engineers are highly experienced in their area of responsibility. The service department has extensive experience in photonics, for both scientific and industrial applications. Our service engineers are also trained and certified by our suppliers.



www.azpect-photonics.com

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Joakim de la Motte

Sales Manager, Research & Scientific
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Industry sectors

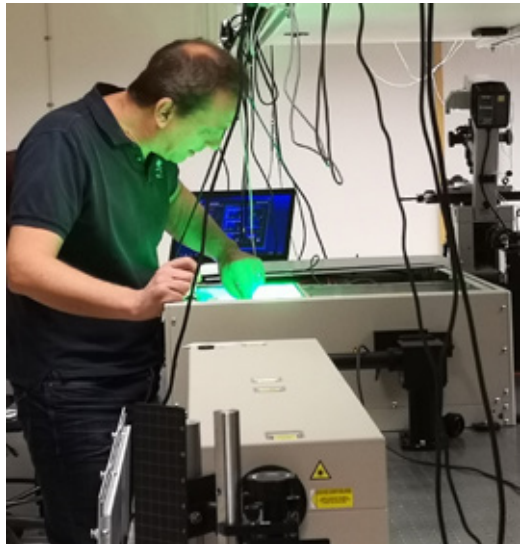
Academic research facilities and a variety of high-tech markets, including renewable energies, medical, defence & aerospace etc.

References

Azpect Photonics continuously delivers equipment to research and science customers, as well as industry. On a component level as well as complete larger turnkey systems, all depending on the customer's needs. Among our customers you find all the major Nordic universities and research facilities, such as MAX IV and ESS. For more detailed references, please contact us.

Company size

Small



Procurement code(s)

Optics and photonics
Particle and photon detectors

BECKHOFF AUTOMATION

Company profile

Beckhoff implements open automation systems based on PC Control technology. The product range covers industrial PCs, I/O and fieldbus components, drive technology and automation software.

Products that can be used as separate components or integrated into a complete and seamless control system are available for all industries. The Beckhoff "New Automation Technology" philosophy represents universal and open control and automation solutions that are used worldwide in a wide variety of different applications, ranging from CNC-controlled machine tools to intelligent building automation.

Core competencies

Motion control, PLC, C++ Real time control, electrical motors, industrial networks, embedded control. Industrial PC, Industrial Displays, vision camera systems, scientific measurements, human machine interface software.

Industry sectors

- General machine building
- Scientific Engineering
- Discrete manufacturing
- Process industry
- Building Automation

References

High-precision, ultra-dynamic drive control for European XFEL X-ray laser
www.pc-control.net/pdf/032015/solutions/pcc_0315_xfel_e.pdf

Company size

Large



BECKHOFF

www.beckhoff.com

Beckhoff Automation AB

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Krister Danielsson

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Procurement code(s)

Electrical engineering and magnets

BERGMANLABORA

Company profile

BergmanLabora AB is one of Sweden's leading suppliers of analytical instruments, microscopy products and apparatus for laboratories. We have more than 100 years of experience, supplying laboratories with products and solutions from world leading suppliers together with knowledge, service and support. Through the knowledge and local presence, with a great amount of simplicity, flexibility and personality we help our customers to succeed. We are a team of 16 dedicated and well trained employees with sales- and service offices in Stockholm and Gothenburg. BergmanLabora is part of AddLife AB listed on Nasdaq stock exchange in Stockholm.

Core competencies

Our core competence is in microscopy and complementary technologies. We deliver standard

and bespoke solutions on time and to budget.

Core technologies are: Light-optical Microscopy (Widefield, Confocal and Super-resolution techniques), Sensitive Cameras and other detectors, CT/X-ray, Atomic Force Microscopy, Scanning Electron Microscopy, Surface Science Instrumentation, Physical and Dissolution testing and Pre-Microscopy Sample Preparation.

References

MAX IV, Lund University - Bespoke microscope to analyse microfluidics after exposure to the beamlines at the MAX IV facility
European Spallation Source - Microscopes for protein crystal analysis

Company size

Small



www.bergmanlabora.se

BergmanLabora AB

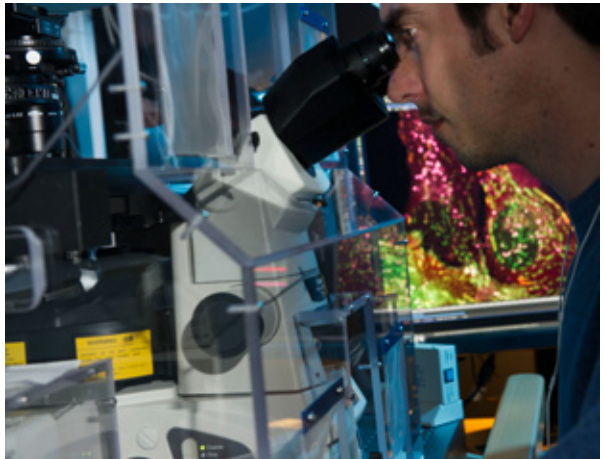
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Oliver Garner

Sales Manager
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Procurement code(s)

Optics and photonics



BERGVIK SWEDEN

Company profile

- Bergvik is a global supplier/producer of Raised access flooring systems
- Seismic bracing solutions
- High built raised floor system and Engineered structural ceiling system.
- With manufacturing in Sweden, South Africa, USA and Australia.

Core competencies

- Construction
- Design, development
- Production
- Installation.

Industry sectors

Use in datacenter, electrical rooms, clean rooms, labs, sub stations, dispatch/control rooms, telecom and other environments.

References

- Data Realty
- USA Vodacom
- South Africa AKA Studio
- Kenya MAX IV-laboratory
- Sweden ESS
- Sweden Fortum CHP plant
- Sweden

Company size

Small



www.bergvik.com

Bergvik Sweden AB

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Procurement code(s)

Civil engineering, building and technical services,
Mechanical engineering and raw materials

BITSIM

Company profile

BitSim is an electronics design house with a focus on Imaging, Edge Computing with Data Acquisition, and High-Speed Data Collection solutions for product-oriented customers. We have developed a number of solutions we want to offer our customers to use in other projects to shorten the time to market. Since 2000, BitSim has designed FPGAs, boards and embedded SW for detectors, sensors, imaging systems and communication equipment ending up in products such as industrial cameras, imaging systems, X-ray, automotive and medical displays, alarm systems, seismic data acquisition, telecom systems.

Core competencies

Data conversion ADC, DAC, Advanced electronics, Printed Circuit Board Design & Layout, FPGA Development, embedded HW & SW, IP blocks, PCIe, DDR4, USB3 and 10G Ethernet.

Industry sectors

- Industrial
- Medical
- Scientific
- Automobile
- Defense



www.bitsim.com

BitSim AB

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Anders Sivard

Business Development Manager
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References

- Uppsala University Geophysical Institution: Ongoing Seismic Exploration project for bore hole exploration
- Uppsala University Physics/IRF: Analog to Digital Conversion with FPGA
- Company: We have developed a high resolution digital seismic acquisition system with sensors collecting and storing geo data. The detector is used at great depths in oceans and seas and has been produced by us in high volumes.
- Startup - Photon Detector - 1 ns pulse single photon detector
- BitSim is the only certified alliance partner to Xilinx in the Nordic

Company size

Small

Procurement code(s)

Electronics and radio frequency

BLUEWAVE

Company profile

Bleuwave Microsystem AB is an engineering design company. We have over 20 years of experience in controlling and commanding electrons and photons (and occasionally other particles) to do useful work or to reveal their secrets. We are experts in NIR, NMR and RF (dielectric) spectroscopic machines as well as pulse analyzers and high voltage electronics (switches). We have also good knowledge and a keen interest in QMR, XRF and SPR machines.

Core competencies

Our specific skills include RF, microwave, graphical (PC) software, embedded software, DSP, FPGA, MMIC and optoelectronics.

Industry sectors

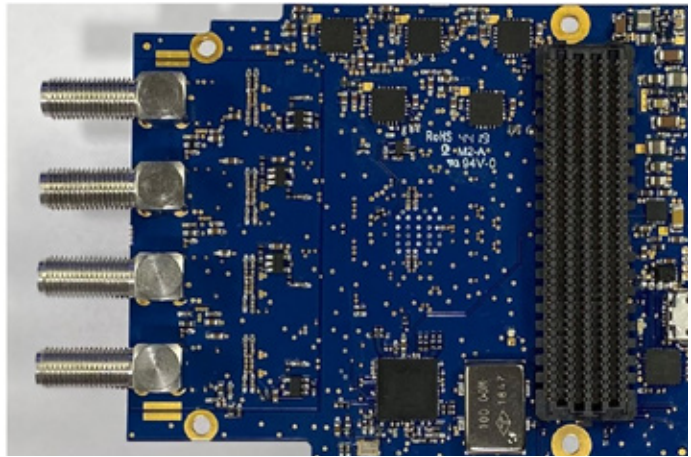
- Academic Research facilities
- Telecom Industry

References

FMC 4xADC 14b/500MHz delivered to CERN as part of the new beam monitoring system.
Pulse height analyzer delivered to DESIREE facility at Stockholm University

Company size

Small



FPGA Mezzanine Cards 4xADC 14b/500MHz



www.bluewave.se

Bluewave Microsystems AB

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CFO

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afshin.fardi@bluewave.se

Procurement code(s)

Civil engineering, building and technical services
Electronics and radio frequency
Particle and photon detectors

BODYCOTE HOT ISOSTATIC PRESSING

Company profile

World leading provider of HIP service (densification of castings), and near-net-shape components based on powder metallurgy. Freedom in design, excellent material properties, wide range of material grades and short production times are some advantages.

Core competencies

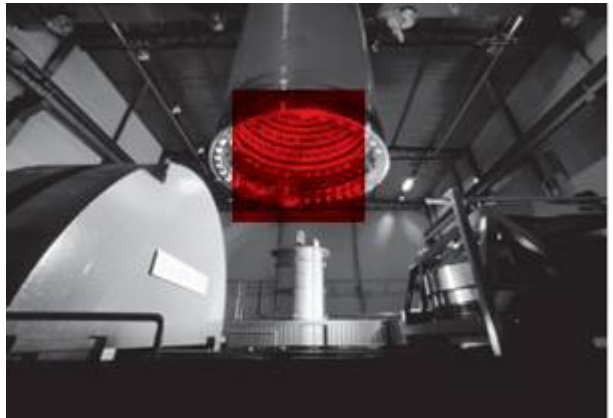
- Hot Isostatic Pressing
- Powder metallurgy
- Material knowledge
- Design capabilities

Industry sectors

- Oil & Gas
- Nuclear
- Aerospace

Company size

Medium



www.bodycote.com

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Procurement code(s)

Gases, chemicals, waste collection and radiation equipment
Mechanical engineering and raw materials

BOLIDEN ELECTRO

Company profile

Our core values have been carved out and proven, in one of the toughest industries on earth for over 90-years now. Professionalism, resilience, integrity, sustaining a pole position for that long amongst tough global competitors can only be achieved by sticking to the mission: "By supplying reliable solutions with cutting-edge technology, we're offering our customers efficiency, safety and increased competitiveness!"

Core competencies

- E-Houses
- Substations
- HMI (front end/back end)
- High voltage
- Low voltage
- Switchgear
- Advanced solutions with cutting edge solutions
- Augmented reality solutions for phones, tablets, PC and HoloLens

Industry sectors

- Mining Industry
- Energy Sector
- Heavy Industry

References

- Incoming HV switchgear solutions of major industries in the mining sector, as well as substations for power distribution above and below ground (open pit and underground mines).
- High-end automation solutions ranging from VFD, PLC, HMI and SCADA to AR-platforms.
- Design, manufacturing of E-houses such as control room, server room, switchgear units/substations, drive systems, transformers.
- Civil works, such as buildings, steel beams, stairs & landings are often included in our scope.

Company size

Medium



www.bolidenelectro.se

Boliden Electro AB

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Jens Holmqvist

CEO/CTO

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Procurement code(s)

Civil engineering, building and technical services

Electrical engineering and magnets

Information technology

BOMANS LACKERING

Company profile

Bomans is an expert in surface treatment, coatings and printing. We are sub supplier to all kind of industries such as science, oil & gas, medical, aviation, telecom, power, agricultural, military and construction. Pre-treatment: Yellow chromate, E-CLPS, SurTec, Oxilan and Iridite NCP Surface treatment: Anodization, Electroless Nickel, Black oxidation, Silver plating, Copper plating, AluBlack and masking. Painting: Wet paint and powder coating Printing: Screen print, Tampon print, UV-Print and Laser engraving. Dispensing, gaskets for shielding or environment protection. Testing: for instance, layer thickness, salt spray, adhesion, layer weight Additional: Paint removal, process water treatment, sandblasting and tumbling. Certified according to ISO 9001:2015 and ISO 14001:2015. Founded: 1908. Number of employees: 60

Core competencies

Surface treatment competence, many years of experience from preforming, evaluation and testing. Wide range of processes, all in house. Quality control, reports and CoC

Industry sectors

- Oil & Gas
- Aviation
- Medical
- Power Industry
- Aerospace

References

- CERN
- Alcatel
- GE Healthcare
- SAAB
- BAE
- CTT
- Ericsson
- Atlas Copco
- ABB

Company size

Medium

Bomans
lackering
ETABLERAT 1908

www.boman.se

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Peter Älander

Sales, Quality and Environment Manager
peter.alander@boman.se

Procurement code(s)

Mechanical engineering and raw materials
Civil engineering, building and technical services



BROGREN INDUSTRIES

Company profile

Brogren Industries should be the obvious option in selecting partners to develop processes or produce high-tech products.

We will work to have long-term relationships with our customers and be able to assist in an early stage. Our work is characterized by quality and continuous improvement.

Carefully developed processes and competent personnel will lead and operate cost-effectively using modern equipment.

We are certified according to the following: AS9100 Revision D, ISO9001:2015, ISO14001:2015, ISO3834-2:2005, ISO3834-2 Scope of Activity.

Core competencies

- A complete expert supplier in machining (turning and milling 5-axis machining), TIG and Laser welding
- AS 9100, ISO 9001, ISO 14001 and ISO 3834-2 certified
- NDT
- Assembling
- Marking
- PPAP/FMEA
- Construction
- CMM and Traceability
- and more

Industry sectors

- Aerospace
- Gas Turbine
- Parts / Environment

References

- GKN
- SAAB
- Siemens
- Azelio (Cleanergy)
- Emerson

Company size

Medium



www.brogrenindustries.com

Brogren Industries

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Daniel Corneliusson

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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

BRÖDERNA CARLSSON

Company profile

A family owned 60-year old company that manufactures machine parts from different branches such as aerospace, power generation and other. Focus on mid-sized parts up to 10 tons with modern and very good multi-function machines and skilled staff. We are certified according to: AS9100, ISO9001, ISO14001 and ISO45001.

Core competencies

- Multitasking
- Measuring
- EDM
- Wire EDM
- Milling
- Lathing assembly

Industry sectors

- Aerospace
- Power Generation
- Paper Industry

References

- CERN
- GKN Aerospace
- Siemens
- Valmet
- SAAB

Company size

Small



www.brodernacarlssonab.se

Bröderna Carlsson AB

Box 5021, SE-591 05 Motala, Sweden

Victor Carlsson

MD

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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

BUMAX

Company profile

BUMAX is the world-leading specialist manufacturer of high-quality stainless-steel fasteners through hot and cold forming as well as through machining. Our fasteners are manufactured at our plant in Åshammar in the heart of Sweden's steel district.

Core competencies

We provide customers with the optimal fastener and material for their specific application, including unique fasteners not found anywhere else on the market. This may involve drawing on our extensive fastener expertise and material science knowledge to develop innovative fastener solutions together with our customers.

Industry sectors

- Stainless steel
- Fastener manufacturer

References

- CERN
- MAXIV
- ESS
- Max Planck Institute

Company size

Medium



www.bumax-fasteners.com

BUMAX AB

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Anders Söderman

Technical Director
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Procurement code(s)

Civil engineering, building and technical services
Gases, chemicals, waste collection and radiation equipment
Mechanical engineering and raw materials
Vacuum and low temperature

BUSCH VAKUUMTEKNIK

Company profile

Busch Vacuum Pumps and Systems is one of the largest manufacturers of vacuum pumps, blowers and compressors in the world. Our product range comprises the largest selection of solutions for vacuum and overpressure technology in all Industry sectors worldwide. We can draw on more than 50 years of experience in vacuum pump and low-pressure pump manufacture.

Core competencies

Busch Vacuum Pumps and Systems

Industry sectors

Our product range comprises the largest selection of solutions for vacuum and overpressure technology in all Industry sectors worldwide.

References

ESS

Company size

Large



VACUUM SOLUTIONS

www.busch.se

Busch Vakuumenteknik AB

Växthusvägen 2, SE-435 33 Mölnlycke, Sweden
+46 31 33 800 80

Irene Jepsen

Marketing & Quality
irene.jepsen@busch.se

Procurement code(s)

Vacuum and low temperature

CARLSSON & MÖLLER

Company profile

Thermoplastics /Thermosets /Composite Engineering plastics produced after drawing in our own factory in Helsingborg, Sweden
Advice - manufacturing - know how = best solution.
Founded 70 years ago. Today 71 employed.
Turnover EUR 13 million.
Flexibility in material, and order quantity from one piece to many pieces.
Together we create new possibilities.

Core competencies

- Temperature range from + 250 C to - 180 C
- Low and high friction
- Dimensions stability
- Radiation resistant materials
- Magnetic materials
- Electrical isolation and conductive materials
- Termic isolation and conductive materials
- Composite Plastic - within fillers as steel, ceramic, boron, MoS₂, bronz, glass, carbon

Industry sectors

- Accelerators/Spallation/Nuclear Plants
- Medical
- Chemical
- Foodstuff

References

- Big Science, oil/gas, nuclear. Electrical & Termic isolation to Accelerators & instruments
- Dimension stable materials within Carbon to accelerator instruments
- Epoxy and glass epoxy materials to accelerator instruments
- Thermoplastic parts for packing Machines.

All produced in own factory in Helsingborg.

Company size

Medium



CARLSSON & MÖLLER



www.c-m.se

AB Carlsson & Möller

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Leif Gjerlöv

Technical Sales Engineer
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Procurement code(s)

Information technology
Mechanical engineering and raw materials
Vacuum and low temperature
Gases, chemicals, waste collection and radiation equipment

CARPENTER POWDER PRODUCTS

Company profile

Carpenter Powder Products is a leading supplier of gas-atomized metal powder and in some cases products thereof. Applications are additive manufacturing, welding & spraying, HIP-near net shape, metal injection moulding, tool steels, brazing and others.

Carpenter Powder Products is fully owned by Carpenter Technologies Corporation, an American company active in specialty metals for niche applications.

Core competencies

Specialty metals, gas-atomized, gas-atomised, powder, hot isostatic pressing, near net shape, metal injection moulding, MIM, NNS, HIP, tool steel, additive manufacturing, AM, 3D-printing.



Courtesy of Metso



www.carttech.com

Carpenter Powder Products AB

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Per Ingo

Managing Director
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pingo@cartech.com

Industry sectors

Energy, Nuclear, Automotive, Transportation, Consumer, Industrial, Aerospace and Medical.

References

CERN, ITER, Sub-sea and Oil & Gas applications.

Company size

In Sweden; small. Carpenter Technologies Corp. in total about 4500 employees.



Procurement code(s)

Mechanical engineering and raw materials

CIM CONSULT SOLUTION SWEDEN

Company profile

Delivering IT-solutions for electromechanical industry since 1988.

Core competencies

E³-series, E-CAE tool developed specifically for companies using any type of design; electrical, automation, hydraulic or pneumatic.

Industry sectors

Electrical industry

Company size

Small



www.ccsgroup.se

CIM Consult Solution Sweden AB

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Fredrik Carlsson

Country Manager
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Procurement code(s)

Electrical engineering and magnets

CEJN

Company profile

CEJN is a leading global niche company with local presence providing innovative quick connect solutions, adding value and productivity to customer applications and processes.

CEJN is committed to high-quality products with a focus on performance, safety and environment, secured through own development and production in a spirit of continuous improvements of processes, technologies and products.

CEJN is an independent family owned business with its roots in Sweden since its start in 1955. CEJN is committed to maintaining its high standards of responsibility towards our customers, employees and the environment.

Core competencies

Our core competence is to develop, manufacture and service Quick connect solutions within different media as: fluids, gases, hydraulics and pneumatics in pressures from vacuum to 400 MPa.

Industry sectors

- Manufacturing industry
- Thermal control of Electronics
- Marine, Agriculture
- Oil & Gas
- Mining
- Fire and Rescue



www.cejn.com

CEJN AB

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+46 500 47 75 00

Kenneth Kjellberg

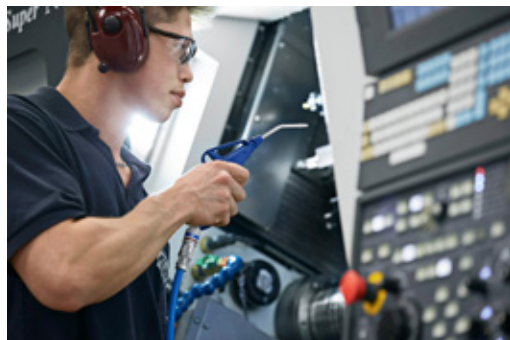
Manager Engineering Division
+46 500 47 75 36
kenneth.kjellberg@cejn.com

References

CEJN has for more than 40 years delivered quick connect solutions to the Oil & Gas industry, our high pressure quick connect couplings are used within the nuclear industries, our Thermal control couplings are used to cool the high performance data centres.

Company size

Large



Procurement code(s)

Mechanical engineering and raw materials
Vacuum and low temperature
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment

CERVITROL

Company profile

Cervitrol, your innovation partner. Cervitrol has a long and solid experience in developing high precision mechanics, electronics and mechatronics for demanding customers. We have under the same roof an experienced R&D team, prototype lab, mechanical workshop for mechanical prototyping and an assembly line for serial production of electronics. In our flexible workshop we also do "box build", racks and integrated mechatronic products in different kinds of enclosures, custom made or from the shelf.

Cervitrol is a "one stop shop" and can shorten your time from idea to complete product as we are flexible and fast.

Cervitrol is always close, we are located in Lund 40 minutes away from Kastrup airport and 30 minutes away from Sturup airport.

Core competencies

- Mechanical engineering, mechanical prototyping, mechanical small serial manufacturing,
- Electronics engineering, electronics prototyping, electronics serial manufacturing,
- Mechatronics engineering, mechatronics prototyping, mechatronics serial manufacturing

Industry sectors

We work with all kind of customers from aircraft industry to subsea industry.

References

ESS

Company size

Small



CERVITROL®

www.cervitrol.se

Cervitrol AB

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Magnus Bredberg

CEO
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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials

CESIUM

Company profile

CESIUM AB is an innovation company specializing in developing, manufacturing and marketing high-technological security systems and storage of explosive goods, weapons and theft-attractive goods as well as secure buildings for data centers.

Core competencies

- Secure buildings
- Physical Security
- Mobile Security
- Vaults Security doors and gates
- Risk analysis

Industry sectors

- Governmental
- IT
- Defence

References

- Swedish Armed Forces
- Swedish National Police
- Saab AB
- Vattenfall
- LKAB

Company size

Small



www.cesium.se

Cesium AB

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Peter Adolfsson

Head of Sales
peter.adolfsson@cesium.se

Procurement code(s)

Civil engineering, building and technical services

CGIT

Company profile

CGit specializes in design, delivery and support of AI-infrastructure solutions.

Core competencies

- Deep Learning
- Machine Learning
- High Capacity
- Storage
- HPC
- Data Science
- GPU
- Networking
- Security
- Datacenter

Industry sectors

All Industry sectors

References

We are the Core Technology partner to AI Innovation of Sweden. Zenuity (Deep Learning platform for self driving cars). Lunds Universitet and several other companies that we are not able to disclosure at this time.

Company size

Small



www.cgit.se

CGit AB

Taljegårdsgatan 11C, SE-431 53 Mölndal, Sweden

Mattias Bergkvist

CEO

mattias.bergkvist@cgit.se

Procurement code(s)

Information technology

COMBINOVA

Company profile

Instruments to measure electric and magnetic fields from 5Hz to 400. Presentation of measuring result as spectrum graphs and/or % of exposure limits stated by ICNIRP, EU-directive or international standards.

Core competencies

- ELF Magnetic Fields
- VLF Magnetic Fields
- ICNIRP
- EU Directive 2016-35
- EU Recommendation 1999:519
- IEEE std C95.1
- IEEE std C95.6

Industry sectors

- Car and Vehicle Industry
- Steel Industry
- Electric Power Industry
- Engineering Industry

References

- ABB
- Scania
- Volvo Cars
- Intertek
- Semko
- Tüv Rheinland

Company size

Small



combinova

www.combinova.se

Combinova AB

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Åke Amundin

CEO

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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Health, safety and environment

COMBITECH

Company profile

Combitech AB is an independent technical consulting company and part of defense and security group Saab AB. We offer high delivery capacity and a wide range of specialist skills and concepts to clients operating in Big Science, manufacturing, the service industry, public sector and defense. We have a Nordic base, but we also work with our clients internationally. Combitech has established a wide network of subcontractors. To be able to meet our customer's demands we are constantly looking for professional partners.

Core competencies

- Project Management
- Development
- Simulation
- Calculation
- Information Technology
- Technical Services
- Design Engineering
- Model Based Definitions
- Cyber Security
- Data Analytics
- AI

Industry sectors

- Automotive
- Processing and Manufacturing
- Industries
- Defense Industry
- Defense Telecom/ICT
- Banking and Finance

References

- ESS: We are working with ESS since 2015, we currently have an ongoing framework agreement within the areas Technical Consultants and Service & Software Test Engineers.
- MAX IV: ongoing framework agreement within the area Technical Consultants.
- MAX IV: hardware such as measure Instruments.

Company size

Large



COMBITECH

www.combitech.se

Combitech AB

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Business Developer
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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Gases, chemicals, waste collection and radiation equipment
Information technology
Mechanical engineering and raw materials
Optics and photonics
Particle and photon detectors
Vacuum and low temperature

COMPLIQ IT

Company profile

Compliq IT AB is a Swedish company with over 30 years of experience in customized computers and servers, workstations and computer solutions. We are certified experts on special requests and build-to-order computer equipment for military requirement, advanced technology in hospitals and within research and production areas. We are also experts in computers/servers that handle large amounts of data or large amounts of simulations and calculations, adjustments to different temperatures as well as odd configurations.

Located in Lund, Sweden we

- Supply IT-products and configurable computers
- Have a web shop
- Have a computer store in Lund
- Provide IT-support and services

Core competencies

- custom-made configurations and constructions
- Hardware design
- SLA setups
- Cluster hardware
- Simulators, vehicle computers, calculating computers, long-life series, servers, industrial computers, GPU based computers
- IT-support and services
- IT-installations
- IT-architecture

COMPLIQ

www.compliq.se

Compliq IT AB

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+46 46 38 47 77

Anders Malm

CEO

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Camilla Edborg

Marketing and Sales

ce@compliq.se

Industry sectors

- IT industry
- Military and Defence
- Innovation, research, development and science
- Academic facilities
- Hospitals
- Research laboratories
- Biotech
- Education
- Manufacturing plants
- High-end Industrial
- Agricultural
- SMBs

References

- Lund University
- MAX IV
- Cellavision AB
- 31173 Services AB
- Region Skåne Regional Council
- NTI Gymnasium
- Defence Industry
- Validus Engineering
- Pauliskolan Technical Gymnasium

Company size

Small



A tailored solution

We are contracted by the high-tech industry, defense and the research sector.

Experts in custom-made builds since 1989

Customize to your needs

Experts in special configurations, systems design and assembly.

www.compliq.se

info@compliq.se



Procurement code(s)

Information technology

Civil engineering, building and technical services

COMPOSITE SERVICE EUROPE

Company profile

Engineering and manufacturing company. Long experience of Design and calculation in carbonfiber and other composite materials. Major business areas, automotive, aerospace and power industry. Close cooperation with Luleå University, RISE and a member of SWEIC, Swedish Composite Innovation Cluster.

Core competencies

- Own patent with a unique design technology
- Strength and stiffness calculations
- Strong composite process knowledge
- High competence in solutions for fishmigration

Industry sectors

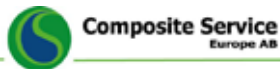
- Automotive
- Aerospace
- Power Industry

References

- AUDI, SEAT, VOLVO
- SAAB, GKN, MTC
- ABB

Company size

Small



www.compositeservice.com

Composite Service Europe AB

Kompositvägen 3, SE-943 33 Öjebyn, Sweden

Göran Svahn

CEO

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goran@compositeservice.com

Procurement code(s)

Civil engineering, building and technical services

Mechanical engineering and raw materials

CONEX ENGINEERING

Company profile

Engineering and manufacturing company. Simulation competence using state of the art software like LS-Dyna plus machine design, project management, and advanced machining with 3 and 5 ax machines. Major business areas, automotive, industrial automation and technical calculations. Close cooperation with Luleå University.

Core competencies

- Simulation technology, sheet metal forming
- Strength and stiffness calculations
- Product development
- Heat treatment
- Automotive die technology

Industry sectors

- Automotive
- Industrial automation

References

- Big Science, Oil & Gas, nuclear or similar
- Industrial automation, turn key delivery for automated house building factory
- Product development, wheel suspension, automotive industry
- Prototype parts for new car models, including geometrical and material evaluation, automotive industry
- Turn key deliveries of hot forming dies for automotive industry
- Flow simulations and product development for flow metering systems
- Flat-table and gentry for satellite orbit testing, space industry

Company size

Small



www.conex.se

Conex Engineering

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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Mechanical engineering and raw materials
Health, safety and environment

COORSTEK SWEDEN

Company profile

High Tech ceramic materials. Specialized in silicon nitride and boron carbide. Prototype and mass production capabilities. Densification techniques:

- Hot Isostatic Pressing
- Sinter/Hot Isostatic Pressing
- Gas Pressure Sintering

Core competencies

- Ceramic materials
- Silicon nitride
- Boron carbide
- Hot Isostatic Pressing
- Sinter/Hot Isostatic Pressing
- Gas Pressure Sintering

Industry sectors

- Energy
- Automotive
- Aerospace
- Machine building
- Chemical industry

References

- HIPed billets extruded for super conductor wire for CERN.
- Silicon nitride rolling elements for flight critical aerospace applications.

Company size

Medium



COORSTEK

coorstek.com

CoorsTek Sweden AB

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Procurement code(s)

Mechanical engineering and raw materials

COROMATIC

Company profile

Coromatic secures availability of power and datacommunications for mission critical functions. We are here 24/7 for our customers to ensure high availability and productivity in facilities, to save lives by securing operations without disruptions, and to protect the environment by optimizing energy consumption. Customers include the financial sector, IT providers, telecom operators, hospitals, national defence, and many other highly connected organizations. Coromatic provides advisory, operations and maintenance services. We design, build and operate energy-efficient technical infrastructure. Coromatic has more than 500 employees in the Nordics. Coromatic has delivered solutions and services to more than 5000 companies in the Nordics. Coromatic is part of the E.ON Group

Core competencies

- Datacenter
- Power
- Emergency power
- Service
- Operations
- Advisory
- Energy optimization

Industry sectors

- IT Healthcare
- Finance
- Telecom
- National defence

References

www.coromatic.com/download/case-studies/

Company size

Large



www.cormatic.com

Coromatic AB

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Charlotte Geeber

Marketing Manager

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Procurement code(s)

Civil engineering, building and technical services

Health, safety and environment

CORONA CONTROL

Company profile

Corona Control has since 1987 offered complete solutions in the process industry - from process knowledge, design and material selection to implementation, spare parts and support. Over the years we have gathered experience from all types of industry and we have a long time working with the Swedish nuclear industry supplying valves, instrumentation and onsite services. Our speciality is to supply equipment and services to the most demanding applications and when needed we can supply bespoke tailored solutions.

Core competencies

Specialist competence in control valves, isolation valves, pressure relief products and process instrumentation. We work closely with our customers already during the design phase finding optimal solutions for process control and plant reliability.

Industry sectors

- Nuclear
- Petrochemical
- Power plants
- Marine Cryogenics
- Greentech
- Pulp & Paper



www.corona-control.se

Corona Control AB

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Svante Karlsson

Technical Manager

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References

Corona Control has supplied equipment to most process industries in Sweden so we can meet almost any type of requirement on function, material or manufacturing standard. References related to Big Science would be 30 years working with Swedish nuclear power (Ringhals, Forsmark and OKG) and ESS.

Company size

Small



Procurement code(s)

Civil engineering, building and technical services
Gases, chemicals, waste collection and radiation equipment
Vacuum and low temperature
Health, safety and environment
Mechanical engineering and raw materials

CRYSTOPT-X

Company profile

CrystOpt-X AB, the main activity is the production of diffraction elements and reflective optics used in the X-ray and neutron beams.

The first developed diffraction element was the very much desired double side machined Johansson crystal in single crystal silicon (main orientations) up to 300 millimeters in length, and bendable down to 500 millimeters radius. Other diffraction elements as single blocks or channel cut and many different geometries are also included in this group. With the same functionality, the multilayers, constitute also an offered product of CrystOpt-X. A second range of products which CrystOpt-X is manufacturing are the very high precision surface shapes, starting with simple flat, for deflection, ending with ellipsoidal or toroidal for both, vertical and horizontal simultaneous focusing. The materials used are mainly silicon, fused silica and zerodur® with a maximum length of 1.2 meters, and all can also be coated with materials like gold, rhodium, palladium and other high-density materials, on request. Surface quality as micro-roughness is now down to 3 Ångström and improving, and the level of surface shape can get down to 0.1 micro-radian of slope error.

Expected in May 2019 (work is in progress on a prototype), long effective life time of optical

elements for neutron guides will become another product which CrystOpt-X will proudly offer. Being an R&D oriented facility, CrystOpt-X AB is looking forward to improve and innovate, undertaking challenges in both, the field of surface shape metrology and the fabrication technologies of new desired optical shapes or functionalities.

Core competencies

Manufacturing very precise surface shapes, super-polishing of shaped surfaces, ion beam figuring, coating and multilayer depositions as also surface shape characterization by means of interferometry and deflectometry are the main competences needed for the manufacturing of the all above offered products.

Industry sectors

Facilities in the field of research and characterization by means of X-ray and neutron beams, including large observatories.

References

- Danmarks Tekniske Universitet
- MAX IV Laboratory

Company size

Small



www.crystopt-x.se

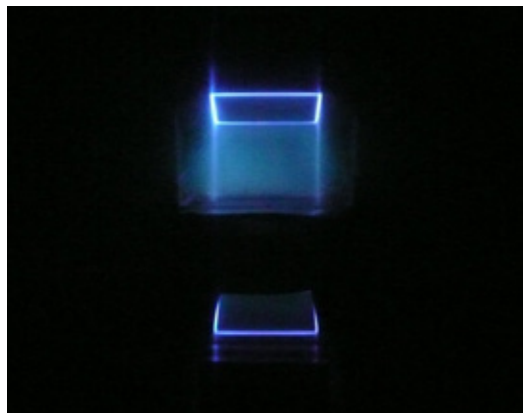
CrystOpt-X AB

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Iulian Preda

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iulian.preda@crystopt-x.se



Procurement code(s)

Optics and photonics

CUAV

Company profile

The spirit of the company is to solve the problems that others cannot, make hazardous, difficult and time consuming tasks simple and above all safe and reliable. With more than 10 years of experience of industrial drone development, we have successfully solved technical problems for specific and custom applications for our clients. Sometimes bordering to what many would think as science fiction. We believe a cost effective solution starts with the true knowledge about our client's needs. The will to improve, streamline, work smarter to stay competitive. We can be your partner on this path. As a tool, our drones are designed to work when needed, to perform the tasks at hand. Our high quality systems will stay on the market for a long time, making it a sound investment. With a full service and operator training program, you can feel safe that we will be at your side when needed.

Core competencies

- UAV Hardware design and development
- UAV Software design and development
- UAV Manufacturing
- Problem solving
- Multiple Sensor integration
- IT and Data Security
- Aerial Communication



CUAV

www.cuav.se

CUAV AB

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CTO

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Industry sectors

- Infrastructure inspections (Railway, Power, District heating)
- Science and X-Labs
- Offshore Security
- Police and Search and Rescue services
- Forestry
- Drone transport
- Construction
- Aerospace Industry
- Military and Space

References

- Swedish Armed Forces
- Luleå University of Technology
- Åland Police Force
- Swedish University of Agricultural Sciences
- LUND University - Engineering
- University of Gothenburg
- MIUN Engineering Deptment
- SAAB
- Swedish Rescue Services (multiple)
- Swedish Line Inspection AB

Company size

Small



Procurement categories

Gases, chemicals, waste collection and radiation equipment
 Electronics and radio frequency
 Health, safety and environment
 Information technology
 Optics and photonics
 Particle and photon detectors

DAIKIN SWEDEN

Company profile

Daikin Industries, Ltd. engages in the manufacture and sale of air conditioning systems. It operates through the following segments: air conditioning and refrigeration business, chemicals, and others. The air conditioning and refrigeration business segment provides residential air conditioners, residential air purifiers, commercial-use air conditioners, commercial-use air purifiers, large-sized chillers, marine container refrigeration units and marine vessel air conditioners. The chemicals segment provides fluoropolymers, fine chemical products, fluorocarbons and chemical engineering machinery. The others segment includes oil hydraulic business, defense systems business, and electronics business.

Core competencies

Air Conditioning Residential air conditioners Residential air purifiers Refrigeration Process cooling Commercial-use air conditioners Commercial-use air purifiers Humidity-adjusting external air-processing units Large-sized chillers Marine container refrigeration units Marine vessel air conditioners Chemicals Fluorocarbons Fluoroplastics Fluoro coatings Fluoroelastomers Fluorinated oils Oil- and water-repellent products

Mold release agents Pharmaceuticals and intermediates Semiconductor-etching products Dry air suppliers Air filtration Oil Hydraulics Industrial hydraulic equipment and systems Mobile hydraulic equipment Centralized lubrication equipment and systems Fuses Aircraft parts Fire extinguishers for aircraft engines Medical equipment Rebreathers and similar equipment Home-use oxygen therapy equipment Electronics business System management of product development process Facility design CAD software Molecular chemistry software

Industry sectors

All sectors

References

- City mall, Tbilisi
- 5MW cooling Qatar World cup stadium
- 183,5 MW cooling Cambridge Hospital
- Health sector application
- 1MW cooling The Tekirdağ City Hospital
- Health sector, 23MW cooling

Company size

Large

www.daikin.se

Daikin Sweden

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Jimmy Svedin

Product Manager
jimmy.svedin@daikin.se

Procurement code(s)

Vacuum and low temperature

DIGITAL MECHANICS SWEDEN

Company profile

Digital Mechanics is a leading innovator in smart additive 3D production. As experienced problem solvers we offer customers access to our digital factory for fast 3D printing of complex plastic and metal details both in prototyping and production ready parts. We always strive for long term customer relationships for the best possible quality and delivery precision. We have global delivery capacity.

Core competencies

- 3D printing in plastic
- 3D printing in metal
- Silicon tools
- Prototype tools
- Rotary casting
- Lost wax casting
- Sand casting
- Precision casting
- Machining

Industry sectors

- Automotive
- Aerospace
- Medical
- Manufacturing
- Construction
- Engineering
- Energy
- Mining

Company size

Small



www.digitalmechanics.se

Digital Mechanics Sweden AB

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Andreas Södergren

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Procurement code(s)

Mechanical engineering and raw materials

DIVISOFT

Company profile

Specialist representative and distributor for power solutions for science, research, industrial and medical applications. As specialists in power technologies, we work closely with the world's leading power supply manufacturers to supply standard, modified and fully customised solutions to our customers in the Nordic and Baltic markets, from low-power (1W) up to high power (1920kW), from embedded products up to standalone rack systems.

Core competencies

- Programmable DC sources
- Programmable AC sources
- Bidirectional power supplies (with energy recovery)
- Bipolar power supplies
- Magnet power supplies
- Electronic DC loads
- Electronic AC loads
- High-voltage power supplies
- Capacitor chargers
- AC/DC power supplies
- DC/AC inverters
- DC/DC converters

Industry sectors

- Scientific research
- Test and measurement Industry (automation, process control)
- Medical

References

- ESS
- Uppsala University
- Scandinova Systems AB
- KTH
- ABB
- Saab

Company size

Small



www.divisoft.se

Divisoft AB

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Michel Gonzalez

Key Account Manager

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Procurement code(s)

Electronics and radio frequency

DVEL

Company profile

We specialize in providing competence and building systems within test, measurement, and control. Our highly skilled experts take you from prototypes through requirements definition, development of measurement techniques and definition of processes to implementation, delivery and education. From our office in Lund, we deliver systems for the most challenging measurement tasks as well as on-site consulting to various industries. One of the industries we focus on is Big Science, as this area is something that lies very close to our hearts.

Core competencies

Our engineers combine theoretical knowledge and the ability to quickly grasp technical challenges with the know-how of creating scalable and stable systems. We combine science, computer science and vast experiences from test development to bridge gaps that are common in most organizations.

About half of our consultants holds PhD's in laser based measurement techniques, electrical measurement techniques, material science, nuclear physics and similar areas, whereas the rest are MSc's in fields ranging from physics through electrical engineering to mechanics. If you need help with National Instruments software or hardware we can help you with that as well. We

are an Alliance Partner with National Instrument and have gathered the largest and sharpest set of LabVIEW and NI hardware competence in the Öresund region.

Industry sectors

- Big Science
- Medical Technology
- Industrial Production
- Power
- IoT

References

Since DVel started in 2012 we have delivered numerous systems including:

- Control system for an ion accelerator
- Control system for a DC/DC converter
- Measurement system for nuclear fuel rods
- Verification of radio ASICs
- Test rig for hydronic actuators
- Hardware and software development for the biogas industry
- Development of test departments and test activities.
- Measurement system for nuclear fuel rods.

Company size

Small



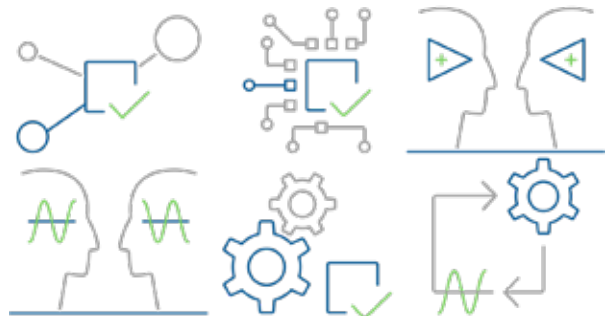
www.dvel.se

DVel AB

Scheelevägen 32, SE-223 63 Lund, Sweden
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Riki Virc

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riki.virc@dvel.se



Procurement code(s)

Electrical engineering and magnets
Particle and photon detectors

E.ON SWEDEN

Company profile

E.ON Sweden is a part of the international energy group E.ON SE with head office in Essen, Germany. The E.ON Group has over 70 000 employees working in 15 countries. E.ON in Sweden sells and distributes electricity, gas and heat, and also develops solutions that include solar panels, charging solutions for electric vehicles and energy storage. With a clear focus on smart grids, energy efficiency and innovative customer solutions, we aim to be the energy partner of choice for companies and municipalities. Our goal is to be in a lead position in the transformation of the energy business, focusing on renewable and recycled energy in order to contribute to the sustainable society.

Core competencies

We develop innovative solutions in order to decrease energy consumption and help customers to control and share their energy in a smart way. An example of that is our innovation ectogrid™. With ectogrid we connect buildings with different needs, balancing residual thermal energy flows to decrease energy consumption. With the help of AI and ectocloud™ our solutions are smart and self-learning including typical demands over time of users, weather, local energy production and energy trading prices. The E.ON Integrated Energy Solutions-team has a strong focus on smart sustainable energy solutions. In cooperation with

our customers and partners we aim to transform the energy market by helping energy users become a Good Neighbour™.

Industry sectors

- Automotive
- Chemicals
- Datacenter & Telecom
- Healthcare
- Food and Beverage
- Manufacturing
- Pulp & Paper
- Retail
- Warehouse & logistics
- Critical facilities

References

- ESS (European Spallation Source), Lund
- Fresenius Kabi, Uppsala
- Medicon Village, Lund
- Högbytorp Upplands-Bro -JM (the construction company)
- The new city quarter Slussen, Örebro
- Orkla Foods, Tollarp

Company size

Large



www.eon.se

E.ON Energilösningar AB

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Michaela Ahlberg

Key Account Manager Industry
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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets

EC KONSULT

Company profile

EC Konsult AB is a technology consultancy company started in 1985, about 20 employees, owned by company management, development/design/testing/verification of electronics and software for embedded systems, and management of IT systems, development/design/testing/verification of mechanical engineering for complex solutions, project management. We are located in southern Sweden, with headquarters in Karlshamn and local offices in Lund and Växjö.

Core competencies

- Development/design/testing/verification/validation of electronics and software for embedded systems, and management of IT systems.
- Development/design/testing/verification of mechanical engineering for complex solutions.
- Project management.

Industry sectors

- Science Research Centers
- Medical Engineering
- Engineering
- Process Industries

References

- Big Science
- Swedish Defense Industry
- Nuclear Power Industry
- Industry
- Oil & Gas
- Med Tech
- Electronics
- Power Electronics
- Process Industry

Company size

Small



ec konsult

www.ec.se

EC Konsult AB

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Camilia Qvist

CEO
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camilia.qvist@ec.se

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature

ECODATACENTER

Company profile

EcoDC provides the worlds most sustainable datacenter services. E.g. all computing capacity for AI, machine learning, analytics, big data etc could be provided from our site in Falun. Since the company's site in Falun has got the most advanced (as per today) ecosystem design, customer will benefit from a neutralised carbon footprint.

Core competencies

We can provide input to how companies and organisations could deploy server capacity in Sweden.

Industry sectors

- Datacenter services
- IaaS

References

- Perfect conditions for companies deploying server capacity within our datacenters.

Company size

Small



www.ecodatacenter.se

EcoDataCenter AB

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Lars Schedin

CEO

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Procurement code(s)

Information technology

EITECH ELECTRO

Company profile

We are an accountable team of specialists in electrical installation and engineering. We are people who work together with brain and heart to create innovative solutions to our customers challenges. We believe that this combination is the key to success. Today our team consists of close to 1 200 employees, from Gällivare in the north to Malmö in the south. We deliver everything from complete projects and comprehensive solutions to ongoing services in the construction sector and the public sector, as well as within the industry, infrastructure and energy sectors. Since January 2018, Eitech is a part of VINCI Energies, a technology group offering a wide range of services in industry, service and ICT with around 70,000 employees worldwide

Core competencies

- Project Management
- Turn key
- Engineering
- Installation
- Service

Industry sectors

- Mining
- Steel
- Pulp & Paper
- Oil & Gas
- Safety

- Infrastructure
- Building
- Energy
- Data centers
- Service

References

- LKAB
- Boliden
- SSAB
- SCA
- Billerud
- Facebook
- Trafikverket
- Vattenfall
- EON
- Svenska kraftnät
- Regionen

Company size

Large



EITECH

www.eitech.se

Eitech Electro AB

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Jonas Bergqvist

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Procurement code(s)

Civil engineering, building and technical services
Information technology

EK POWER SOLUTIONS

Company profile

EK Power Solutions is the Nordic region's leading design house for power electronics and PCB-layouts. Our specialty is custom design development and delivery of power supply, motor drives, battery charging and PCB-layout. We have delivered design services since 1978. In our premises we have a 300 sqm modern and well-equipped electronics lab, including EMC and environmental measurement capabilities. We have also expert skills in the design of printed circuit boards and how PCB-layouts need to be designed to comply with both electrical safety and EMC requirements. We work throughout every stage of the development - from idea to finished product. EK Power Solutions also deliver series production units.

Core competencies

- Power electronics
- Power supplies
- Motor drives
- Battery charging
- EMC investigations
- PCB layout

Industry sectors

EK Power Solutions have customers in all kind of Industry sectors where the requirements are demanding. Our clients include some of the world's most technology-intensive companies in automation, power generation, telecommunications, railway, automotive, marin and defense.

References

- Atlas Copco
- ABB
- Scania
- Husqvarna

Company size

Small



www.ekpower.se

EK Power Solutions AB

Rinkebyvägen 19B, SE-182 36 Danderyd, Sweden
+46 8 446 56 00

Vidar Wernöe

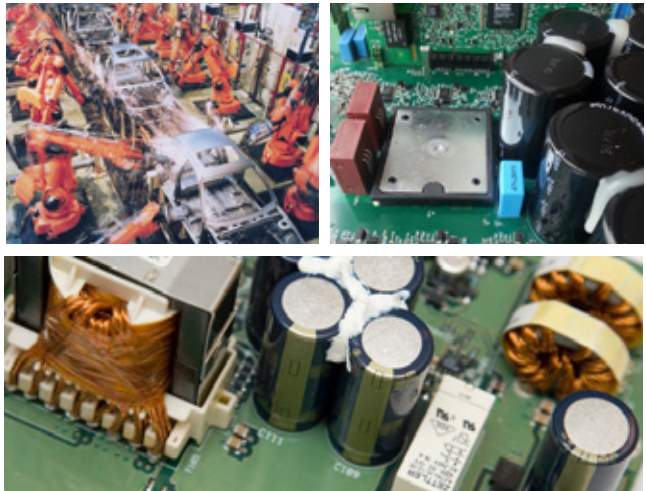
CEO

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vidar.wernoe@ekpower.se

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency



ELAJO MEKANIK

Company profile

Since the dawn of the nuclear era in Sweden, Elajo has been the company that builds, modifies, upgrades and decommission. We are now heavily involved in the mechanical work at ESS. We have a framework agreement for mechanical installations at ESS. We deliver projects from 3D-scanning, engineering, manufacturing to installations.

Core competencies

- Installations
- Manufacturing
- Piping
- EN 1090-3
- Engineering

Industry sectors

- Oil
- Pulp & Paper
- Nuclear
- Research Infrastructure

References

- MUTS (Mock Up and Test Stands) at ESS
- Drain tanks system at ESS
- HVAC for target building at ESS
- Primery cooling system at ESS
- TSS systems at ESS

Company size

Medium

www.elajo.se

Elajo Mekanik AB

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Kristofer Bard Ahlström

Sales & Business Development Manager
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Procurement code(s)

Mechanical engineering and raw materials

ELECTRO HEAT SWEDEN

Company profile

Electro Heat Sweden AB is an innovative company based in Gothenburg. We manufacture and develop heat treatment solutions to companies all over the world. We specialize in manufacturing of customized heating solutions and industrial ovens / furnaces.

Core competencies

- Furnaces Ovens
- Heat Treatment Equipment
- Customized industrial ovens
- Customized industrial furnaces
- Heating Wire
- Heating Tapes
- Heating Cables and Hoses
- Annealing Tempering Hardening Drying
- De- gassing

Industry sectors

- Aerospace
- Aircraft
- Automotive
- Marine
- Energy
- Military
- Pharmaceutical

Company size

- Small



www.electroheat.com

Electro Heat Sweden AB

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Joel Lagerqvist

Sales

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Procurement code(s)

Mechanical engineering and raw materials
Vacuum and low temperature

ELEMENT METECH

Company profile

Delivering metrological confidence! Element Metech is a leading, independent full service provider of measurement and calibration services. With over 60 years of experience, we provide one of the broadest and most reliable ranges of calibration, accredited calibration and measurement technology services in Europe. In June 2018 Element Metech became a part of Element able to offer 6200 engaged experts in 200 locations in over 30 countries across five continents. With this, we are one of the global leaders in the field of measurement and calibration services.

Core competencies

- Material testing, calibration, measuring assignments, product qualification testing, certification, consultancy.
- Instrument calibration: As a full-service provider, Element Metech is the single point of contact for all your instrument calibration, service and administration needs.
- Leading measurement service provider.
- We are experts in interpreting quality requirements and standards from many Industry sectors. We will help you to identify and implement the right quality level throughout the organisation.

Industry sectors

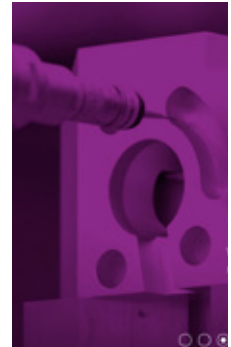
- Processing Industry
- Mechanical Industry
- Aerospace
- Fire and Building products
- Infrastructure and Environmental
- Oil & Gas
- Transportation and Industrials.

References

We are continuously delivering our service to the leading global industries around the world.

Company size

Medium



www.elementmetech.com

Element Metech

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Jens Bergendorff

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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials
Vacuum and low temperature

ELITKOMPOSIT

Company profile

Elitkomposit AB is a producer of goods in advanced composite materials. We develop material combinations to suit particular applications and particular requirements. Product size range from millimeters to several meters and series lengths spans from prototypes to tens of thousands. Typically, advanced composites are used wherever traditional materials have reached their limit and no longer function well. Composites can be tailored to provide multifunctional behaviour in diverse combinations, i.e. stiffness combined with radio transparency, structures with integrated sensors or conductive components with low radiation absorption.

Core competencies

- Advanced composites
- Carbon fiber
- Radio transparency
- Integrated sensors radome

Industry sectors

- Space
- Medical
- Telecom
- Defense
- Aerospace

References

- Ruag Space
- Elekta
- Panthera

Company size

- Small

www.elitkomposit.se

Elitkomposit AB

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Erik Kullgren

Process Developer
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Procurement code(s)

Civil engineering, building and technical services
Electronics and radio frequency

EMV HOLDING

Company profile

We offer our customers the whole scope within manufacturing of process equipment in stainless steel - from laser cutting of single parts to assembly of complex modules. If the customer needs help with installation, we can offer a group of skilled field service engineers (including plumbing). We work as one organisation within three companies (with two factories) and in close cooperation with third party organisation. Our company group consists of Ekeby Rostfria, EMV Stainless and EMV Pipe Solutions.

Core competencies

- Welding in stainless steel with high precision
- Welding of high alloy steel
- Installation of modules for processing industry
- Plumbing

Industry sectors

- Pharmaceutical industry
- Food processing industry
- Manufacturing of stainless steel
- Construction industry

References

- Tanks and vessels to pharmaceutical and food processing industry
- Installation and rebuilding of food processing equipment
- Installations and rebuilding of boilers and heat exchanger
- Manufacturing of food processing equipment
- Manufacturing of CIP units to food processing industry

Company size

Medium



EMVHOLDING^{AB}

www.emvholding.se

EMV Holding AB

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Managing Director
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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

ENABLY

Company profile

Enably has been producing laboratory equipment for 60 years. Our lab equipment series Laborativ have found great success on a number of large projects. Laborativ's uniqueness as a customer solution lies in its comprehensiveness and our end-to-end support from electrical wiring to data and purity-classified media to laboratory tables and storage units. Our expertise encompasses design, planning, installation, final inspection and documentation.

Core competencies

- Laboratory furnishings
- Safety-ventilated workplaces
- Fume cupboards
- Downdraft bench
- Extraction arms
- Fire-rated cabinets
- Chemical cabinets
- Laboratory tables, sinks
- Laboratory cabinets
- Power/outlet boxes
- Data outlets
- Water and gas fittings
- Projecting
- Electric fronts
- Sliding doors
- Office pods



Industry sectors

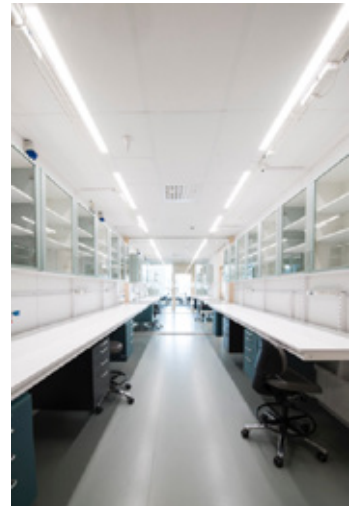
- Universities
- Research
- Life Sciences
- Process Industries
- Pharmaceutical
- Petrochemical

References

- University of Gothenburg
- Klöver
- Karolinska Institutet
- Billerud Korsnäs
- KTH - Royal Institute of Technology
- Stockholm University

Company size

Medium



www.enably.se

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Procurement code(s)

Civil engineering, building and technical services

ENOC SYSTEM

Company profile

Enoc System is one of Scandinavia's leading manufacturers and suppliers of enclosures and containments in combination with accessories for network and data centers. Our marketing and sales are focused in northern Europe, with subsidiaries in Germany and France, and resellers in Denmark, Norway and Belgium. Together with a network of partners we are able to provide a strong sales organisation close to the customer with extensive warehousing to increase product availability. Enoc's modular system makes it possible to easily create new and customized solutions, regardless if it is used for entire server rooms or for individual racks and data cabinets.

Core competencies

Flexibility and customer focus are Enoc's cornerstones. We can quickly adapt to customer needs throughout the production. The unique modular system can be built in a variety of variations. The aisle containment solutions, chimneys and freestanding HAC:s enable temperature optimization that generate a high grade of energy savings. It's the details that make the difference. We are determined to find a solution that best suits the customer, with quality from the ground up. That's what we call "The Enoc Way".

Industry sectors

Network enclosures and computer installation systems Customized solutions for network and data center Server racks, IT enclosures Fiber optic cabinets Aisle containment Cooling solutions for server rooms Test and measurement Industry (automation, process control)

References

- SISC RISE - Research and environment testrigs
- ESS - Server and Network racks
- University LIU, LTU - Server racks
- GleSYS - Datacenter
- IP Only - Datacenter
- Bahnhof - Datacenter
- Cebeo - Datacenter
- Public Authority Service's data center
- Saab - Process Control
- Volvo - Testrigs & Process Control

Company size

Small



ENOC

DETAILS MAKE THE DIFFERENCE

www.enocsystem.com

Enoc System AB

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Patrik Berggren

Key Account Management Datacenter
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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Information technology
Mechanical engineering and raw materials

ENTANGLY

Company profile

Entangly is a consulting company in optics, photonics and quantum technologies. We help companies and organizations deliver smart, reliable and future proof solutions. Entangly is rooted in science and all employees have a PhD degree and are motivated to put scientific and technological discoveries into practical use. We offer optical analysis, simulations, prototyping and product development as well as testing in our lab.

Core competencies

- Optics, lens design, illumination
- Camera systems and imaging
- Photonics and fiber optics
- Lasers (including high power femtosecond lasers)
- Laser safety
- Optical metrology and sensing
- Scientific investigation and education

Industry sectors

- Energy and clean technology
- Quantum technologies
- Automotive
- Industrial
- Medtech
- Scientific
- Security
- Space science

References

www.entangly.se

Company size

Small



www.entangly.se

Entangly AB

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Jonas Tidström

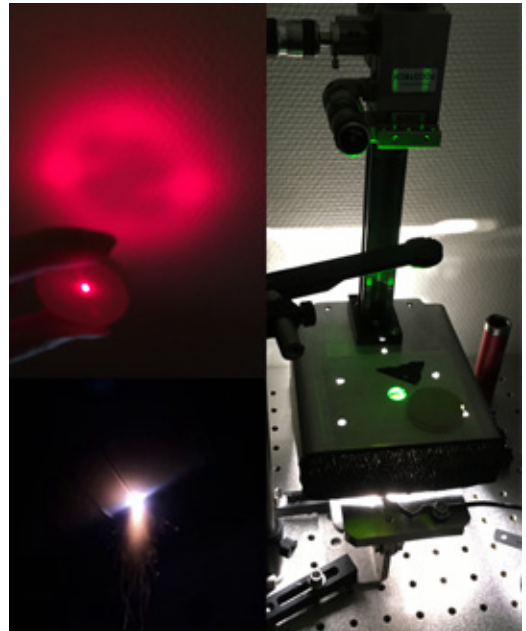
CTO

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Procurement code(s)

Optics and photonics

Particle and photon detectors



ENTECH

Company profile

Entech designs and delivers different high temperature furnaces to customers in numerous countries. We have gathered a very high degree of experience used to make thorough and unprejudiced analysis of the requirements for our customers. We can present a solution which guarantees that our customers get a furnace designed to fulfil the specified tasks, it may be anything from a standard furnace to a very special custom designed furnace. Known technology and innovative thinking are combined and backed up by a very good cooperation with leading suppliers of components. The furnaces from Entech are known to be built with carefully chosen materials and with a high degree of precision in the detailed manufacturing.

Core competencies

- Tube furnaces
- Chamber furnaces
- Elevator furnaces
- Thermal cycling furnaces
- Fire testing furnaces
- Horizontal split tube furnaces
- Vertical split tube furnaces
- Continuous sintering furnaces with rotary hearth
- Special furnaces

Industry sectors

- Technical universities in Europe
- Research institutes in Europe
- Dental industry

References

- VTT, Technical Research Centre of Finland
- Delft University of Technology, Netherlands
- DTU/Risø, Technical University of Denmark
- KTH Royal Institute of Technology, Sweden

Company size

Small



www.entech.se

Entech Energiteknik AB

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Janne Jyrinki

Sales Manager & CEO

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Procurement code(s)

Civil engineering, building and technical services

EPILUVAC

Company profile

Epiluvac AB builds equipment for material research. This includes advanced gas mixing systems, vacuum chambers, high temperature cells and customized design solutions. More than 30 years of experience from the semiconductor industry.

Core competencies

- Gas mixing systems
- Vacuum
- High temperature cells
- Chemical vapour deposition
- Epitaxy, corrosive gases
- Ultra-high clean gas systems

Industry sectors

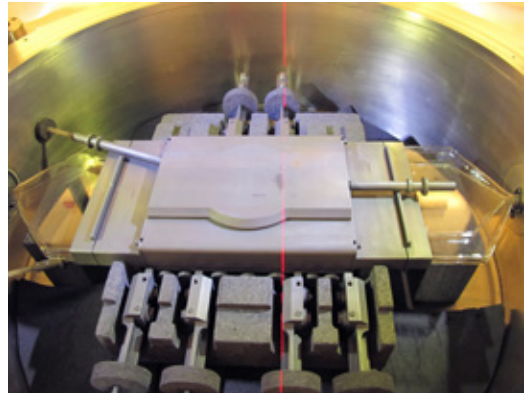
- Material research
- Semiconductor
- High temperature processes

References

Different kinds of epitaxial equipment for semiconductor industry (CVD, UHV-CVD, sublimation, HTCVD, graphene), customized equipment for different process steps.

Company size

Small



epiluvac

www.epiluvac.com

Epiluvac AB

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Roger Nilsson

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Procurement code(s)

Electronics and radio frequency
Vacuum and low temperature
Gases, chemicals, waste collection and radiation equipment

EXAMEC

Company profile

Fully integrated company, from raw materials to functional instruments/machines. Competence in cutting, welding, machine tooling, surface treatment, metrology, electrics and automation, assembly and final testing.

Core competencies

Building of complete instruments/machines, machine tooling of larger components (also from Lead), assembly and testing

Industry sectors

- Big Science
- Research
- Packaging
- Manufacturing
- Hyper Car Automotives

References

- CERN
- ESS
- MaxIV
- Cox Analytical Systems
- Elekta
- Bomill
- Scanditronix Magnet
- TetraPak
- Koenigsegg
- UFAB

Company size

Small



EXAMEC

www.examec.com

Examec Group AB

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Mats Ohlsson

CEO

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Procurement code(s)

Mechanical engineering and raw materials

EXIR BROADCASTING

Company profile

Develop and manufacture innovative passive RF components with 10-year guarantee. We are specialized in customized solutions to meet your specific needs.

Core competencies

Design and production of passive RF components and on site support.

Industry sectors

- Transmission lines and wave guides
- Customized Solutions

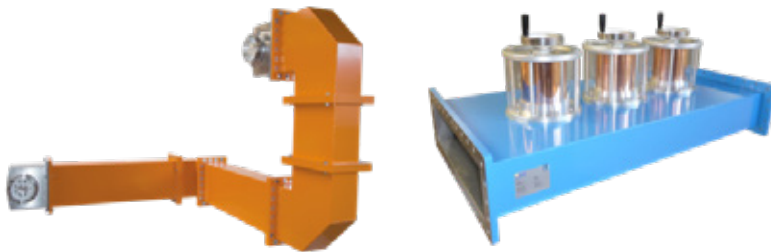
Research and Development

References

- Transmission line to Maxlab
- Solaris
- ESS and Freia including installation support and supervision (Big Science).
- Custom designed passive components, i.e. adapters, directionally coupler etc to CERN, Maxlab, Solaris, ESS and Freia (Big Science).
- Other components delivery to various Big Science plants around the world.

Company size

Small



www.exirbroadcasting.com

Exir Broadcasting AB

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Niclas Rosvall

General Manager
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Procurement code(s)

Electronics and radio frequency

FAGERSTRÖM INDUSTRIKONSULT

Company profile

"Designs and solutions that no one else thought of". We are not industry specific so we can offer technical improvements in most types of processes and within all sectors of the industry.

We are frequently commissioned for developing unique specialized machines.

For others, we realize long-term development project. An example is the cooperation with the Swedish nuclear industry and ESS, where we interact with their organizations and conduct joint projects.

Fagerström has since many years close cooperation with various subcontractors who meet the same high level of quality standards as our own. Naturally, we are quality and environmentally certified according to ISO 9001:2015 and ISO 14001:2015.

Core competencies

- Technical solutions: Technical consulting activities such as machine design, pipe and steel structures with associated calculations and project management.
- Remote handling systems: Deco Systems
- Development, manufacturing and decontamination system, to clean components from radioactive particles.
- Production systems: Project responsibilities, development, design, delivery and commissioning of complete production lines and plants.
- Pharma systems: Feasibility studies,



www.fagerstrom.se

Fagerström Industri Konsult AB

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Per Fagerström

CEO

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per.fagerstrom@fagerstrom.se

development and validation with rigorous control and high standards of analysis and manufacturing.

Industry sectors

- Nuclear
- Research facilities
- Spallation source

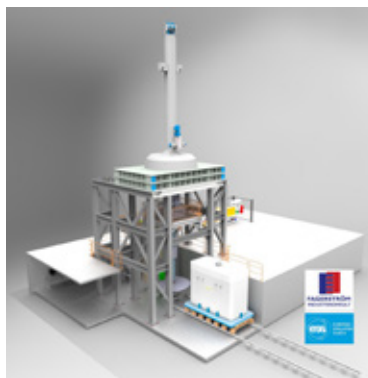
References

ESS, European Spallation Source:

- Active cell, design, documentation and inspection plans.
- Hot cell facility for handling of radioactive waste
- Proton Beam Window, component separating ultra-high vacuum in accelerator beam pipe from rough vacuum in monolith vessel
- Chopper group, design of different choppers for the instruments.
- Design of remote handling tools for the installation of the choppers
- Casks and associated handling devices, design and documentation.
- Equipment for transport of used radioactive and contaminated and 200 more projects.

Company size

Small



Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

FIELDROBOTIX

Company profile

FieldRobotiX develops hardware and software to enable autonomous UAVs to inspect confined environments, such as tunnels, corridors, underground mines, construction tunnels and other related ones. The developed autonomous UAV solutions can provide frequent inspections to these areas and provide valuable information such as a 3D map, gas level, temperature, or providing visual feedback to the personnel for the situational awareness of the sites. FieldRobotiX creates innovative solutions and services that will enable the next step in automation and the further deployment of aerial robotic workers in multiple applications for achieving a real impact in the field from a safety and productivity point of view.

Core competencies

Embedded autonomy and obstacle avoidance. 2D and 3D mapping. Detection of the irregularities. In-house hardware and software development.

Industry sectors

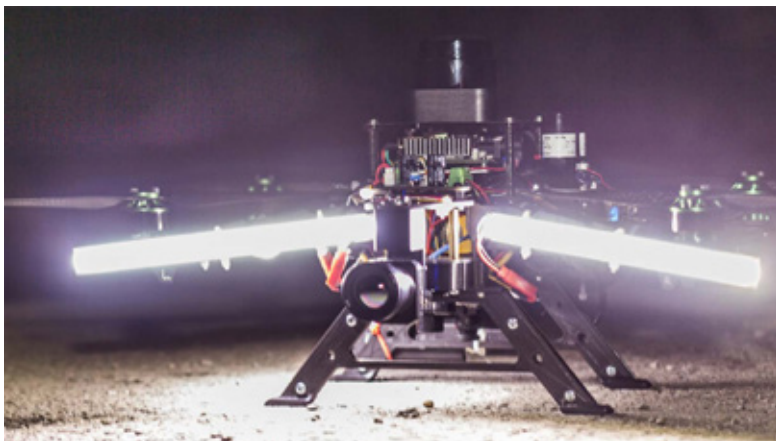
Any sector where inspection of unreachable, complex, dark and dangerous locations is needed.

References

- Mining Industry
- Pulp and paper Industry

Company size

- Small



FIELDROBOTIX

www.fieldrobotix.com

FieldRobotiX AB

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+46 725 09 08 78

Dariusz Kominiak

CEO

dariusz@fieldrobotix.com

Procurement code(s)

Health, safety and environment

FINEPART SWEDEN

Company profile

Finepart Sweden AB supply technology for non-thermal cutting for virtually all materials. We serve our customers with technology solutions and cutting of advanced geometries at high precision. We are used to cut advanced materials including super alloys, engineering ceramics (green or sintered state), composite materials, sandwich materials.

We can supply both cutting systems and advanced cutting service. Our product portfolio includes machine system with 3-, 4- and 5-axis configurations, which are also capable of cutting high inclination angles.

Core competencies

- Precision cutting of advanced materials. Ceramics, CFRP, high strength alloys.
- Design of machine tool and automation solution. 30 years experience in waterjet technology based on research and development.

Industry sectors

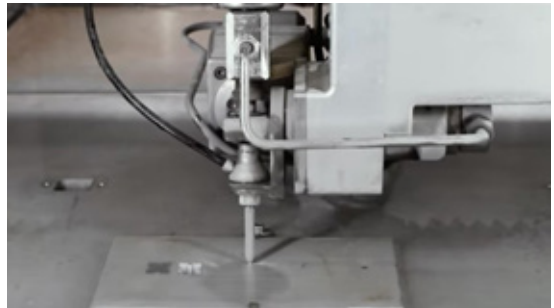
- Aerospace
- Fine mechanics
- Tool making
- Medical device
- Watch industry/luxury

References

- SKF Aerospace
- Google
- Hublot
- Dohner AG

Company size

Small



Finepart
Sweden AB

www.finepart.com

Finepart Sweden AB

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Christian Ojmertz

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Procurement code(s)

Mechanical engineering and raw materials

FINVERKO

Company profile

Finverko designs and manufactures mechanical products after the client's requests or own initiative. One part manufacturing, or small series of products in various material, eg. tooling steel, stainless steel, but also aluminium, copper and plastic. Finverko performs experiments and manufactures models and prototypes, complete confidentiality is guaranteed. We also manufacture advanced spare parts to all frequent machines. Finverko has quality system ISO 9001 and environment system ISO 14001.

Core competencies

Mechanical design, 5-axis Milling, 3-axis milling, turning, sparking, tools, moulds, fixtures, prototype, wire machining, EDM, advanced spare parts, workshop. Quality ISO 9001, environment ISO 14001.

Industry sectors

- Development company
- Manufacturing company
- Medical company
- Injection molding company
- Punch and die company

References

- ESS: Products for vacuum equipment.
- Höganäs: Powder steel prototypes and test equipment.
- Trelleborg: Moulds for rubber parts.
- Airec: Tools for heat changes.
- Solvoltaics: Products for reactors for manufacturing of nano particles.
- Ripasso: Motor parts for Sterlingmotor.
- Lindab: Form and punch tools.

Company size

Small



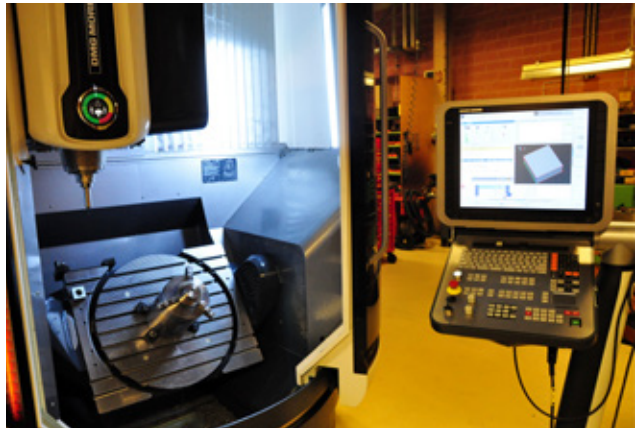
www.finverko.se

Finverko AB

Mogatan 1, SE-254 64 Helsingborg, Sweden
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Håkan Persson

Managing Director
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hakan@finverko.se



Procurement code(s)

Mechanical engineering and raw materials

FLIR SYSTEMS

Company profile

FLIR Systems designs, develops, manufactures, markets, and distributes technologies that enhance perception and awareness. We bring innovative sensing solutions into daily life through our thermal imaging, visible-light imaging, video analytics, measurement and diagnostic, and advanced threat detection systems.

FLIR offers a diversified portfolio that serves a number of applications in government & defense, industrial, and commercial markets. Our products help first responders and military personnel protect and save lives, promote efficiency within the trades, and innovate consumer-facing technologies. FLIR strives to strengthen public safety and well-being, increase energy and time efficiency, and contribute to healthy and intelligent communities.

Core competencies

- Thermal imaging
- Thermography
- Optical gas imaging
- IR
- Optics

Industry sectors

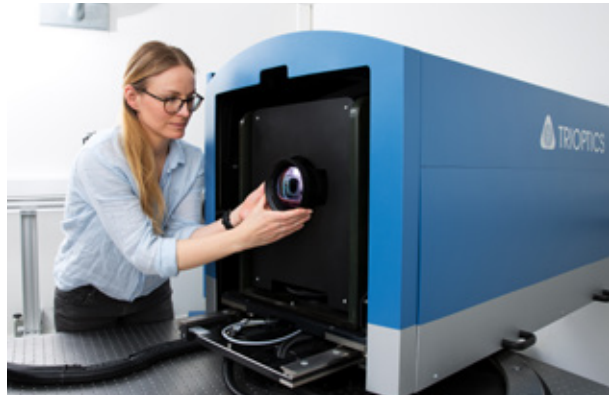
- Electrical industry
- Manufacturing industry
- Building industry
- Research & Development

References

- Utility
- R&D
- Manufacturing
- Oil & Gas
- Facilities
- Fire

Company size

Large



www.flir.se

FLIR Systems AB

Antennvägen 6, Box 7376, SE-187 15 Täby, Sweden

Erika Göransson

Director Optics and Sensor Systems
+46 70 856 27 69
erika.goransson@flir.se

Procurement code(s)

Civil engineering, building and technical services;
Electrical engineering and magnets
Mechanical engineering and raw materials
Optics and photonics

FREDRIKSONS

Company profile

Fredriksons Verkstads AB is a first-class contract manufacturer offering manufacturing and assembling of advanced industrial products in small and medium series. Within high knowledge of sheet metal and machine processing of mainly stainless steel, aluminium and other metals together with advanced mechanical and electronic assembly we are convinced that we can be used as a one shop partner for both details and also complex products. We have deep experience in manufacturing and assembling systems in complex products. Within medtech, food and general industries we manufacture systems including final testing. High standards of quality, delivery reliability and cost-effective solutions are demands we place on ourselves.

Core competencies

- Contract manufacturing
- High standards of quality demands
- Delivery reliability
- Small series
- Medium series
- Final testing sheet-metal work
- CNC machining
- Mechanical assembling
- Electronic assembling
- Automatic processes
- Cost effective production

Industry sectors

- Medtech
- Food industry
- General industry

Company size

Large



www.fredriksons.se

Fredriksons Verkstads AB

Kronångsgatan 4, SE-592 30 Vadstena, Sweden
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Reine Eriksson

Key Account Manager
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reine.eriksson@fredriksons.se

Procurement code(s)

Mechanical engineering and raw materials

FURHOFFS ROSTFRIA

Company profile

Production of subcontracted parts in stainless steel.
Sheet metal and machined parts.

Core competencies

Laser cutting, bending, welding, turning, milling,
surface treatment and assembling.

Company size

Medium



www.furhoffs.com

Furhoffs Rostfria

Box 93, SE-541 22 Skövde, Sweden
+46 500 44 45 46

Lars Ryefalk

Marketing Manager
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lars.ryefalk@furhoffs.se

Procurement code(s)

Mechanical engineering and raw materials

GAMMADATA INSTRUMENT

Company profile

In the Scandinavian region, Gammadata Instrument AB, founded in 1987, is the leading supplier of equipment and tailor-made solutions for analytical instrumentation, optical spectroscopy, radiation analysis and protection, material characterisation, laser science, optoelectronics as well as for natural science education.

Core competencies

- Radiation Detection
- Laser Solution & Light Detection
- Microscopy & Spectroscopy
- Material Characterization
- Elemental Analysis.

Industry sectors

- Nuclear Power
- Hospital Physics
- Steel
- Recycling & Mineral
- Military & Security
- Radon & Geophysics
- Oil & Gas
- Material Processing
- Thermal Analysis
- Life Science.

References

- ESS
- MaxLab
- All universities
- All nuclear power plants

Company size

Small



gammadata

www.gammadata.se

Gammadata Instrument AB

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Stefan Isaksson
Business Unit Manager
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Procurement code(s)

Electronics and radio frequency
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment; Information technology
Optics and photonics
Particle and photon detectors

GEFYR COOL & ENERGY

Company profile

Consultant job in refrigeration technology and heat recovery systems in refrigeration. Various technical solutions with environmentally friendly refrigerants.

Core competencies

Cooling systems

Industry sectors

- Technical industry
- Mining industry
- Office space and supermarkets
- Other activities in the community where there is a need for refrigeration

References

- Co2 cooling systems for computer course at Esrange Space Center Kiruna
- Industry refrigerationsystem at LKAB Kiruna and Svappavaara
- Shop cooling system of various kinds

Company size

Small



www.gefyrcoolenergy.se

Gefyr Cool & Energy AB

Företagsvägen 5, SE-953 33 Haparanda, Sweden

Anders Lind

CEO

anders.lind@coolenergy.se

Procurement code(s)

Civil engineering, building and technical services

Vacuum and low temperature

GKN AEROSPACE SWEDEN

Company profile

Component and system design. Advanced computational capacity. Mechanical computation and fluid dynamics such as aerodynamics and noise. Advanced manufacturing for example welding of high temperature materials. Testing and laboratory facility. Extensive network of suppliers and specialized GKN companies. Design for manufacturing.

Core competencies

- Light weight Design and Manufacturing
- Titanium alloys
- Superalloys
- Composites
- Welding
- Additive Manufacturing
- Machining

Industry sectors

- Aerospace Industry
- Aero Engines and Aero Structures
- Commercial
- Military and Space

References

- Demonstrator Aero Engine
- Hardware within the European Program
- Clean Sky for example Open Rotor

Company size

Large



www.gknaerospace.com

GKN Aerospace Sweden AB

Flygmotorvägen 1, SE-46838 Trollhättan, Sweden
+465 209 40 00

Henrik Runnemalm

Vice President Research & Technology
henrik.runnemalm@gknaerospace.com

Procurement code(s)

Mechanical engineering and raw materials

GLENAIR NORDIC

Company profile

Focus on high end applications/markets in military, science, marine, space and energy sector. We offer a dozen, full-spectrum product lines designed to meet every interconnect requirement, including a broad range of military qualified and commercial connectors, hermetic opto (active) and fiber solutions, including the MIL-DTL-38999 Series III and our ultralight Series 80 Mighty Mouse.

Core competencies

Photonics, Fiber interconnect technology, Interconnect miniaturization, lightweight, high speed.

High level of service both commercial and technical. Big inventory. No moq policy!

Industry sectors

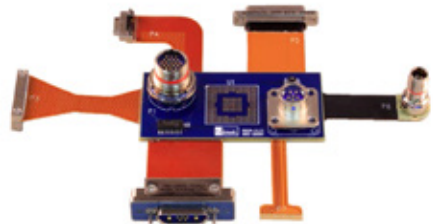
- Science
- MIL/Aero/Defence/Marine
- Space
- Oil & Gas

References

- All universities in Europe
- SAAB Group
- Kongsberg Group
- Bluefors/Finland
- RUAG
- ÅAC

Company size

Small (large globally)



www.glenair.com

Glenair Nordic AB

Gustav III:s Boulevard 42
Box 726, SE-169 27 Solna, Sweden

Mats Nielsen

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mats@glenair.se

Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Optics and photonics
Vacuum and low temperature

GO VIRTUAL NORDIC

Company profile

Go Virtual Nordic AB was founded back 2002 with the vision to support customers with simulation technology which reduce their development cost or create a platform for the research communities. Go Virtual Nordic AB offer customized supercomputers solutions based on technology from HPE, Huawei or Gigabyte. Our HPC solutions are chilled with air cooling or liquid cooling. The interconnect between compute nodes is based on Mellanox Technology. We are offering different kind of cluster management utilities from open source products to licensed technology. We also offer NICE Desktop Cloud Visualization (DCV) which is a high-performant remote 3D technology enabling technical computing users seamless remote access to 2D/3D interactive VDI desktops on-premises and in the cloud - for CAE/CAD, Oil & Gas, Life Sciences, Research and other application areas.

Core competencies

- HPC
- Supercomputers
- CPU
- GPU

- Network
- Infiniband
- Linux
- Cluster Management
- Job Scheduler
- Job Portal
- File Storage
- Object Storage
- AI Compute

Industry sectors

- Automotive
- Research Institutes
- Universities
- Life Science

References

- Volvo AB
- Volvo Car
- NSC
- DTU Denmark
- CERN

Company size

Small



www.govirtual.eu

Go Virtual Nordic AB

Datavägen 21A, SE-436 32 Askim , Sweden
+46 31 748 88 71

Jan Wallenberg

CEO

jan.wallenberg@govirtual.se

Procurement code(s)

Information technology



GOALART

Company profile

GoalArt provides software systems, which help operators and service technicians to understand fault situations and handle these quickly and correctly. This increases both productivity and safety, and speeds up fault diagnosis and repair. We reduce the number of alarms in a control system drastically, through alarm cleanup, state-based alarm priority, and root cause analysis.

Core competencies

- Alarm management
- Artificial intelligence
- Availability
- Control systems
- Fault diagnosis
- Reliability
- Safety

Industry sectors

Airport ground systems, aviation and airplanes, blood components, dialysis, ventilators, and heart-lung machines, cars, buses, trucks, and vehicles, power grids, Internet communication, nuclear power plants, power plants, chemical and petrochemical, pulp and paper, food processing, metallurgy, mining, and steel.

References

- Swedish National Grid (Svenska kraftnät)
- Croatian National Grid (HOPS)
- ESS

Company size

Small



www.goalart.com

GoalArt

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SE-223 70 Lund, Sweden
+46 46 286 4880

Jan Eric Larsson

President and CEO
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janeric@goalart.com

Procurement code(s)

Health, safety and environment
Information technology

GRANITEN

Company profile

Graniten is a global provider of machine solutions to the pharmaceutical manufacturing and healthcare automation sector. We have built turn-key solutions since 1992 and today we offer products ranging all the way from custom innovations to full-scale production equipment. Global pharmaceutical companies and healthcare suppliers are the testimony to our exceptional service. At Graniten, our core purpose is to empower our customers and help them improve their production and workflow to continuously improve patient care and security.

Core competencies

We are focused on becoming a business leader in technical solutions & innovations within the scope of manufacturing and engineering. Thus, we continue to stay true to our core values without compromise to achieve:

Staying ahead of industry challenges and customer needs and creating user-centric solutions
Leveraging creativity and implementing new innovative technologies
Limiting environmental impacts through optimization, sustainability, and small footprint products.

Industry sectors

- Pharmaceutical Packaging
- Healthcare Automation
- Customization Projects

References

www.graniten.com/portfolio/the-ptl-machine

www.graniten.com/portfolio/case-packer-palletizer-for-tape-sealed-boxes-medium-speed

Company size

Medium



www.graniten.com

Graniten AB

Kärrastrandvägen 125A, SE- 451 76 Uddevalla,
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Asmae Bemmouna

Account Manager
asmae.bemmouna@graniten.com

Procurement code(s)

Mechanical engineering and raw materials



GREPIT

Company profile

"Grepit specializes in High Tech Design of Embedded Systems, founded 2014 as a spin-off from LTU and is rapidly expanding, currently 20 employees. We specialize in R & D projects and develop systems for Automotive applications, Industrial measurement systems, IoT and advanced high speed sensors. Experienced in FPGA development for signal processing applications (Certified Xilinx member). In-house Lab with capabilities for prototype manufacturing of electronics, EMI/RF measurement/certification, High Speed Analog measurements."

Core competencies

- Embedded systems
- FPGA
- High speed sensors
- High speed analog measurements
- IoT Devices
- Rust
- Vacuum & Cryogenic Systems

Industry sectors

- Industrial Measurement Systems
- Mineral Surveying
- Embedded Systems
- Automotive

References

- Mikael Bergqvist, PhD, Orexplore AB
- Jonny Johansson, PhD, Luleå University of Technology
- Daniel Ask, Prof, FracSinus AB

Company size

Small



www.grepit.se

Grepit AB

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Johan Eriksson

Embedded System Specialist, PhD
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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Optics and photonics
Particle and photon detectors
Vacuum and low temperature

GRÄNGES

Company profile

Gränges is a leading global supplier of rolled aluminium products for heat exchanger applications and other niche markets. In materials for brazed heat exchangers, Gränges is the global leader with a market share of approximately 20 per cent. In addition to aluminium rolled products, Gränges also produces spray formed components and aluminium powder. The company's geographical markets are Europe, Asia and the Americas. Its production facilities are located in Sweden, Poland, France, China and the United States, and have a combined annual capacity of 560,000 metric tonnes. Gränges has some 2,400 employees and net sales of more than SEK 11 billion. The share is listed on Nasdaq Stockholm.

Core competencies

- The spray forming process of metal matrix composites
- The casting, rolling and slitting processes of aluminium alloys
- The brazing process of aluminium clad material
- Mechanical properties and microstructure
- Corrosion
- Lubrication, chemistry and surfaces

Industry sectors

- The automotive industry
- The stationary heat exchanger industry (HVAC)
- The packaging industry

References

- Automotive heat exchanger manufacturers
- Stationary heat exchanger manufacturers
- Parts for electronics manufacturing equipment

Company size

- Large



www.granges.com

Gränges AB

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Kent Schölin

Senior Vice President Technology & Innovation
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Procurement code(s)

Mechanical engineering and raw materials

HABIA CABLE

Company profile

Habia Cable is a custom design and production partner for specialised cable and connectivity needs all over the world. Founded in Sweden in 1941, Habia is today one of the most trusted names for tailor-made cable solutions in the telecom, offshore, industry, defence and nuclear power sectors. Our production facilities are situated in Sweden, Germany, Poland, and China. We have a global presence and customers in more than 50 countries worldwide.

Core competencies

- Custom design cables and harnesses
- Cables for harsh environments
- High temperature cables
- 35 years experience of safety classified cables

Industry sectors

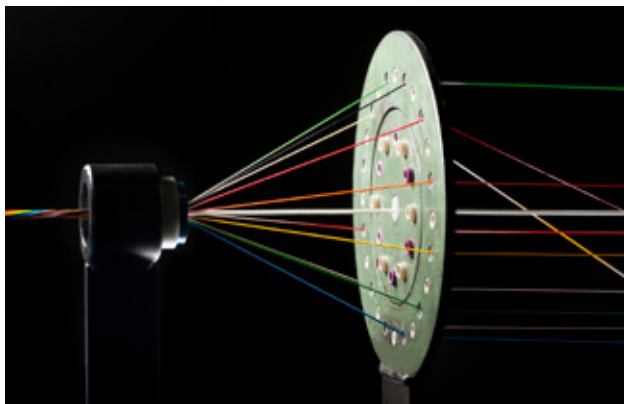
- Defence
- Nuclear power
- Industrial
- Offshore
- Telecom

References

- CERN
- Defense Industry
- Nuclear Industry

Company size

Large



Habia Cable

www.habia.com

Habia Cable AB

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Thorbjörn Gustafsson

VP Sales & Marketing
thorbjorn.gustafsson@habia.com

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

HAGEMA

Company profile

Hagama is a contract manufacturing company with focus on CNC-machining for High-Tech customers. We can provide manufacturing of prototypes and smaller series production.

Core competencies

High precisions machining in 3 and 5-axis milling machines in various materials such as aluminum, copper, brass, titanium, stainless-steel and plastics. For extreme precision we also have a 5-axis ultra precision milling machine in a temperature-stable environment with tolerances down to $\pm 0.5 \mu\text{m}$. Customers for this type of products are often found in the space industry and technical universities.

Industry sectors

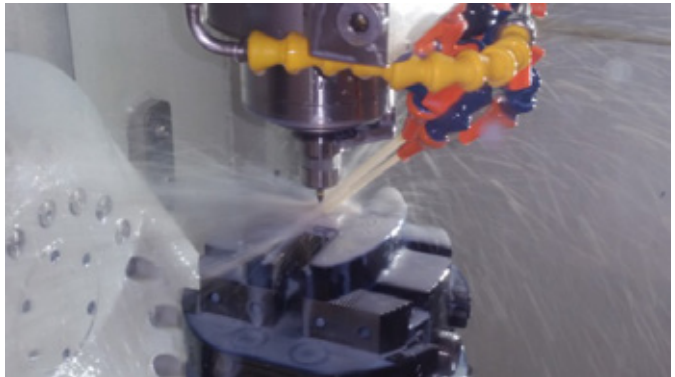
- High-Tech Industries
- Space Industry
- Telecom Industry
- Medical Industry
- Research and Development Labs
- Technical Universities

References

- Parts for ALMA Telescope, Chile
- Parts for Various Spaceprojects in both Sweden and Europe.
- Parts for Microwave Instruments, Radiometer Systems and GHz Products

Company size

Small



Hagama

www.hagama.se

Hagama AB

Bolshedensindustriväg 26, SE-427 50 Billdal, Sweden
+46 31 910410

Fredrik Thorlin

Production/Sales
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fredrik@hagama.se

Procurement code(s)

Mechanical engineering and raw materials

HALMSTADS GUMMIFABRIK

Company profile

HGF is a manufacturer of advanced moulded products in rubber and TPE often combining different components or sub-assemblies. We specialise in more complex product development projects together with our customers to find the optimum solution. Examples of such products are: three-component membranes for hydrogen electrolyzers used for fuelling hydrogen fuel-cell trucks, fire-proof rubber sealings used in nuclear plants and marine vessels, silicon cooling plates for hospital intensive care situations, etc.

Core competencies

- Rubber
- Polymer development project
- Sealing
- Gasket
- Membrane
- Polymer material
- High performance rubber

Industry sectors

- Automotive
- Mining and Construction
- Industry
- Sports
- Marine
- Medical



www.hgf.se

AB Halmstads Gummifabrik

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Christian Kiks

CEO
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christian.kiks@hgf.se

References

- NEL
- Hydrogen
- Sandvik
- Volvo Cars
- Braincool
- Eleiko
- Roxtec

Company size

Medium



Procurement code(s)

Mechanical engineering and raw materials

HAMAMATSU PHOTONICS NORDEN

Company profile

Hamamatsu is a world leader in optoelectronics. We offer the widest product range of components, modules and systems on the market for science and research and for a broad range of applications within medicine, biotechnology, industry, automation and consumer electronics. Our worldwide organisation with headquarter in Japan has sales and technical support offices around the world. Hamamatsu Photonics Norden AB is supporting our customers in the Nordic and Baltic countries, Russia and CIS.

Core competencies

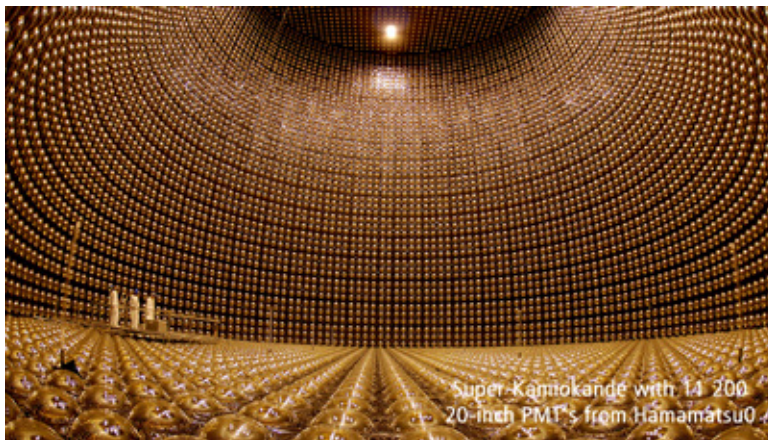
- Optoelectronics
- Photoics

Industry sectors

- Biotechnology
- Medical & Life science
- Daily life
- Industry, IT & Optical communication
- Analytical & Environment

Company size

Small company



HAMAMATSU
PHOTON IS OUR BUSINESS

www.hamamatsu.com

Hamamatsu Photonics Norden AB

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Marketing Coordinator
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Procurement code(s)

Health, safety and environment
Information technology
Optics and photonics
Particle and photon detectors

HAMEK

Company profile

HAMEK AB is a well-established mechanical workshop specialising in the series production of aluminium and steel components with tight tolerances and high precision. The company is located in Stockholm and currently comprises of 20 employees. We work in accordance to ISO/ TS 16949 with control plans and screening processes for many of our components. This ensures optimal production and enables us to create the conditions whereby we maintain the constant high quality of our deliveries.

Core competencies

We distinguish ourselves by delivering consistently high quality, precision pieces. We have developed an inspection process that we use to control production and that helps us to maintain a stable quality. We often use computer-based measurement systems both for measuring and to later be able to do analysis. With this we have the basis for the further quality development of the individual articles and their control plans. In order to keep control of our processes' capabilities, we apply Statistical Process Control as an active tool. Usually we measure our PPK and CPK values against a 12 sigma requirement.

References

Hamek has been a supplier to CERN since 2007

Company size

Small



www.hamek.se

Hamek AB

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Adam Dahlberg

President
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Procurement code(s)

Mechanical engineering and raw materials

HARALD PIHL

Company profile

Europe's largest stockholder of titanium and special alloys. We supply alloys with unique characteristics – alloys that meet specific demands in extreme environments.

HARALD PIHL was founded in 1912 and is now managed by the fourth generation of the family. We currently have offices in 13 different countries but customers all over the world. Our longstanding experience also guarantees a vast knowledge of metallurgy.

Core competencies

- Stock holder
- Nickel alloys
- Titanium
- Titanium alloys
- Copper alloys
- Welding material
- Plate
- Sheet
- Round bar
- Tube
- Pipe
- Wire
- ISO 9001 as well as AS9120 (aerospace)

Industry sectors

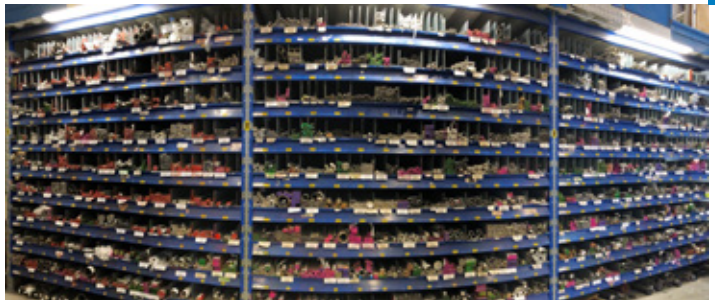
- Aerospace
- Space
- Oil and Gas
- Medical
- Turbines
- Nuclear
- Defence
- Motorsport

References

- CERN
- Formula 1 teams
- Alfa Laval
- GKN
- SAAB
- Siemens
- Emerson

Company size

Small



HARALD PIHL
SPECIAL ALLOYS AND TITANIUM
WWW.HARALDPIHL.COM

www.haraldpihl.com

Harald Pihl

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+46 8 731 56 00

Jonas Pihl

Managing Director
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jonas.pihl@haraldpihl.com

Procurement code(s)

Mechanical engineering and raw materials

HEMI HEATING

Company profile

The company is built with all the necessary knowledge and experience required to achieve the most efficient heating from simple solutions to the most complex needs from our customers. Today we are a leading actor in the market within the area of UHV bakeout and flexible surface heating systems.

Core competencies

- Bakeout equipment
- Heater tents
- Heater jackets
- Heater tapes
- Temperature controllers
- Cleanroom
- Heating fans
- Semiconductor/FPD/Solar cell
- ALD Process industry

Industry sectors

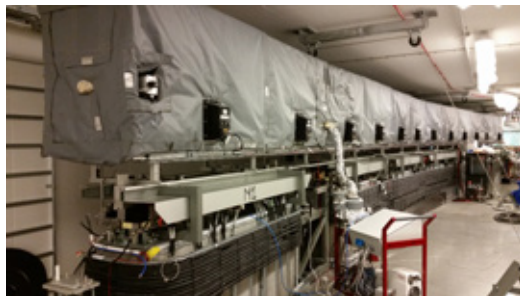
- Automotive industry
- Particle research (UHV) and laboratory equipment
- High Voltage (straightening and relaxation of HV cables, heating of oil barrels)
- ATEX, EX-classed areas

References

CERN, MAX IV, ITER, ESRF, DESY, ESS, NXP, ST Microelectronics, AMD, IMEC, 3SUN, Picosun, HSR, ABB, NIST, Oxford Instruments, DCA Instruments, Silex, Excillum, Microsoft Quantum Materials, Astra Zeneca, Oerlikon, VOLVO.

Company size

Small



Bakeout tent, 23m long at MAX IV



Heater jackets, photoelectron analyser

HEMI HEATING
SURFACE • HEATING • SYSTEMS

www.hemiheating.se

Hemi Heating AB

P.O. Box 2077, SE-151 02 Södertälje, Sweden
+46 8 554 232 50

Bengt Ericsson

Sales representative
bengt.ericsson@hemiheating.se

Procurement code(s)

- Vacuum and low temperature

HERRSTRÖMS MEKANISKA

Company profile

Family owned company in Trelleborg started 1972. 4500 square meters fully equipped, with 40 employees and long experience of work at MAX Laboratory from the beginning of 1980.

Core competencies

Mechanical workshop with turning, milling, grinding, service, assembly, cutting and construction.

References

- ESS Lund
- SKB (Nuclear fuel handling)
- SAAB Kockums
- Trelleborg Industries
- Tetra Pak

Company size

Small



www.herrstroms.se

Herrströms Mekaniska Verkstads AB

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Christer Herrström

Managing Director
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chh@herrstroms.se

Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

HEXATRONIC CABLES & INTERCONNECT SYSTEMS

Company profile

Hexatronic Cables & Interconnect Systems develops, manufactures, markets and provides solutions within the fiber optic cable infrastructure, for telecom companies. Hexatronic Cables & Interconnect Systems manufacture fiber optic cable, duct, copper cable and network accessories. The company originates from the former Ericsson site in Hudiksvall.

Industry sectors

Telecom

References

- Ice cube projects
- CERN projects

Company size

Medium

Core competencies

- Hybrid cables
- Fiber & copper measurements
- Calculation
- Innovative Cable designs
- Deep productions skills



www.hexatronic.com

Hexatronic Cables & Interconnect Systems AB

Kabelvägen 1, SE-824 82 Hudiksvall, Sweden

Karl-Ove Andersson

Product Manager

karl-ove.andersson@hexatronic.com

Procurement code(s)

Civil engineering, building and technical services

Electronics and radio frequency

Optics and photonics

HUURRE SWEDEN

Company profile

Company with in house design department for refrigeration, factory for production of ref. units, design of control systems, own solution for cloud service on top and so on. Ability to design, execute and commission big and complex installations. Market leader in solutions with natural refrigerants, preferably CO₂ (R744). 24/7/365 service center with skilled personnel for maintenance and support.

Core competencies

New value-added technology, natural refrigerants, integrated system solutions, machine learning, cloud-based connectivity, project and design organisation for refrigeration, electrical, control, plumbing, ventilation, BMS and so on.

Industry sectors

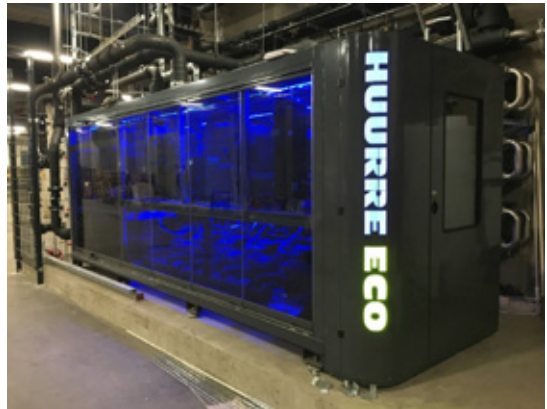
- Industrial
- Commercial
- Heat pump
- Ice hockey arenas
- Geothermal systems
- Professional kitchens
- Hospitals
- Medical
- Warehouse
- Logistic centers
- Data centers
- Climate room for University

References

www.huurre.se

Company size

Medium



HUURRE
VALUE-ADDED REFRIGERATION

www.huurre.se

Huurre Sweden AB

Slånbärgsgatan 8 , SE-722 23 Västerås, Sweden
+46 709 44 97 16

Fredrik Strengbohm

Technical Manager
fredrik.strengbohm@huurre.se

Procurement code(s)

Civil engineering, building and technical services
Information technology

HYDROSCAND

Company profile

Hydros cand was founded in 1969 in Stockholm, Sweden. Today we are the market leader in hoses and fittings in Scandinavia. In Sweden, Hydros cand has more than 70 branches and a nationwide mobile hose service – HoseExpress.

We provide solutions and services for hoses, fittings and related products. We work innovatively and customer-driven and we strive to always find solutions that will help our customers increase their efficiency and profitability.

We are also located world wide in 20 countries.

Core competencies

Hoses, couplings, pipes and pipe bending for hoses and fittings on site, Hydraulic, Penumatic, Industrial, mobile service, gas, chemicals, low pressure, high pressure, technical, calculating, drawing, hose testing, component testing and corrosion testing..

- Off-shore
- Aerospace
- Metallurgy
- Mining
- Shipyard
- Railway
- Forestry

References

We have won a public procurement "Hoses for process and piping system" at European Spallation Source 2020. We have also delivered solutions and products to MAX IV and we have a Framework agreement with RISE.

Company size

Large

Industry sectors

- OEM
- Industrial
- Science
- Marine
- Agriculture
- Construction
- Automotive



www.hydros cand.se/se_se

Hydros cand AB

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Halit Omeragic

Sales Manager Technical Products
halit.omeragic@hydros cand.se

Procurement code(s)

Health, safety and environment
Gases, chemicals, waste collection and radiation equipment
Vacuum and low temperature
Mechanical engineering and raw materials

INNOVATIVE MATERIALS ARENA (IMA)

Company profile

Innovative Materials Arena (IMA) is an innovation environment that stimulates research, collaboration and growth in the field of advanced materials. IMA is a global network that facilitates development and partnership by establishing connections between new and existing players. The innovation environment also includes a physical meeting place for collaboration, IMA One. IMA brings together the commercial sector, academia and public sector organisations with the common goal of generating and utilising material innovation.

Core competencies

- Innovative materials
- Cluster
- Equipment and knowledge sharing
- Smart material
- Collaboration
- Thin film
- Paper electronics

Industry sectors

The commercial sector, academia and public sector organisations with the common goal of generating and utilising material innovation.

References

We have a bit over 50 members in our organisation.

Company size

Medium



www.innovativematerials.se

Innovative Materials Arena (IMA)

Pursergatan 1, SE-582 78 Linköping, Sweden
+46 72 179 23 05

Linda Robinson

Acting Cluster Manager
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linda.robinson@innovativematerials.se

Procurement code(s)

Mechanical engineering and raw materials

INTAB INTERFACE-TEKNIK

Company profile

After more than 40 years in the industry, we have experience in data logging & collection measurements and have worked with remote monitoring since 2003. Our EasyView software is specially designed for analysis of measurement data. In the software you can collect data from different types of measuring equipment. Intab is a very stable company with long experience. We hold both gold seal from UC and triple A. We are also certified according to ISO9001 and ISO14001.

Core competencies

- Data acquisition
- Analysis software
- Temperature loggers
- Humidity loggers
- Energy loggers
- Data loggers

Industry sectors

- Pharmaceutical
- Food Industry
- Oil & Gas
- Research
- Health care
- Facilities
- Logistics and transportation
- Energy
- Industrial

References

- European Spallation Source
- Luleå University of Technology
- Sandvik Coromant
- ABB

Company size

Small



intab^o
Mät, analysera och förstå

www.intab.se

Intab Interface-Teknik AB

Gjutarevägen 1, SE-443 61 Stenkullen, Sweden
+46 302 246 00

Torgny Jansheden

Sales
tj@intab.se

Procurement code(s)

Health, safety and environment
Information technology
Electronics and radio frequency

HÖGANÄS

Company profile

Höganäs AB produces metal powders for powder metallurgy. These include iron and iron based powders, stainless steel powders, and nickel based powders including super alloys and brazing powders. Other powders include ceramic powders such as amorphous and crystalline boron powders, metal carbides, nitrides and borides.

Core competencies

Pressing and sintering, additive manufacturing, surface coating, brazing.

Industry sectors

- Automotive,
- Aerospace
- Industrial

References

Major OEM's to the automotive and aerospace industry

Company size

Large



Höganäs 

www.hoganas.com

Höganäs AB

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Hilmar Vidarsson

Specialist Chemistry
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hilmar.vidarsson@hoganas.com

Procurement code(s)

Mechanical engineering and raw materials

JOBSAB INTERPIPING SYSTEM

Company profile

Since 1981 JOBSAB has installed and delivered pipe installations within gas, hydraulics and industrial installations. We have a workshop where we can perform prefabrications. Our main installations are for customers within special gas requirements, hydraulics, and traditional industry. We take responsibility for the entire installation cycle from the purchased products to documentations. JOBSAB is certificated ISO 3834-2

Core competencies

- High quality installations
- Clean installations
- Installations delivered on time
- Open, clear and direct communication
- Personnel with certificates
- Accurate documentation

Industry sectors

- Big Science
- Oil and gas
- Nuclear
- Automotive
- Process industry

References

- Big Science: ESS – Installation of cryogenics and process water
- Gas industry: Air Liquide – Industry- and gas installation for new production and plant upgrading
- Process/Gas industry: SSAB – Pipe-, pumps and valves installation.
- Automotive: Volvo – Industry- and hydraulic installation for new production and plant upgrading
- Nuclear: Ringhals – Industry- and gas installation for new production and plant upgrading
- Oil industry: Rolls Royce – Hydraulic installation, plant upgrading

Company size

Small



www.jobsab.se

JOBSAB Interpiping System AB

Järvgatan 8, SE-261 44 Landskrona, Sweden

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www.jobsab.se

Magnus Jönsson

Manager Director

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Procurement code(s)

Civil engineering, building and technical services

Gases, chemicals, waste collection and radiation equipment

Mechanical engineering and raw materials

Vacuum and low temperature

JOIN BUSINESS & TECHNOLOGY

Company profile

We deliver and support strategic research development in most technology areas. We help develop products, processes and business. We deliver custom-designed products for industry and research. We offer expert resource in technology, skilled technical problem solvers and prototype builders.

Core competencies

- Development department
- Prototype
- Instrument
- Trouble shooting
- Measurement systems

Company size

Small



www.join.se

JOIN Business & Technology AB

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Scheelevägen 15, SE-223 70 Lund, Sweden
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Göran Nybom

CEO
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goran.nybom@join.se

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials
Information technology

KARLSKOGA CNC QUALITY

Company profile

CNC Quality is an engineering company in Karlskoga specializing in cutting precision machining in metal. Based on our experience of manufacturing and delivering to defense industry and development in the automotive industry, we see that we have good opportunities to offer complex precision machining in all different types of materials. We have a well-developed machinery park in both turning, milling, grinding & assembly. We work extensively with partners to provide services such as surface treatment, painting, heat treatment, laser welding etc.

Core competencies

- Complexity
- Precision Machining
- Overall management
- Construction

Industry sectors

- Automotive Industry
- Defense Industry
- Glass Industry
- Mining Industry
- Aerospace Industry

References

- Volvo PV
- BAE Systems
- Emhart Glass

Company size

Medium



www.cncquality.se

Karlskoga CNC Quality AB

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Gustaf Ekström

CEO

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gustaf.ekstrom@cncquality.se

Procurement code(s)

Mechanical engineering and raw materials

KG FRIDMAN

Company profile

KG Fridman AB, suppliers of advanced materials as well as high precision mechanics and sub-assemblies thereof. Machining and assembly of large and small, tightly toleranced mechanical components. We also offer components made of technical ceramics, ceramic/metal-composites with extreme properties, Molybdenum-graphite developed and used by CERN, heat-sink materials such as copper-diamond plus our own material developments within technical ceramics.

Core competencies

- Tightly toleranced mechanical components and sub-assemblies - large and small
- Technical ceramics
- Ceramic/metal-composite materials, conductive materials for EDM
- Ceramic nozzles
- Spark plasma sintering
- Graphite-Molybdenum
- Copper-Diamond

Industry sectors

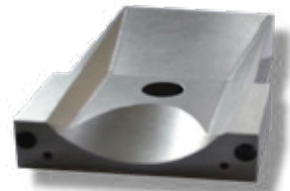
- Defense
- Medical
- Metrology
- Big-science

References

- CERN
- GE Healthcare
- SAAB
- Hexagon

Company size

Small



Graphite-molybdenum for use in collimators



Copper-Diamond material for heat-sinks



www.fridman.com

KG Fridman AB

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Alain Lennquist

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alain@fridman.com

Procurement code(s)

Mechanical engineering and raw materials
Particle and photon detectors
Vacuum and low temperature

KISAB

Company profile

KISAB constructs, builds and produces single units or small series of equipment and parts in steel and aluminium, such as heat exchangers, pressure vessels and vacuum chambers, to order.

We also offer installation on site and turn-key solutions.

Core competencies

- Welding
- Turning
- Milling,
- Assembly
- Project management
- ISO3834 and EN1090 certified

Industry sectors

- Pulp and paper
- Food industry

- Water and sewage
- Infrastructure
- Energy

References

- NKT – underwater joints in stainless steel for high-voltage cables
- Öresund Bridge Consortium - evacuation doors (emergency exits) in the tunnel
- Max IV Laboratory – various equipment supports
- Stora Enso – heat exchangers
- Purac – stainless steel pipes for waterworks and pumping stations

Company size

Small



www.kisab.se

KISAB

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Claes Andersson
CEO
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claes@kisab.se

Procurement code(s)

Mechanical engineering and raw materials

KUNGSÖRS MEKANISKA VERKSTAD

Company profile

Kungsörs is specializing in machining parts up to 13 meters length, through deep-hole drilling, honing, turning and milling. We are a complete partner in advanced machining for many different types of industries, all the way from raw material to a finished product.

Core competencies

- Deep hole drilling
- Honing
- Turning
- Milling
- Supplying includes material, heat treatment, surface treatment

Industry sectors

- Hydraulic industry
- Medicine industry
- Mining industry

References

- Emhart Glass
- Kaller
- LKAB

Company size

Small



143



www.kmv.se

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anders.karlsson@kmv.se

Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

LABKONTROLL SYD

Company profile

We are specialists in clean and safe air in environments with special requirements such as laboratories, operating theaters in hospitals and clean rooms. With many years of experience in protective ventilation, we can offer complete solutions and products even for the most advanced environments.

Core competencies

- Validation hepa filter
- Consultation
- Build clean rooms
- Air analyzes
- Incubators
- Fume cupboards
- Safety benches
- Protective ventilation
- Decontamination
- Annual inspection
- OVK inspection

Industry sectors

- Life science
- Hospitals
- Laboratories

References

- Region Skåne
- Lund University
- MAX IV

Company size

Small



www.labkontroll.se

Labkontroll Syd AB

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Dan Åkerman

CEO

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Procurement code(s)

Civil engineering, building and technical services
Health, safety and environment

LARSSON & KJELLBERG

Company profile

The production flow is particularly suitable for larger and coarser designs. Larsson & Kjellberg is a complete partner and can supply over all solutions from drawing to installation. Our customers are always in focus and can expect us to meet certified quality and environmental requirements. We can produce welded and machined parts and constructions from 1 kilo to 100 ton. We also have our own painting facility.

Core competencies

- Licensed welders. EN 1090-2 ISO 3834-2 ISO 9001
- Wide production possibilities
- Heavy machine production
- Painting and blasting work

Industry sectors

- Ports
- Shipping
- Maritime Administration
- Mining
- Steelworks
- Foundry
- Defense Materials

References

- The Port of Oxelösund
- Maritime Administration
- SSAB
- Metso
- Union Electric Åkers
- Scama
- AP & T
- Scania
- ABB

Company size

Small



www.larssonkjellberg.se

AB Larsson & Kjellberg

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Lars Erlandsson

CEO and Sales Manager
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Procurement code(s)

Mechanical engineering and raw materials
Civil engineering, building and technical services

LASER NOVA

Company profile

Expertise in micro machining using low to medium power lasers. Precise cutting in thickness 15 μm \leq 3mm.

Precise welding 20 μm foils, up to 3 mm in thickness. Stainless, titanium, copper, covar, inconel. Basic material analysis, internal Zeiss SEM.

Core competencies

- Laser processes
- Micro Welding
- Micro Cutting
- Surface Structuring
- Pre-studies using NdYAG and Fibre Lasers.
- Several systems available for production

Industry sectors

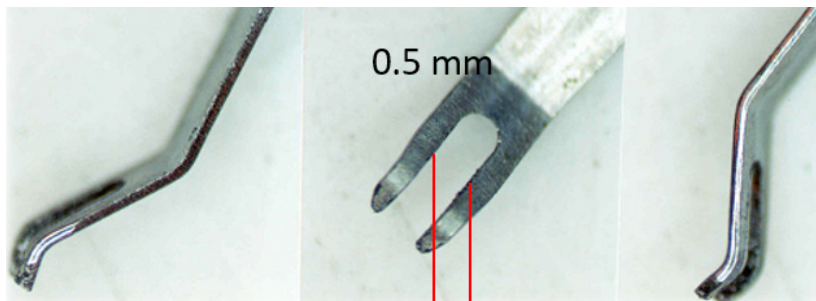
Space, micro machining, surgical and medical devices, dental devices, R&D organizations, off shore and subsea applications e.g. encapsulating of sensors for deep sea applications.

References

- CERN
- Alcatel Subsea Networks
- DOVER
- Integrum
- Max IV

Company size

Small



www.lasernova.se

Laser Nova AB
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SE-831 48 Östersund, Sweden

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Procurement code(s)
Mechanical engineering and raw materials

LIEDHOLMS MASKINTEKNIK

Company profile

Liedholms Maskinteknik AB manufactures welded constructions, such as ASME U and EN 13445 (PED) classified pressure vessels in carbon and different kinds of stainless steel. We work in high alloy material and are used to complex specifications and high demands. We help our customers with design, calculations and project management. We work with third party inspectors on a weekly basis.

Core competencies

Welding in high alloy material. Manufacturing of pressure vessels including design, calculations and project management.

Industry sectors

- Energy
- Big Science
- Marine

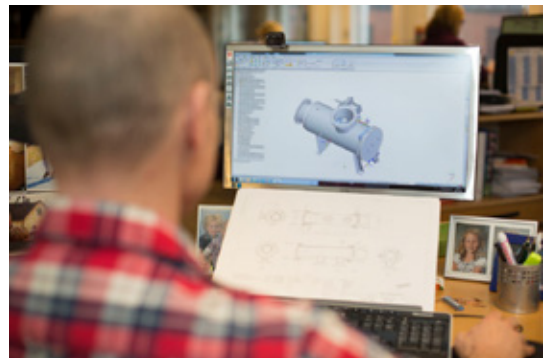
- Nuclear
- Food & Beverage
- Oil & Gas
- Submarine

References

- Big Science: ESS - Drain tanks (with ÅF)
- Nuclear: Water filters/Strainers
- Oil and Gas: Water filters/Strainers
- Food & Beverage: Tanks
- Marine: Scrubber towers in high alloy material
- Marine: Ballast water treatment units in high alloy material.

Company size

Small



www.liedholms.se

Liedholms Maskinteknik AB

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Joakim Svensson

Key Account Manager
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joakim.svensson@liedholms.se

Procurement code(s)

Mechanical engineering and raw materials
Gases, chemicals, waste collection and radiation equipment

LK PRECISION PARTS

Company profile

LK Precision Parts is a supplier of complex geometry parts with high requirements on tolerance and form. LK Precision has developed a company/industry unique quality assurance process that helps us achieve the extra ordinary, supporting our customers in the manufacturing industry in general and especially within world-leading pharmaceutical companies, aerospace industry and high-tech niche enterprises. We mill and turn all different materials and closely monitor the development of new materials and methods in our ambition to be a technology leader in our segment. The goal at LK Precision Parts is to be involved from concept stage to full production and achieve long term, mutually satisfying cooperation with our customers.

Core competencies

- Unique Quality System built to deliver to the highest requirements on tolerance and form
- Ability to support your engineers with manufacturing knowledge through every step of your development process

- High knowledge of machining different types of advanced materials
- Cutting edge 5-axis machining with pinpoint precision
- High service grade and on time deliveries are important to us

Industry sectors


- Medtech
- Aerospace
- General industry
- Optics

References

- Cytiva
- Saab
- Trimble
- Maquet
- Implantica
- Parker Hannifin
- Bradford Ecaps

Company size

Medium



* LK PRECISION



www.lkprecision.com/en

LK Precision Parts AB

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Bogdan Renholm

Technical Sales
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Procurement code(s)

Mechanical engineering and raw materials

LOW NOISE FACTORY

Company profile

Low Noise Factory (LNF) offers the lowest noise, highest performance low noise amplifiers in the world. Our cryogenic models have become the de-facto standard in physics related research throughout the world thanks to their unprecedented sensitivity. Our lowest noise model offers a noise figure of less than 0.03 dB. LNF provides its customers with state-of-the-art LNAs and isolators for radio astronomy, physics research and telecom applications.

Core competencies

When Low Noise Factory was founded it was the first commercial company offering true state-of-the-art LNAs. Today, more than a decade later, LNF is still the only company in the world offering these products commercially. Our engineers have more than 35 years of experience in designing LNAs from

California Institute of Technology, Jet Propulsion Laboratory and Chalmers University of Technology.

Industry sectors

- Physics research
- Quantum computers
- Radio astronomy
- Telecom

References

LNF manufactures, tests and delivers about 1500 cryogenic Low Noise Amplifiers annually. The big markets are quantum computer related research and radio astronomy.

Company size

Small



www.lownoisefactory.com

Low Noise Factory AB

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+46 31 27 70 17

Niklas Wadefalk

CEO
+46 31 27 70 17
wadefalk@lownoisefactory.com

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

LOW2HIGH VACUUM

Company profile

As the name suggests, Low2High Vacuum operates with everything from low vacuum to ultra high vacuum. Low2High vacuum specializes in vacuum technology and our core business is about the sale of products and the provision of services related to vacuum technology and its peripheral areas.

Our employees have a long experience and have supplied vacuum technology to the Swedish market for over 50 years.

In addition to providing products such as: vacuum pumps, gauges, instrumentation and aftermarket solutions to these, we also have the ability to test (leak detect) products with helium on our customer's behalf. We can do this in our own premises or at customer location. Here too, we have long experience and knowledge of tests of this type and we are flexible and meet the customer's needs.

We also offer courses to companies and students in vacuum technology/theory at both basic and advanced levels.

Core competencies

- Helium leak detection tasks
- Provider of vacuum chambers
- Provider of vacuum equipment

Industry sectors

- Automotive
- Pharmacy
- R&D
- Food and packaging
- Science

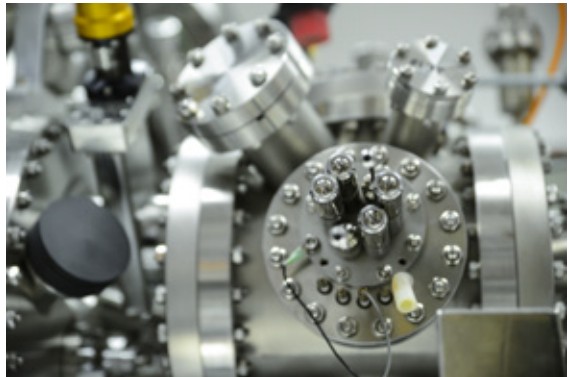
References

Our list of references is very long and contains, in addition to all major industrial manufacturing companies in Sweden, all technical colleges and universities in Scandinavia.

A small selection: Lund University (and Max IV), European Spallation Source and DESY.

Company size

Small



Low2High
vacuum

www.low2high.se

Low2High Vacuum AB

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Mickael Sörensson

Regional Sales Manager

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mickael.sorensson@low2high.se

Procurement code(s)

Vacuum and low temperature

LUMA METALL

Company profile

Luma Metall AB, based in Kalmar, Sweden, 23 employees, net turnover 41 MSEK, manufactures fine and ultra fine wire (0,004-0,3 mm) of tungsten, tungsten-rhenium and molybdenum for various application areas in different kinds of industries all over the world. The export quota is 100 %.

Plating technology became very important during the last years. Luma wires are often plated with gold, silver, nickel or combinations of these materials. Luma is one of the leading companies worldwide in plating technology and offers also plating services.

The main application areas are: reflector wire for satellite antennas in space, detectors and scanners, musical strings, digital printing, Medical applications such as guide wires, lightning and automotive, research (e.g. particle accelerators)

Core competencies

- Fine wire drawing
- Ultra fine wire
- Plating
- Tungsten
- Molybdenum
- Tungsten-Rhenium
- Gold Plating



www.luma-metall.com

Luma Metall AB

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Industry sectors

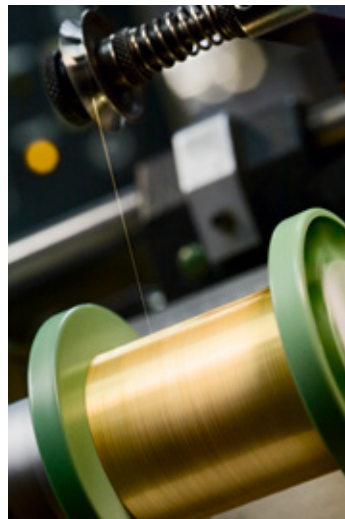
The main application areas are: reflector wire for satellite antennas in space, detectors and scanners, musical strings, digital printing, medical applications such as guide wires, lightning and automotive, research (e.g. particle accelerators)

References

- Cern, Switzerland
- ESA (European Space Agency)
- Various American Producers of wire mesh and satellite antennas, working mainly for the US-government.
- Hewlett-Packard, Printing division, Israel
- Thomastik, Austria

Company size

Small



Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Particle and photon detectors

LÖWENER VACUUMSERVICE

Company profile

Löwener Vacuumservice AB designs and manufactures vacuum assisted systems for leak testing, tightness control, degassing, drying, flight altitude simulation, residual gas analysis, vacuum gauge calibration, central vacuum and much more. We have a long experience from designing and building customer specific vacuum solutions.

We also offer various service solutions, from pump renovation to custom defined service agreements.

Core competencies

- Vacuum systems
- High vacuum
- Ultra high vacuum
- Leak detection
- Tightness control
- Calibration
- Vacuum pumps
- Rotary vane pump
- Cryo pump
- Turbo molecular pump
- Molecular drag pump
- Central vacuum system
- Scroll pump
- Claw pump
- Vacuum measurement instruments
- Mass spectrometer
- Leak detector

Industry sectors

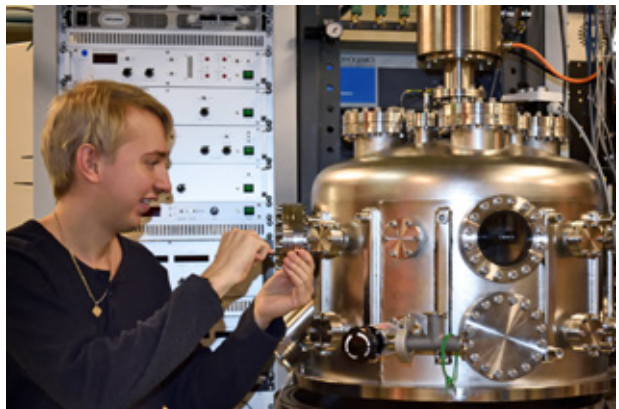
- Companies producing components related to electrical infrastructure
- Automotive industry
- Defence industry
- Biotech
- Research laboratories

References

- ABB Composite
- ABB High Voltage Products
- Electrolux
- FLIR, SAAB Dynamic
- Westinghouse
- Astra Zeneca
- Ericsson Radar
- Sub supplier to Automotive manufacturers such as Volvo, Mercedes, Jaguar, sub supplier to Alstom and General Electric, etc.

Company size

Small



www.lowener.se

Löwener Vacuumservice AB

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Anders Holm

Managing Director

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Procurement code(s)

Vacuum and low temperature

M A KAPSLINGSTEKNIK

Company profile

- Microelectronics
- Independent assembly house for customers with low to medium volumes or with special packaging requirements

Core competencies

- Microelectronic Assembly
- Polymer competence
- Substrate Design
- Custom designs

Industry sectors

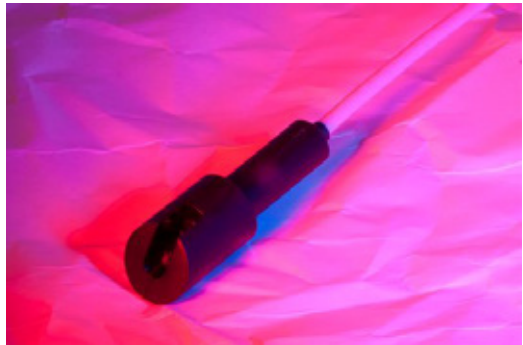
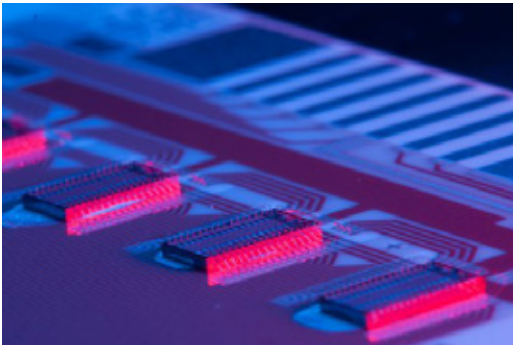
- Avionics
- Space
- Military
- High end Industrial

References

- SAAB
- Thales
- ASML
- Bosch
- Airbus Safran luanchers (Carrier rocket Arriane 6)

Company size

Small



www.mak.se

M A Kapslingsteknik AB

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Magnus Alsered

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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Optics and photonics
Vacuum and low temperature

MALMÖ MÖNSTERKORT

Company profile

MMAB is a full-service supplier of Printed Circuit Boards with our own production unit in Sweden and customers all over Europe. We manufacture customer unique prototypes and small volumes in Sweden since 1970 and offer flexible solutions and quick deliveries. Our experienced staff provides excellent technical support already during the design stage, including Design Rule Check and Design for Manufacturing. All essential production processes, laboratories and test resources are in-house.

Core competencies

- Printed Circuit Boards
- Prototypes
- Multilayer boards
- Heavy copper
- Impedance control
- Blind vias
- Aluminum base
- Large antennas
- RF-material

Industry sectors

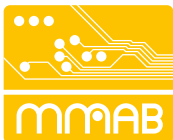
- Industrial
- Science
- Medical
- Defense
- Automotive
- Wireless
- Power

References

Over 300 customers within OEM, EMS, engineering and Universities. Customer unique printed circuit boards for a wide range of high-tech applications for both commercial and scientific projects.

Company size

Small



www.mmabgroup.com

Malmö Mönsterkort AB

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Esbjörn Johansson

Technical Manager
esbjorn.johansson@mmabgroup.com

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

MANN TEKNIK

Company profile

MannTek is a coupling manufacturer. MannTek produces and markets products for safe and environmentally friendly handling of aggressive fluids for the chemical and petrochemical industries. Couplings and other products we develop and market will give you a return of investment, ROI, no longer than a couple of months. Not only are they operated in seconds without tools, they also decrease the risk of human errors substantially. With our product range, like industrial couplings, for your pipes, tubes and hoses you will notice that the need for costly insurances will decline, which further affects your ROI in a positive way. And yet, we haven't mentioned the advantage of avoiding expensive spill.

Core competencies

- Coupling and Safety Break-away couplings for Chemicals
- LNG
- LPG
- LBG
- Hydrogen

Industry sectors

- Marine

- Chemical plants
- Terminals
- Pharmaceutical
- Bunkering
- Heating
- Energy

References

- LPG Conversion Aramco KSA
- Pori Finland LNG Terminal
- M/S Skangas Coralus Ship to Ship bunker
- M/S Viking Grace, Stockholm Ship to ship bunker

Company size

Medium

www.manntek.se

Mann Teknik AB

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Mikael Welin

CFO

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Procurement code(s)

Gases, chemicals, waste collection and radiation equipment
Vacuum and low temperature

MASKINTEKNIK I OSKARSHAMN

Company profile

Maskinteknik i Oskarshamn is a consulting and engineering company focusing on prototyping and manufacturing. The company has extensive knowledge and experience in designing and manufacturing components, tools, instruments, equipment, and machines for the manufacturing industry as well as for research, development and innovation purposes.

Maskinteknik offers solutions combining mechanics, hydraulics, pneumatics, electronics and intelligent control systems.

Our strength is to manage technical development projects for product development, prototyping, O-series and short series, most of which that can be manufactured in-house.

The company has an extensive range of conventional, NC-controlled machines, and highly specialized machines, making it possible to do most types of machining in-house, such as milling, turning, drilling, spark-erosion machining, welding, water cutting, 3D-scanning and 3D-printing.

We have 30 years of experience developing and manufacturing technical solutions for the nuclear fuel and waste management sector and a wide variety of other industries and sectors.

Core competencies

- Technical development, technical consulting
- Prototyping, O-series

- Design and manufacturing of components, tools, instruments, equipment, machines and machine systems
- High precision machining and manufacturing in copper, nimonic, steel and plastic materials

Industry sectors

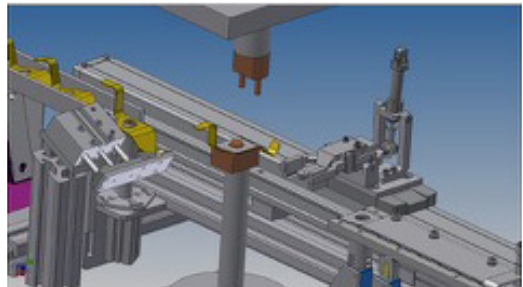
- Nuclear fuel and waste management
- Nuclear industry
- Manufacturing industry
- Energy
- Automotive
- Wood processing, paper and pulp
- Marine
- Water
- Research facilities
- Machine building

References

- Swedish Nuclear Fuel and Waste Management Company

Company size

Small



www.maskinteknikab.se

Maskinteknik i Oskarshamn AB

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Linda Sharp

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linda@maskinteknikab.se

Procurement code(s)

Mechanical engineering and raw materials

MB SCIENTIFIC

Company profile

MB Scientific AB develops and produces state of the art photoelectron spectroscopy instruments and systems for advanced material research. Our MBS A-1 analyser is well-known as Ultra High Resolution ARPES (Angular Resolved Photoelectron Energy Spectroscopy) machine and it is the world best product. We also offer to design UHV system for the scientists.

Core competencies

- Photoelectron spectroscopy
- Spin detection
- Electron optics
- Magnetic screening
- UHV system design
- Ultra-high precision electronics (DAC, PWM)

Industry sectors

- Advanced material research and development
- Super conductive material, semiconductors and spintronics

References

MBS A-1 analyser has been installed at following places: Soleil Synchrotron (beam line ANTARES, TEMPO, CASSIOPEE), Diamond Light Source (beam line I21, I05), ALBA Synchrotron (beam line BL20-LOREA), University of St. Andrews, University of Cologne, University of Amsterdam, University of Geneva and so on. We have also delivered to Japan, China and Taiwan.

Company size

Small



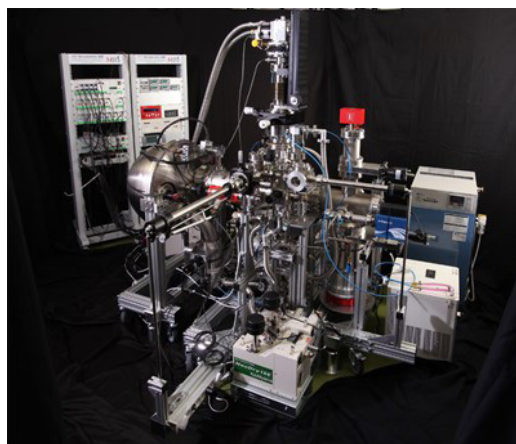
www.mbscientific.se

MB Scientific AB

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Mitsuse Matsuki

CEO
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Procurement code(s)

Particle and photon detectors
Vacuum and low temperature
Optics and photonics

MCT BRATTBERG

Company profile

We protect buildings and equipment to keep your business run smoothly.

Core competencies

Production of fire and pressure proof cable and pipetransits.

References

We deliver cable and pipetransits to ESS, ITER nuclear powerplants, oil & gas worldwide.

Company size

Medium



www.mctbrattberg.se

MCT Brattberg AB

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Procurement code(s)

Civil engineering, building and technical services
Health, safety and environment

MEDICAST

Company profile

Technical service provider within castings and forgings, design, metalurgy / material, process technology.

Machining fabrication with two locations in Sweden.

Core competencies

Foundry engineering /cast technology/audit processes:

- 3 Foundry engineers - University level, Krakow University
- 1 Dr. Science Metalurgy - KTH, Stockholm
- 1 Civil engineer, University Magdeburg (pump and compressor technology)
- 1 General machining - designer
- 1 Pattern maker

Industry sectors

Machinery sectors in general with focus on pumps, mining, off-shore, aero and space etc.

References

- Sandvik
- Atlas Copco
- IMO
- Sesab
- Quintus
- Atlet

Company size

Medium

www.medicast.se

Medicast AB

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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Mechanical engineering and raw materials

MERX SVENSKA

Company profile

Merx Svenska AB is a leading player in the turning and milling sector, characterised with a high level of skills and competence.

Within the technical subcontracting sector, Merx Svenska AB represents an important partner as supplier for the Global Production Industry.

We are certified according to ISO 9001:2015, ISO 14001:2015, Achilles, Sellihca, and handle documentations according to TS 16949.

Core competencies

- Milling
- Turning
- Assembly – all metals and plastic materials.

Industry sectors

- Gas turbines
- Nuclear industry
- Heat transfer
- Engine cooling
- Industry ovens
- Inline stitching industry
- Nanotechnology
- Transmission system

References

- Brackets
- BoltsNuts camera holders
- Transmission parts
- Gas turbines
- Nuclear industry
- Heat transfer
- Engine cooling
- Industry ovens
- Inline stitching industry
- Nanotechnology

Company size

Small



www.merx.se

Merx Svenska AB

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Thomas Smedberg

Sales Manager
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Procurement code(s)

Mechanical engineering and raw materials

MICROBAS PRECISION

Company profile

Microbas provides precision components and customized solutions in granite, glass ceramics, glass, aluminum, steel or other bespoke materials for the global high-tech industry and research institutions.

Core competencies

- Precision granite
- Optical glass grinding and machining
- Invar machining
- Precision lapping
- Zerodur machining
- Clearceram machining
- Fused silica machining
- Precision metals machining

Industry sectors

- Electronics manufacturing equipment
- Advanced machines
- Thin film technology
- Astronomy
- Space optics
- Research institutions and projects
- Metrology and calibration

References

- ESO: precision machining of glass ceramics
- Max IV: precision granite
- ESS: mirror assembly
- Mycronic: machine bases, stages, beams and other ultra-precision components
- Carl Zeiss Jena: light weighting and precision grinding of mirrors
- Safran REOSC: light weighting and precision grinding of mirrors. Lens grinding
- University of Leiden (Astron/Nova): precision grinding of mirrors and lenses
- Eldim SA: lens grinding
- Coherent: precision granite

Company size

Small



www.microbas.se

Microbas Precision AB

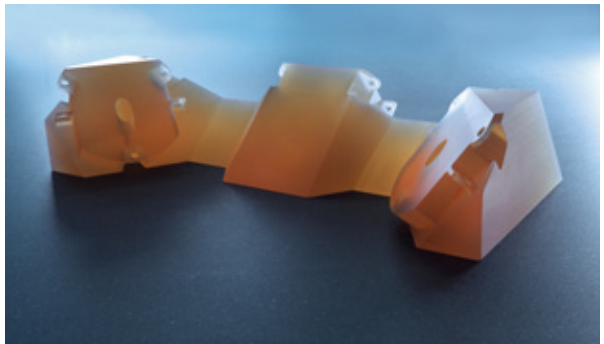
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Magnus Lindvall

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Procurement code(s)

Mechanical engineering and raw materials
Optics and photonics



MICROPOL FIBEROPTIC

Company profile

At Micropol we combine unique design and production technology to offer more complex and compact solutions for passive fiber optics than any other supplier on the market. Our work is of extreme high precision and we are known for providing short lead times, high quality and customized applications. Our customers are found in a large variety of markets where advanced fiber optic solutions are crucial. Our products are used in a whole range of technologies, from complex fiber optic networks for telecom and data communication, to advanced sensor systems for industrial, medical and military applications.

Core competencies

- Outstanding optical performance
- Large number of high demanding customer references
- Product development and manufacturing in Sweden
- 30 years' experience of passive fiber optics

Industry sectors

- Telecom and Broadcast
- Defence and Security
- Medical Technology
- Industry and Offshore

References

- Swedish Armed Forces - Long range field tactical fiber optic communication systems and cables
- Netherland Armed Forces - Fiber optic connectors for mobile communication units
- Saab AB - Customized high specification fiber optic solutions for defence and security applications
- BAE Systems - Optical converter components for use in combat vehicles
- Biotage - Micro polished glass rods for liquid detection in laboratory equipment
- ABB - Plastic fiber optics for use in industry robots
- SSAB - Fiber optic cable systems for emergency use in harsh environments

Company size

- Small



www.micropol.com/en/

Micropol Fiberoptic AB

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Peter Ljungkvist

CEO
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p.l@micropol.com

Procurement code(s)

Information technology
Optics and photonics

MIKROPONENT

Company profile

Mikroponent was founded in 1973, a well-known supplier, principally to the Scandinavian telecom, electronic and fine mechanical industries. Together we have a high level of expertise within product adaptation and manufacture of outline-cut thin metal products made from materials ranging from hardened steel to soft copper alloys with or without flexible supporting materials.

Core competencies

We manufacture high precision customer designed parts of thin metal foils or laminated flex films. The technique is well developed after more than 45 years of experience.

We are partners to and deliver to electronics and fine mechanical industries.

Our products are found in mobile phones and systems, cameras, flexible circuits, Blue Tooth, antenna elements for wireless communication, EMC-shieldings on PCB, instrumentation, sensors and camera video technology, medical equipment and aviation – space and defence industry.

Industry sectors

- Electronics
- Design
- Telecom
- Precision-engineering
- Optics
- Food
- Medicine
- Space



www.mikroponent.se

Mikroponent AB

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Örjan Dahlstedt

Sales Manager
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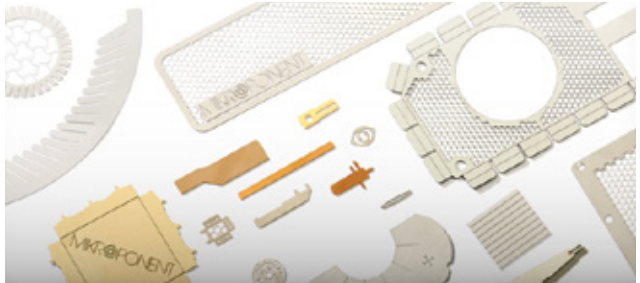
- Aviation
- Defence
- Dental
- Home care
- Automotive
- Maritime
- Nuclear

References

- SAAB AB, high precision metal parts
- Kongsberg AS, high precision metal parts
- CERN, high precision metal parts
- GE Healthcare, high precision metal parts
- RUAG Space, high precision metal parts
- Hasselblad, high precision metal parts
- 3M, high precision metal parts
- Ericsson, high precision metal parts

Company size

Small



Procurement code(s)

Mechanical engineering and raw materials
Electronics and radio frequency
Optics and photonics
Particle and photon detectors

MIKROVERKTYG

Company profile

Mikroverktyg is a leading supplier of tools, high-quality transmission components and advanced mechanical components incorporating Mikro-quality.

Core competencies

- Gears & Transmissions
- High precision mechanics
- Tools, Power Skiving

Industry sectors

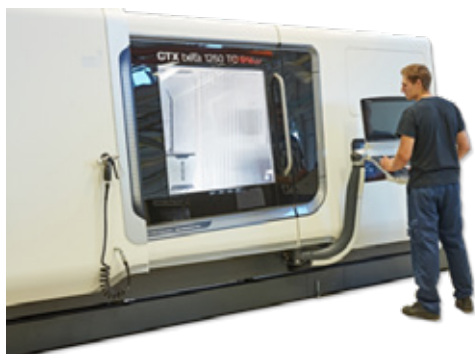
Technology company with manufacturing/development services for industrial products and automation equipment.

References

We work on assignments from customers within the aerospace, defence, energy, industry, automotive and medical engineering sectors, all of which impose stringent demands and high expectations.

Company size

Medium



www.mikroverktyg.se

Mikroverktyg AB

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Lars Bohman

Sales Manager
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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

MODELLTEKNIK

Company profile

We are an engineering company with cutting-edge expertise in CAD/CAM, industrial engineering and mold manufacturing.

Our business areas include contract manufacturing in short runs, machining, 3-D design, product development, special projects, prototypes and precision measuring.

Manufacturing is primarily within advanced 5-axis machining, model manufacturing, fixture manufacturing, tool manufacturing and prototype manufacturing.

Core competencies

- Advanced machining
- Solid machining
- Milling/Turning
- Wide range of materials
- 3D-scan
- 5-axis machining
- CMM
- Reversed engineering
- Expertise in product development
- Expertise in metallurgy and castings

Industry sectors

- Automotive
- Defense
- Aerospace
- Medical
- Mining
- Electronics



www.modellteknik.se

Modellteknik AB

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Johan Tegnemo

Technical Sales Manager

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References

- ABB
- Aker Solutions
- Alfa Laval
- CERN
- Flir
- Nobel Biocare
- Minesto
- Orexplore
- Philips
- Rolls Royce
- Saab
- Scania
- Stille
- Volvo.

Company size

Small



Procurement code(s)

Mechanical engineering and raw materials

MP BOLAGEN INDUSTRI

Company profile

Producer of cable management system based on cable ladders, cable trays or mesh trays.

Material: Pre-galvanized, Hot dipped galvanized, aluzinc, aluminum, stainless steel, acid proof stainless steel.

Core competencies

- Cable ladder
- Cable tray
- Cable mesh tray
- Wall trunkings
- Mechanical profiles

Industry sectors

Electrical installations

References

- Nuclear power plants in Sweden
- Ericsson mobile sites worldwide
- Paper mills worldwide
- ABB high voltage stations
- Most industries in Nordic countries

Company size

Medium



www.mpbolagen.se

MP bolagen Industri AB

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Export Manager

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Procurement code(s)

Electrical engineering and magnets

Mechanical engineering and raw materials

NANOVAC

Company profile

We are specialized in vacuum technology solutions, providing equipment and know-how for various vacuum system solutions. We have extensive experience in providing automation and mechanical solutions for advanced vacuum systems, ranging from small test systems to large complex vacuum chamber/system solutions.

Core competencies

- Vacuum technology
- Vacuum system automation
- Automation
- Risk analysis

Industry sectors

- Research & Development
- Solar Industry
- Medical Industry
- Electrical Industry
- Aeronautics

References

- Vacuum pumps
- Vacuum technology

Company size

Small



www.nanovac.se

Nanovac AB

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Thomas Engstedt

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Procurement code(s)

Electronics and radio frequency
Health, safety and environment
Mechanical engineering and raw materials
Vacuum and low temperature

NAVERVIKEN LOGISTIC

Company profile

Naverviken is an expansive high-tech company with focus on welding, sheet metal processing and assembling of complicated constructions as well as manufacturing of components, mainly in stainless materials and aluminum. We are often involved in development and production of complex process systems in close cooperation with our clients. We are certified according to: ISO: 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 3834-2:2005, ISO1090-2.

Core competencies

- Qualitative sheet metal processing
- Laser cutting
- Welding, mainly stainless steel and aluminum
- Inhouse IWS and contract with external IWE
- Surface treatment, powder and wet coating
- Assembly of complex systems
- Construction

Industry sectors

- Security
- Fire
- Nuclear
- Defense
- Mine
- Offshore
- Medical market

References

- WestingHouse
- Sandvik
- Scanditronix
- BAE Systems
- Bofors
- Epiroc

Company size

Small



www.naverviken.se

Naverviken Logistic AB

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Marie Hagman

CEO
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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

NELSON CREATED

Company profile

Our mission is to provide high quality RF and microwave components/systems manufactured and created in China and Russia for the European market.

We work with two categories of companies in China and Russia, those are widely chosen by domestic OEM's and those who will be in the front edge of development.

Core competencies

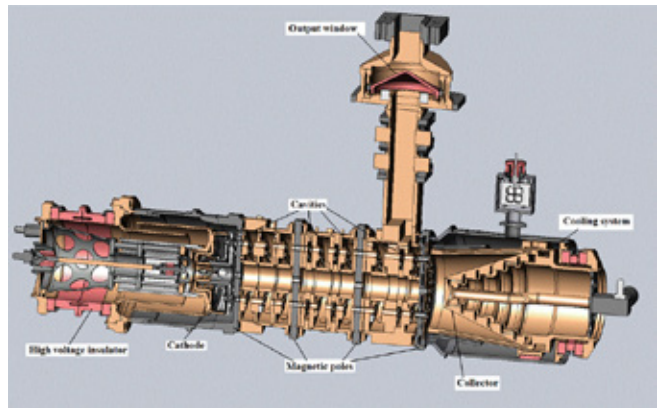
- Electrical
- Electronics
- Electromechanical
- RF systems

References

- Microwave
- Magnetron
- Klystron
- RF systems

Company size

Small



NELSON
CREATED AB

www.nelsoncreated.com

Nelson Created AB

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SE-752 25 Uppsala, Sweden

Daniel Lundberg

CEO
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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

NEONEST

Company profile

Buyisotope (Neonest AB) provides a range of high quality enriched isotopes e.g. in oxide, metal, carbonate chemical forms and enriched isotopic gases. On requests, we produce isotopically modified organic and inorganic compounds and different structured forms of enriched isotopes e.g. foils, rods, targets.

Core competencies

Enriched Isotope powders, particles, crystals, rods, foils, discs, isotopically modified organic and inorganic compounds.

Industry sectors

- Big Science
- NMR science
- Research and development of new products
- Medical, health and food industries

References

Enriched isotopes in different chemical forms, isotopically modified organic and inorganic compounds and different structured forms of enriched isotopes e.g. foils, rods, targets.

Company size

Small

ISOTOPES
at www.buyisotope.com

BUYISOTOPE.COM provides high quality isotopes for competitive prices



Buyisotope

CHEMICAL ELEMENTS IN BLUE with nucleon numbers are available to order
Please request a quote on the buyisotope.com website or via e-mail: info@buyisotope.com



www.buyisotope.com

Neonest AB

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Petr Vasiliev

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info@buyisotope.com

Procurement code(s)

Particle and photon detectors
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment

NORDBERGS TEKNISKA

Company profile

Nordbergs Tekniska is a distributor of semi-finished engineering plastics in rods, sheets, tubes and films. In our workshop we have 5-, 4- and 3-axis CNC milling machines as well as CNC lathes. We also manage cold or heat form covers of polycarbonate and cast acrylic.

Core competencies

- Material knowledge
- Engineering plastics
- Thermosets
- Film
- 5-axis machining

Industry sectors

- Medical and Life Science
- Aerospace and Defense
- Chemical Processing
- Electronics
- Industrial Equipment

References

GE

Company size

Small



www.nordbergstekniska.se

Nordbergs Tekniska AB

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Oskar Nordberg

Material Specialist

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oskar@nordbergstekniska.se

Procurement code(s)

Mechanical engineering and raw materials

NORDIC FURNACES

Company profile

Innovative furnace competence. Nordic Furnaces AB is a Nordic market-leader in industrial furnaces in a large variety of sizes and types.

Core competencies

- Heat treatment of metal
- Laboratory furnaces
- Industrial furnaces
- Electrical heating elements
- Gas burner systems
- Heat resistant steel details
- Spare parts for furnaces
- Service for furnaces
- Modernizations of furnaces

Industry sectors

- Science
- Automotive
- Steel secondary

- Manufacturing industry (steel)
- Manufacturing industry (aluminium)
- Engineering industry
- Heat and many others

References

- Volvo
- Scania
- SKF
- Epiroc
- Ljunghall
- AGES

Company size

Small

www.nordicfurnaces.com

Nordic Furnaces AB

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Jani Martinsson

Sales Engineer / Project Manager

jani.martinsson@nordicfurnaces.com

Procurement code(s)

Civil engineering, building and technical services

Electrical engineering and magnets

Mechanical engineering and raw materials

NOTE

Company profile

NOTE is a global leader within the EMS industry. We manufacture electronics for various customers with high demands. NOTE has factories in Sweden, Estonia, Finland, UK and China. Our customers come mainly from high end industrial and medical, research and high-end consumer segments. NOTE is a publicly traded company listed on the First North list at Nasdaq Stockholm exchange.

Core competencies

NOTE's core competence is development of viable manufacturing methods for PCBA:s or full products with different partners. We have factories with different competences that can solve almost any problem related to product manufacturing/development

Industry sectors

- Medical
- High Level Industry
- High Level Consumer
- Defence

References

- SPECT: Swedish Research Program for development of a portable GammaRay dosimeter. NOTE manufactures prototypes for the project with various counterparts. The project is supported by Vinnova Sweden.
- Big Science. COGNA: Swedish Research Program for development of intelligent PCB:s with built

in sensors. NOTE manufactures prototypes for the project with various counterparts. Project is supported by Vinnova Sweden and Swerea Sweden.

- Cross discipline project. CERN: NOTE has manufactured PCBA:s for CERN through Uppsala University.

Company size

Large



www.note.eu

NOTE AB

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Tobias Ljungström

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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Information technology
Optics and photonics
Particle and photon detectors

NSS WATER ENHANCEMENT TECHNOLOGY

Company profile

NSS Water Enhancement Technology AB (NSS WET) was founded in 2020 by Björn Holmström and Christer Ljungwall. NSS WET has developed two products for the advanced electronics manufacturing industry and life sciences: (i) A method to test and verify nanoparticles in ultra-pure water down to 10 nm; (ii) A Water Enhancement Tool – WET - that produces ultra-pure water, totally free of contamination above 10 nm, on demand and just in time.

UPW is used in the semiconductor and life science industries the most, and is an ideal component for any work in laboratories. Applications include: rinse of wafers, polymerase chain reaction (PCR), high performance liquid chromatography (HPLC), graphite furnace atomic absorption spectroscopy (GFAAS), immunochemistry (ICC), clinical analyses, trace analysis

Core competencies

- Contamination free ultra-pure water for semiconductor and life science industries
- Test and verify nanoparticles in ultra-pure water

Industry sectors

- Semiconductor
- Life sciences

References

- Kent Rundgren, Chalmers Industriteknik
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- Erik Østreng, Kongsberg Innovation
erik.ostreng@k-i.no
- Deborah Lygonis, Innovatum Science Center
deborah.lygonis@innovatum.se

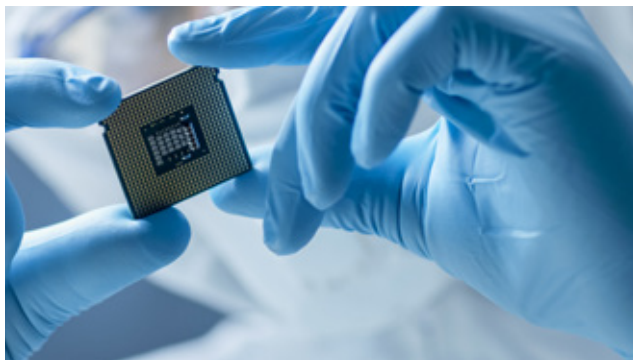


NSS Water Enhancement Technology AB

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Co-founder, Chairman of the Board
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christer@nanosolutionsweden.com



Procurement code(s)

Information technology
Electronics and radio frequency
Health, safety and environment

NUVIA NORDIC

Company profile

Nuvia offers highly specialized services and products to demanding environments focusing on nuclear and science applications. Our service offering includes all parts of a facility's lifecycle, from new build to maintenance and decommissioning. We deliver highly specialized engineering capabilities in engineering, technical maintenance and installation as well as radiation protection services. We also develop our own radiation protection products sold worldwide to nuclear facilities.

Core competencies

- Radiation protection
- Engineering
- Major big projects
- New builds

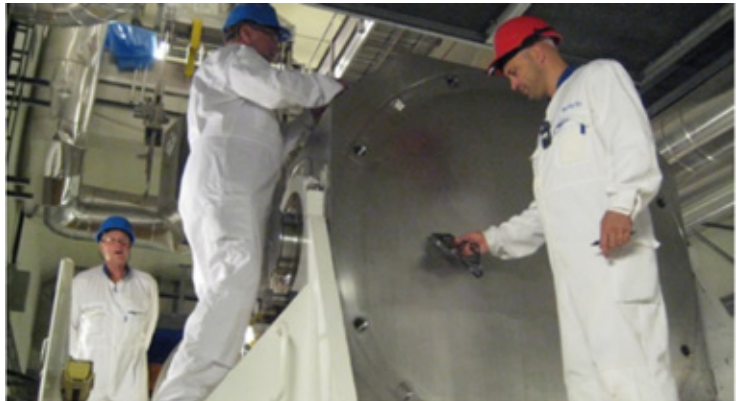
- Decommissioning
- Waste management
- Radiation monitoring equipment
- Fire protection

References

ESS

Company size

Medium



www.nuvia-nordic.com

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Tobias Gustavsson

CEO

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Procurement code(s)

Civil engineering, building and technical services
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment
Mechanical engineering and raw materials

NVENT NORDIC

Company profile

At nVent, former Pentair, we believe that safer systems ensure a more secure world. We connect and protect our customers with inventive electrical and electronic solutions. nVent is a \$2.1 billion global company that provides enclosures, electric heat tracing solutions, complete heat management systems, and electrical and fastening solutions. nVent employs 9,000 people worldwide.

Core competencies

The nVent SCHROFF brand contains a broad product portfolio from printed circuit board (PCB) accessories, such as card retainers and extractors, front panels and handles to subracks, cases, backplanes, power supplies, cabinets and pre-assembled chassis for embedded computing systems. As a pioneer and trendsetter, the SCHROFF name is synonymous with expertise in the areas of mechanics, electronics, climate control and system management and has been for over 50 years.

Industry sectors

SCHROFF provides a comprehensive range of standard, modified, and custom-engineered solutions for the energy, industrial, infrastructure, commercial, communications, medical, security, and defence markets. For the test and measurement market SCHROFF systems are ideal

in a 19" control cabinet or as a scalable and flexible system that can be adapted to specific aesthetic concepts.

References

nVent provides support to several research facilities, such as the European XFEL X-ray laser from the DESY research center (Deutsches Elektronen-Synchrotron) and ESS (European Spallation Source). Area of application for the SCHROFF MTCA system is the "beam control". In addition, there are systems located in the experiment chamber where researchers carry out their measurements.

Company size

Large



<https://schroff.nvent.com>

nVent Nordic AB

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Ulf Broomé

Regional Sales Manager
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ulf.broomé@nvent.com

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials

OMNISYS INSTRUMENTS

Company profile

Omnisys develops and manufactures customized scientific instruments for advanced science applications. We are a private company, operating profitably since 1992 and with 30 employees. Omnisys main experience comes from space projects where we successfully delivered several satellite subsystems and scientific payloads. Important products are power systems, (PCDU:s), microwave radiometer payloads, optical instruments and electrochemical instruments. Omnisys also has significant experience from delivering radiometer equipment for ground based radio astronomy, e.g. for the ALMA telescope in Chile.

Core competencies

Omnisys has a world leading experience in high frequency micro- and millimetre wave instruments. Other fields of expertise are electronics design, instrument control, power electronics, optical measurement systems, measurement software and optomechanical structures. Since we develop and manufacture complete instrument systems we have extensive experience from working together with the scientific user community and we have a unique understanding of scientific instruments on system level.

Industry sectors

- Space
- Big Science



www.omnisys.se

Omnisys instruments AB

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Martin Kores

CEO
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martin.kores@omnisys.se

References

- Microwave instruments to the Odin satellite (customer: Swedish Space Corporation)
- PCDU:s for the SMART-1 moon probe (customer: ESA) and PRISMA satellites (customer: Swedish Space Corporation)
- Phase lock system to the Japanese SMILES mission (customer: JAXA)
- Water Vapour Radiometers for the ALMA telescope in Chile (customer: ESO)
- Cryogenic front end feeds for VLBI/VGOS radio telescopes (customer: Wettzell telescope and Toyo Corporation)
- Front-end receivers for METOP SG, weather satellites (customer: Airbus Defence and Space)
- Front-end components and Spectrometer for the Sub Millimetre Wave Instrument (SWI) on JUICE (customer: ESA)
- Complete optical payload for the MATS satellite (customer: Swedish National Space Board)
- Complete payload for the HABIT instrument on Exomars (customer: Swedish National Space Board)

Company size

Small



Procurement code(s)

Electronics and radio frequency
Vacuum and low temperature
Optics and photonics

OPTONYX

Company profile

OPTONYX was formed in 2006 to sharpen the focus on photonic components and systems, used by industrial and research customers in Scandinavia. We are an established photonics supplier for both the OEM and R&D market. Our business is to serve as a value-adding distributor and representative in Denmark, Estonia, Finland, Latvia, Lithuania, Norway and Sweden. We represent a limited number of selected international high performance manufacturers, whose reputation and products are truly world-class.

Core competencies

We want to provide the best service for our customers. Combining efficient communication with our experience and in-depth knowledge of our suppliers and their capability, we will assist you in finding answers, components and solutions. The areas we work in are:

- Optics: Top quality optics for visual and IR. Components and assemblies, traditional optics and new tunable lenses. • Lasers: High quality lasers based on different technologies. • Filters: State-of-the-art optical filters. Catalog filters, custom sized filters and filters made with custom design. • Spectrometers: High performance gratings, spectrometer components and spectroscopic systems for OEM use and laboratory or process installations.
- Positioning: Motorized precision positioning devices with integrated controllers, and

advanced nanopositioning systems as well as fiber optic switches based on piezoelectric actuator technology.

Industry sectors

- Spectrometer manufacturer
- Pulp, paper, forestry
- Process industry
- Pharma
- Medtech
- Material processing
- Laser manufacturer
- Food, drink, dairy
- Analytical instrumentation
- Defence

References

- Lund University, Max IV Laboratory
- Lund University, Combustion Physics
- Luleå University
- University of Tromsø, Department of Physics and Technology
- University of Aarhus, Department of Physics and Astronomy
- VTT, Technical Research Centre of Finland
- NTNU Department of Physics
- NTNU CNC Kavli Institute for Systems Neuroscience
- KTH Applied Physics

Company size

- Small



www.optonyx.com

Optonyx AB – part of Hugo Tillquist AB

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Urban Konradsson Botes
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urban@optonyx.com



Procurement code(s)

Optics and photonics
Particle and photon detectors

PFEIFFER VACUUM SCANDINAVIA

Company profile

For more than 125 years, Pfeiffer Vacuum has served as a guarantee for advanced vacuum technology, high quality comprehensive vacuum solutions, and first-class service.

Core competencies

Advanced vacuum technology

Industry sectors

- Research & development
- Solar industry,
- Medical industry
- Electrical industry

References

UHV Vacuum pumps, Fluorine free multi roots pumps, leak detectors, rotary vane pumps.

Company size

Large



www.pfeiffer-vacuum.com

Pfeiffer Vacuum Scandinavia AB

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Stefan Brun

Managing Director
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sales@pfeiffer-vacuum.se

Procurement code(s)

Vacuum and low temperature

PHOTONICSWEDEN

Company profile

PhotonicSweden is the Swedish national platform in optics and photonics. It is an economic association and as such a legal entity founded in 2011. We count more than 50 member organizations and over 100 personal members. The work force presently consists of three consultants. Our vision for Optics and Photonics is having a strong impact on a viable, expanding and profitable Swedish industry based on research and innovation.

Core competencies

- Photonics
- Optronics
- Optics
- Infrared Optics (IR)
- Infrared Cameras
- Fiber optics
- Quantum optics,
- Optical detection and imaging
- Optical metrology
- Optical communication
- Light Fidelity (LiFi)
- Macro, micro- and nano photonics
- Photonics integrated circuits (PIC)
- Lasers
- LEDs
- Microoptoelectromechanical systems (MOEMS)
- Lidars (Light detection and ranging)
- Lighting (LED)
- Intelligent Lighting
- Displays
- Virtual & augmented reality (VR/AR)
- Solarcells

Industry sectors

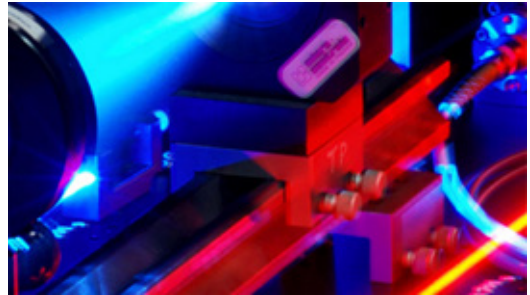
- Suppliers of photonics components
- Suppliers of photonics systems
- Suppliers of optical components
- Manufacturers of photonics components
- Manufacturers of photonics systems
- Manufacturers of optical systems
- Consultants of photonics components
- Consultants of photonics systems
- Consultants of optics

References

PhotonicSweden's corporate and organisation member list at: www.photonicsweden.org/membership/members/

Company size

- Small



www.photonicsweden.org

Photonic Sweden

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Procurement code(s)

Optics and photonics

PICKERING INTERFACES

Company profile

We have comprehensive expertise in power supply and electronic loads. We also produce high-tech switch systems and relays. Test equipment to simulate and emulate battery and charging equipment according to IEC standards. These parts combined make us take a holistic approach within testing and measurement, our own production and our tight work with our agencies make us tailored to your needs.

Core competencies

- Power supply AC/DC
- Switching
- Reed relay
- LXI, PXI
- Grid emulation
- Dynamic electronic load AC/DC
- HIL test
- Fault injection system
- Microwave switching
- Fibre optic switching
- High voltage switching
- Customized switching

Industry sectors

- Automotive
- Aerospace
- Defense
- Telecom
- Space
- Electronic production
- E-mobility
- Medical industry
- Research and development production
- Universities
- EMC labs

References

- CERN, The project Oasis
- Bitrode Kepco Cinergia Pacific power

Company size

Large



www.pickering.se

Pickering Interfaces AB

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Bo Öhrwall

CEO

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Procurement code(s)

Electrical engineering and magnets
Health, safety and environment
Electronics and radio frequency

PILZ SKANDINAVIEN

Company profile

Today, Pilz is a global supplier of automation products, systems and services. We want to make the world safer and plants and machines more reliable with everything we do. This is evident: In every product, every service and every idea generated at Pilz. Pilz is the first port of call for anyone who refuses to compromise where automation is concerned.

Core competencies

- Automation
- Safety
- Safe automation
- CE-mark
- Machinery Directive
- SIL
- Performance Level
- E-stop
- Safety PLC
- PLC
- Sensors
- Safe sensors

Industry sectors

- Automotive
- Energy
- Robot
- Paper & pulp
- Wood
- Metals & mining
- Packaging

PILZ

THE SPIRIT OF SAFETY

www.pilz.se

Pilz Skandinavien K/S

Smörhålevägen 3, SE-434 42 Kungsbacka
+46 300 139 90

Patrik Frivold

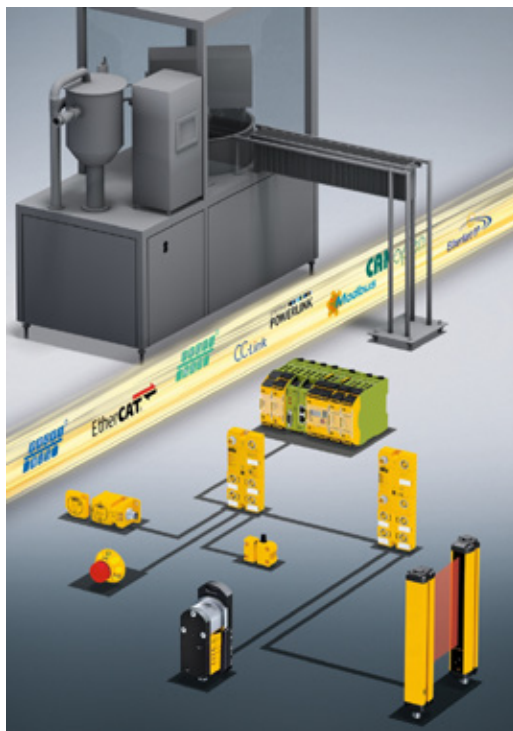
Country Manager
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p.frivold@pilz.dk

References

- MAX IV
- ESS
- ESO
- CERN

Company size

Large



Procurement code(s)

Electrical engineering and magnets

POLYAMP

Company profile

Polyamp has more than 50 years' experience in design for switch mode power supplies, embedded and software design and is also manufacturer with a project organisation.

In a MAX IV project we used table standard power supplies from Delta Elektronika, Netherlands. In this project some magnets were designed with a stabilizing equipment for paralleling of several such units with 100 ppm accuracy. We also added knowledge with our project administration.

Our main business today is producing degaussing system for naval ships and submarines, which is based on controlled bipolar with continuous zero crossing power supplies that are distributed around such vessel, using magnetic sensors and control systems. This gives us knowledge of magnetics in large structures as well as multi sensor systems. We can deliver power units or systems from 150 W to 300 kW and stable reliable low noise DC/DC converters 100 W to 2000 W, in one unit and then parallelable.

Core competencies

- Design in power, embedded and software manufacturer with a project organisation
- Power supplies, low noise, high accuracy with many types of interfaces
- Software for large structure
- Magnetic analyses using Biot-Savart law

Company size

Small



www.polyamp.com

Polyamp AB

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+46 120 85 400

Eric Östlund

CEO

eric.ostlund@polyamp.se

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

POWER HEAT PIPING SOUTH

Company profile

Power Heat delivers advanced industrial piping- and mechanical installations as major installation contracts and as service and maintenance on a daily basis. We are working with all kind of process systems in all kind of materials, all from stainless small-bore piping, large stainless water systems to high grade steel piping for high pressure steam. Power Heat is specialized in highly regulated industrial sectors with high documentation standard. We are certified according to ISO 9001:2015 for quality, ISO 1090-1:2009 regarding steel construction and ISO 3834-2:2005 regarding welding. We also follow ISO 14001:2015 for environment and ISO 45001:2018 for work environment. Power Heat also has a well-equipped manufacturing workshop for manufacturing of almost all kind of specialized process equipment including pressure vessels.

Core competencies

- Industrial Piping Installations
- Mechanical Installations
- Manufacturing
- Welding
- PED

Industry sectors

- Process Industry
- Pharmaceutical Industry
- Food & Dairy Industry
- Chemical Industry

POWER HEAT

WELDING • CONSTRUCTION • MAINTENANCE

www.powerheat.se

Power Heat Piping South AB

Emilstorpsgratan 27, SE-213 64 Malmö, Sweden
+46 40 370 300

Magnus Hammarstedt

General Manager
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References

- ESS (European Spallation Source), framework agreement for mechanical- and piping installations including a number of installation projects and advanced manufacturing.
- MAX IV Laboratory, framework agreement for mechanical manufacturing
- ON, framework agreement for mechanical- and piping installations and maintenance including a large number of installation projects.
- Nordic Sugar, framework agreement for mechanical- and piping installations and maintenance including a large number of installation projects.
- Norcarb Engineered Carbons AB, framework agreement for mechanical- and piping installations and maintenance including a number of installation projects.
- Tetra Pak, different piping installation projects.
- Skånemejerier, mechanical- and piping installations and maintenance work on Malmö dairy site
- Oatly, mechanical- and piping installations and maintenance work on Landskrona dairy site
- Kraftringen Lund, a large number of different piping installation projects
- Magle Chemoswed, mechanical- and piping installations and maintenance work on the local Malmö site
- Gambro / Baxter + MarCor, serial delivery of prefabricated piping systems for dialysis water purification units
- Stora Enso AB, mechanical- and piping installations and maintenance work on Swedish paper mill sites
- A large number of projects on smaller local process sites and heat & power units in southern Sweden
- Research Industry
- Heat & Power Industry
- Distributed Heating & Cooling

Company size

Small

Procurement code(s)

Mechanical engineering and raw materials
Vacuum and low temperature

PROACT IT GROUP

Company profile

Proact is Europe's leading independent data centre and cloud services provider. By delivering flexible, accessible and secure IT solutions and services, we help companies and authorities reduce risk and costs, whilst increasing agility, productivity and efficiency. We've completed over 5,000 successful projects around the world, have more than 3,500 customers and currently manage in excess of 100 petabytes of information in the cloud. We employ over 800 people in 15 countries across Europe and North America. Founded in 1994, our parent company, Proact IT Group AB (publ), was listed on Nasdaq Stockholm in 1999 (under the symbol PACT).

Core competencies

Proact is Europe's leading independent integrator of data storage solutions.

- Data storage
- Networking
- Supercomputing
- Unified computing
- Virtualisation
- Security
- Cloud computing

Industry sectors

- Manufacturing
- Medical
- University
- Finance
- Science
- Governmental

PROACT

www.proact.se

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References

- Octapharma (Medical ,Science): storage solutions and backup to Octapharma, focusing on their high availability and data security requirements.
- Spotify (high-tech): hardware and services to Spotify globally.
- ThermoFisher (scientific developing: supplier for storage for approx. 8-9 years to a company who help their customers accelerate life sciences research, solve complex analytical challenges, improve patient diagnostics, deliver medicines to market and increase laboratory productivity.
- Swedish Orphan Biovitrum (life science): a new storage platform that resulted in a more efficient environment, high automated backup and restore that uses snap-shot for space saving, high availability with cluster design.
- Synchrotron source (high-tech, science): design and implementation of server, virtualization, high performance storage for both control and data ingest and supercomputing.

Company size

Large



Procurement code(s)

Civil engineering, building and technical services
Information technology
Particle and photon detectors
Optics and photonics

PRODUKTIONSTEKNIK I LUND

Company profile

Produktionsteknik i Lund has two different facilities with total ten 5-axis high precision Swiss milling machines.

We have two well equipped measuring labs. Manufacturing is our main business but we also perform the whole chain from designing, manufacturing assembling and testing.

Core competencies

High precisions manufacturing in different materials e.g. stainless steel, copper, aluminium, ceramics.

Industry sectors

- Particle accelerators
- Vehicle
- Medical
- Packaging and processing-sector

References

We have delivered diode stacks to CERN.

Company size

Small



PRODTEK
Produktionsteknik i Lund AB

www.prodtek.se

Produktionsteknik i Lund AB

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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials
Vacuum and low temperature

PROMECH LAB

Company profile

We offer innovation, development, design and manufacturing of customized research equipment in close cooperation with our committed partners.

Core competencies

- Design and Production of one-piece components
- Follow-up and change of manufactured details
- Assembly and testing
- CNC Prototype Workshop

Industry sectors

- Consulting engineer
- Mechanics
- Manufacturing
- Mechatronics

References

- Charles River Lab, UK.
- GE Healthcare, USA
- Medimmune Inc, USA
- Glenmark Pharmaceuticals Ltd. India
- Bracco Img, Italy
- AstraZeneca, Sweden
- Amgen Inc. USA
- Several universities around the globe

Company size

- Small



Installation of COPD device. Mumbai India



www.promech.se

Promech Lab AB

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Jurgen Persson

CEO

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Procurement code(s)

Electronics and radio frequency
Mechanical engineering and raw materials
Particle and photon detectors
Vacuum and low temperature

PROTOLABS

Company profile

We are the world's fastest digital manufacturing source for rapid prototypes and on-demand production parts. Our automated quoting and manufacturing systems allow us to produce commercial-grade plastic, metal, and liquid silicone rubber parts within 1-15 Days. The result? A manufacturing partner that helps you accelerate speed to market and strategically manage demand volatility across the entire product life cycle.

Core competencies

- Injection Molding
- Plastic injection molding
- Liquid silicon rubber
- Overmolding & insertmolding CNC
- CNC Milling • CNC Turning 3DP
- Stereolithography (SLA)
- Selective Laser Sintering (SLS)
- Digital Metal Laser Sintering (DMLS)
- Multijet fusion
- Polyjet & 3DP printed silicon

Industry sectors

- Medical
- Aerospace & Defense
- Consumer Electronic
- Automotive
- Industrial Equipment

References

- CERN
- EMBL Grenoble

Company size

Large



www.protolabs.se

Protolabs

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Tom Edstav

Area Sales Manager
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Procurement code(s)

Mechanical engineering and raw materials

PROVEXA SURFACE TECHNOLOGY

Company profile

We offer surface treatment and surface technology! We have adapted our production after the demands of the modern era, in order to provide surface technology that adds form, function and sustainability to the product. We also provide special production, corrosion testing and process development at our laboratory.

Core competencies

- Plating
- Surface treatment
- Surface technology
- Powder coating
- E-coating
- Corrosion testing
- Consultation
- R&D
- Analysis
- Cycle corrosion testing
- Salt spray testing

Industry sectors

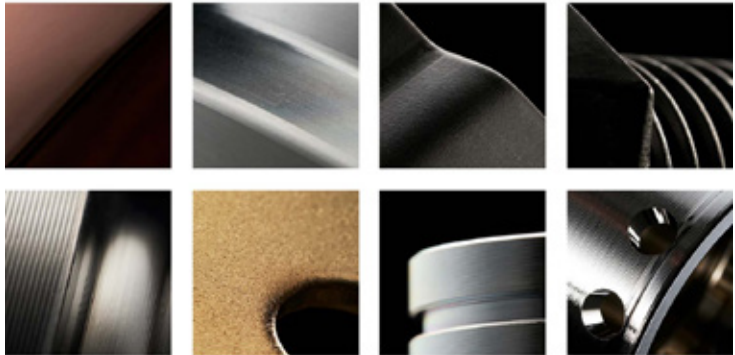
- Automotive
- Construction
- Energy
- Electronics
- Hydraulics & HVAC
- Aerospace & Defence
- Interior & Design
- Medtech

References

- Gapwaves
- RUAG
- Saab

Company size

Medium



www.provexa.com/en

Provexa Surface Technology AB

Gamlestadsvägen 303, SE-415 02 Göteborg,
Sweden

Anders Skalsky

CEO

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Procurement code(s)

Information technology

Gases, chemicals, waste collection and radiation equipment

Mechanical engineering and raw materials

Civil engineering, building and technical services

QAMCOM RESEARCH AND TECHNOLOGY

Company profile

Qamcom is a technology application expert. We provide solutions, products and services within wireless connectivity (5G), autonomous systems and industrial IoT. By working with stimulating, challenging and state-of-the-art technology and incorporating it into our solutions and products, we add value to our customers' operations and ultimately improve infrastructure for the benefit of all society.

We do product development in partnership with our customers and offer specialist services within eight defined domains.

We are domain specialists within a holistic system view. As system experts, we create robust, scalable solutions within our domains.

To be able to do this, we have created an organisation that, in addition to world-class domain expertise, offers qualified, cross-genre expertise in certification, products and supply, product and system development and precision mechanics.

Core competencies

Advanced Signal Processing/Algorithms/Advanced Embedded Systems/Power Electronics/ASIC and FPGA Design/Schematics and PCB Layout/High Frequency Electronics/Radar Systems/Wireless Communication Systems/Packet Networks, Mesh and Routing/Ultra Low Latency Communication/Augmented Reality/Object Identification and Tracking/Functional and Systems Safety/Safety Management and Engineering/



www.qamcom.se

Qamcom Research and Technology AB

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Research in Autonomous and Cooperative/
Vehicle Technology/AI/Deep/Machine Learning/
Object Detection and Classification/Computer
Vision/Optics and Optical Filtering/Camera
Electronic Platforms/Image Processing/Object
Identification and Tracking

Industry sectors

- Telecommunications
- Automotive
- Space and military
- Consumer electronics

References

- Telecom systems to world leading companies
- Developed radar systems for obstacle detection
- Developed sensor systems and full camera for leading high end camera company
- Conducted research in advanced 4G and 5G algorithm development and standardization
- Developed signal processing algorithms for world leading car manufacturer

Company size

Medium



Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Optics and photonics

QMT SCIENCE

Company profile

Qmt Science supplies the manufacturing, process and pharmaceutical industry with qualified products. These meet specified requirements for purity, surface fineness and density. We provide our customers with appliances, regulators, filters, valves, couplings, pipes and fittings that support qualified process requirements. We are the Swedish and Danish distributors for clutch couplings and valves from DK-Lok. Our specialty is to compose components and adaptations to customer order-driven concepts. Our strength is specialist expertise in advanced manufacturing, protective gas welding and orbital welding, as well as our special skills deriving from being part of the QMT-companies.

Core competencies

- Pipes
- Fittings
- Valves
- Filters
- Customized solutions
- Stainless steel

Industry sectors

- Manufacturing
- Process and medical

References

Gambro/Baxter, Getinge, Metso, Alstom, Valtec, ABB, GasProducts, AstraZeneca, Hydrosand, Purac Puregas, E.on Biofor, Breatheus Regional, Max Lab, Swep International, Högånäs, Arcam

Company size

Small



www.qmtscience.se

QMT Science AB

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Oscar Smide

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Procurement code(s)

Gases, chemicals, waste collection and radiation equipment
Vacuum and low temperature

QTECH GROUP

Company profile

Qtech Group simplifies our customers purchase of mechanical components through our wide network of suppliers. Around 80% of our suppliers are located in the neighborhood which is also known as the Mecca of production in Sweden. We supply components, low amount such as pre-serie-orders and higher volume although small and medium series are our core business. We supply the customer within the following areas for mechanical products: design, construction, project management, prototyping, warehousing, assembled products, pick and pack. We are ISO certified in 9000 as well as 14000 and quality has always been our focus.

Core competencies

- Complex projects with complex mechanical components
- Competitive solutions
- Broad network with sub-suppliers for all kind of operations
- Prototyping workshop in house for quick production

Industry sectors

- Robotic
- Train
- Medical
- Spare parts
- General Industry

References

- ABB
- NOTE
- Göteborgs Spårvägar
- NSB

Company size

Small



www.qtechgroup.se

Qtech Group AB

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Procurement code(s)

Mechanical engineering and raw materials

REcab

Company profile

Recab is a Scandinavian specialist company and part of Addtech, a 7.5 billion SEK technology group, listed on the Swedish stock trading market. With expertise and experience Recab provides embedded computer and sensor hardware solutions for demanding applications.

Core competencies

Recab focus on "Embedded Computers Systems", "Industrial Communication" and "Vision & Sensors" for demanding applications and deliver hardware products and customised solutions. In-house development combined with standard embedded products from world leading companies provides our customers with tailor made solutions.

Industry sectors

Recab has customers in all kinds of Industry sectors where the requirements are demanding. Where some customers require rugged, robust or

redundant others requires an extended product life cycle or ultra high performance compatible with already installed legacy technology. Recab enables world class applications for demanding applications.

References

To our customers within the science sector, Recab provides high-end standard embedded computers and communication products and custom off-the-shelf solutions. We enhance existing platforms and building blocks to perfectly fit our customers' applications and requirements. This reduces risk and time-to-market, and saves development and consultancy costs for our customers.

Company size

Medium



www.recab.com

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Procurement code(s)

Electronics and radio frequency
Information technology



REJLERS SVERIGE

Company profile

Rejlers is a Nordic group offering technical consultancy services and IT solutions to customers in the areas of: energy, buildings, industry, telecom and infrastructure. Rejlers puts together teams of consultants with different skills who collaborate to carry out projects all the way from preliminary studies and planning to design, engineering design, project planning, project management and programming.

Core competencies

- Building and property
- Energy
- Industry and technology
- Transport infrastructure
- ICT and telecom

Company size

Large



REJLERS

www.rejlers.se

Rejlers Sverige AB

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Group Manager Energy
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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets

REQUTECH

Company profile

ReQuTech is a specialist antenna designer and manufacturer based around a team of highly experienced and knowledgeable electrical, mechanical, software and production engineers. Focused on communications, ReQuTech has developed a range of products for Satellite and Troposcatter applications. ReQuTech targets applications where SWaP (Size, Weight and Performance) are the key drivers. ReQuTech offers a range of lightweight manpack/portable antennas and fully integrated terminals incorporating embedded modems and beacon receivers for GEO, MEO and LEO satellite constellations. ReQuTech has a growing reputation for Electronically Steered Phased Array solutions aimed at Satcom-On-The-Move (SOTM) applications for land, marine and airborne environments. ReQuTech is happy to provide solutions bespoke or tailored to customer requirements.

Core competencies

- Microwave Engineering
- Antenna Engineering
- Satellite Communications

Industry sectors

- Satellite Communications
- Telecommunications
- Commercial and Defence

References

ReQuTech is working with many blue-chip companies providing innovative solutions for communications and internet all over the world. ReQuTech's product portfolio now includes:

- The PICO family of manpack and portable manual and auto-point multi-frequency band antennas from 75cm to 2.4m diameters
- The ATLAS family of fixed site pedestal mounted manual and auto-point multi-frequency band antennas in 2.4m and 3.7m diameters
- The RESA (ReQuTech Electronically Steered Array) family of flat panel phased array antennas for land, marine and airborne applications
- ISO9001:2015 and ISO14001 certified
- Airbus Defence & Space approved supplier
- Eutelsat Certification for certain antennas

Company size

Small



requitech 

www.requitech.com

ReQuTech AB

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Paul Wheatcroft

VP Sales & Marketing
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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

RESINIT

Company profile

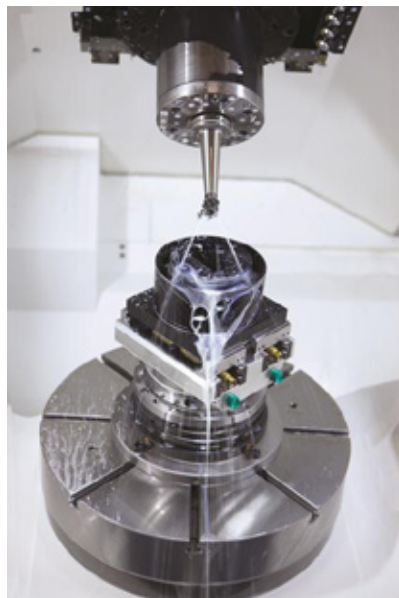
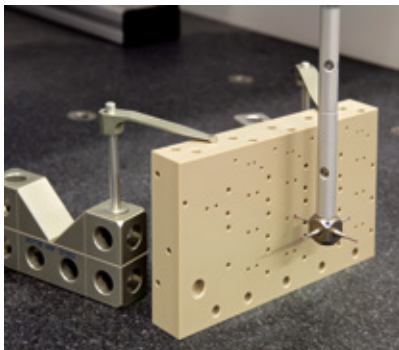
Resinit AB is a high-quality supplier of components machined in plastics and thermosettings. We specialise in plastic materials that are challenging to machine, with high demands on quality and delivery reliability. Our primary target is the manufacturing industry and we closely monitor the development of new materials and methods. The goal at Resinit is to achieve long-term, mutually satisfying cooperation with our customers.

Core competencies

- High quality
- On time deliveries
- High service grade
- High knowledge of machining plastics
- Plastic material knowledge

Company size

Medium



www.Resinit.se

Resinit AB

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Andreas Hellman

Key Account Manager
andreas.hellman@resinit.se

Procurement code(s)

Mechanical engineering and raw materials

RFR SOLUTIONS

Company profile

From idea to finished product.

We help you develop and manufacture solutions in stainless steel, and offer full support throughout the entire process from design and development of prototypes to production, assembly, quality controls and installation. Our engineers are often a part of our customers' project teams from an early stage, and assist with materials expertise, design and product optimization. RFR Solutions is one of few suppliers who offer a complete production facility free from carbon steel.

Core competencies

At the forefront of Technology.

We have a strong focus on technical expertise, quality and continuous improvement. Our Big Science projects are a key part of advancing our competencies. Here we work at the absolute forefront of technology and contribute to the development of new designs, materials (e.g. 316 LN) and production methods. We cooperate with scientists from several universities and help them develop equipment for some of the world's leading research facilities, such as CERN, MAX IV and ESS. The knowledge we gain from our Big Science projects benefits all our customers, regardless of industry, and enables us to ensure high quality and technical standards.

Industry sectors

Our expertise is well known and proven in many different applications within the fields of med tech, energy, food, Big Science and green tech.

References

Due to confidentiality agreement with all our customers and with our key suppliers we are not allowed to publish any information concerning our customers and reference objects. When it comes to Big Science we are today working actively with CERN, ESS and MAX IV. Since some years we also have a close cooperation with the universities in Luleå, Lund and Uppsala regarding different areas of competencies.

Company size

Small



www.rfrsolutions.se

RFR Solutions AB

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Procurement code(s)

Mechanical engineering and raw materials
Vacuum and low temperature

RISE, RESEARCH INSTITUTES OF SWEDEN

Company profile

RISE Research Institutes of Sweden, with more than 2700 employees, develops and transfer technology for improving competitiveness and quality in society and industry. RISE works actively for the advancement of safety, conservation of resources and production of a sustainable environment with Sweden's broadest and most sophisticated range of laboratory resources. RISE performs applied research and innovation in close liaison with industry, universities and international partners. In addition, RISE is hosting the Swedish National Metrology Institute (NMI) with responsibility for national primary measurement references. We perform research within metrological areas, developing new measurement standards and measurement techniques combining emerging scientific or industrial needs with RISE's highest metrology expertise. The activities include development of measuring methods and instruments on behalf of customers.

Core competencies

RISE has interest and skills in several technology fields and extensive experience and laboratory resources at room temperature as well as at high and cryogenic temperatures under various conditions.

- Vast experience and laboratory resources for electrical metrology. Both low and high voltage at DC, AC and pulses. At high voltage unique capabilities for onsite measurements.
- Optical metrology including refraction and spectroscopy with application in e.g.

- measurements of low pressure and vacuum.
- Developing equipment and methods for dissemination and synchronization of time and frequency.
- Sensor development and methods for Positioning, Navigation and Time (PNT) including GNSS.
- Extensive experience and laboratory resources within high-frequency and microwaves. This includes both wired and radiated microwaves, including world-leading resources for antenna measurements and testing.
- Mechanical testing laboratories with sophisticated equipment for digital image correlation and acoustic emission and dimensional metrology ranging from nano- to global scales.
- Fire safety including large laboratories with activities for prevention, limiting and extinguishing as well as investigations.
- Excellent experience in signal processing with applications in remote sensing and sensor fusion including modelling and simulation with applications.

References

High voltage reference divider to CERN. Various measurement systems to more than fifteen metrology institutes around the world. National system for robust and correct time for the Swedish Internet infrastructure.

Company size

Large



Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Information technology
Optics and photonics
Vacuum and low temperature
Civil engineering, building and technical services
Mechanical engineering and raw materials

**RI
SE**

www.ri.se/en

**RISE, Research Institutes of Sweden, Division
Safety and Transport**
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ROWACO

Company profile

We are suppliers of anything from single components to turn-key systems within vacuum technology, Gas analysis and surface analysis, deposition, high energy physics, for development and research within the industry and higher education. Rowaco provides competitive products and services developed in close co-operation with our customers and suppliers.

Core competencies

- Vacuum technology
- Gas analysis
- Surface analysis
- Cryogenics
- Microscopy
- Process Technology

Industry sectors

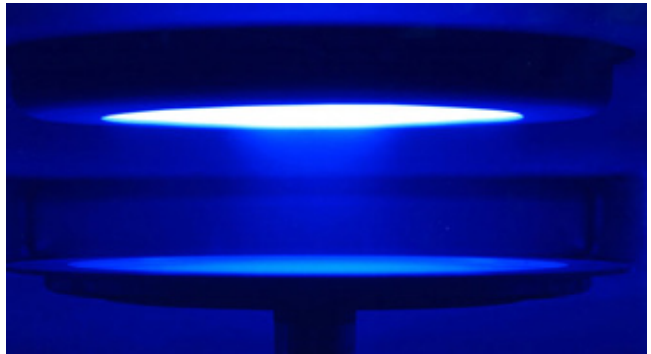
- Semiconductor
- Nuclear
- Space
- Cryogenic
- Automotive
- Turbine manufacturing

References

- Semiconductor: El-Seed, Norstel
- Nuclear: Westinghouse Elektrik, Sandvik
- Space: Swedish Space Agency, Nanospace, OHB
- Cryogenic: Linde AG, AGA Cryo
- Automotive: Scania, Volvo Car Company, Volvo Technology, Volvo Powertrain, Johnson and Matthey, Cummins, Wärtsilä, SAAB
- Turbine: SIEMENS

Company size

Small



www.rowaco.se

Rowaco AB

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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Gases, chemicals, waste collection and radiation equipment
Mechanical engineering and raw materials
Vacuum and low temperature

RYDVERKEN

Company profile

Rydverken is a family owned company that has manufactured machine parts since the start in 1970. Focus have been on highly complex single or low volume parts towards vehicle-/ and aerospaceindustry. We are certified according to: AS9100 and ISO9001.

Core competencies

- A complete supplier in machining (turning, milling and EDM)
- Marking
- CMM

Industry sectors

- Vehicle
- Aerospace
- Coil and yoke manufacturing

References

- GKN Aerospace
- SAAB
- Scanditronix Magnets

Company size

Small

www.rydverken.se

Rydverken AB

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Sales Manager

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Procurement code(s)

Civil engineering, building and technical services

Mechanical engineering and raw materials

RZ GRUPPEN

Company profile

RZ Gruppen is a group of mechanical engineering workshops that perform specialized engineering. We perform advanced assignments that require high precision. Our strength is bringing new products into production quickly and then maintaining high efficiency over long production runs. Our customers in Sweden and the rest of Europe view us as a reliable partner, managing all the key stages from design, prototype and production through to assembly and delivery.

Core competencies

RZ Gruppen's broad competence in many areas such as machining (milling and turning), machining of sheet steel, production and assembly of tools and fittings, are combined with the workshops' specialization and flexibility.

Industry sectors

- Automotive
- Space
- Aero
- Off shore
- Energy

References

- Volvo Cars
- Volvo Trucks
- Scania
- RUAG
- Markem Imaje Epiroc
- Atlas Copco

Company size

Large



www.rzg.se

RZ Gruppen

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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

RZ KILS VERKSTAD AB

Company profile

Subcontractor of welded and machined products. We have laser cutting, plasma cutting, oxy-fuel cutting, sheet rolling, sheet-metal bending, welding, turning lathe, milling and boring mills inhouse. We work with pieces up to 32 000 kg.

Core competencies

- Welding
- Cutting
- Metalworking
- Milling
- Turning

Industry sectors

- Waterpower
- Pulp & Paper
- Protection and security
- Construction industry

References

- ESS
- Dynasafe
- Valmet
- Spetals
- Turab

Company size

Small



www.kilsverkstads.se

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Joakim Gylling

CEO

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Procurement code(s)

Mechanical engineering and raw materials

SANDVIK

Company profile

In addition to a comprehensive portfolio of premium products in advanced materials to the most demanding industries, Sandvik can now provide services and solutions within:

- Materials consulting and testing
- New product and process development
- Supply chain, fabrication and customized products
- Sentusys™ intelligent tube system for material monitoring

With more than 150 years of experience from developing and manufacturing products in steel, stainless steel, nickel, zirconium and titanium-based materials, you can trust us for support regarding all material related questions and problems. Turn to us when your material fails or when you want a second opinion on what material to use in your applications.

Core competencies

- Metallurgy and metallography
- Material characterization
- Process simulation
- Corrosion (wet and high temperature)
- Electrical resistance heating
- Powder technologies
- Surface coating technologies (CVD and PVD)
- Welding and production technology



www.materials.sandvik/services

Sandvik Materials Technology AB

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Industry sectors

- Big Science
- Oil and gas
- Automotive
- Nuclear
- Process industry

References

- Big Science: CERN – non-magnetic material for accelerators to run at 4K
- Big Science: ESS – Material consultancy at the construction of the facility
- Process industry: Stora Enso – Material consultancy and selection of material for corrosive environments
- Process industry: Analysis and material recommendation for a corrosion exposed ventilation system
- Nuclear: GE: Design and industrialization of a production method for thin-walled APTM tubes in cladding dimensions

Company size

Large



Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

SCANDINOVA SYSTEMS

Company profile

ScandiNova is by its break-through technology a world leader in development and production of pulsed power systems with high power levels. The product range covers pulse modulators, generators, turnkey radio frequency (RF) systems and e-gun modulators, all using solid-state technology. Thanks to our modular design we can offer systems that handle a wide range of loads and needs all the way to RF peak power of 100 MW. As one of the few players in the market ScandiNova has the capability to take care of everything, including integrating the magnetron/klystron, cooling system and low-level RF. Reliable and high precision pulses lead to improved control, performance, significantly decreased power consumption and lower maintenance costs. ScandiNova has clients in 40 countries, mainly in Europe, Asia and North America. The company was founded in 2001, has its head-office in Uppsala, Sweden with 65 employees and sales representatives over the world.

Core competencies

- Pulsed power Systems
- Pulse modulators
- Pulse generators
- E-gun modulators
- RF-units

ScandiNova

www.scandinovasystems.com

ScandiNova Systems AB

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Industry sectors

- Science: Free electron lasers, synchrotron light sources, compact light sources, colliders proton booster research, isotope production research, gamma sources
- Medtech: Radiotherapy, proton therapy
- Industry: Cargo scanning, radar, industrial X-ray, sterilization, electroporation

References

- CERN: Pulse modulators for CLIC test stand
- PSI/SwissFEL: Pulse modulators for the accelerator and for the injector.
- MAX IV: Turn-key RF Systems, including pulse modulators, klystrons and other RF parts.
- DESY/European XFEL: Pulse modulators to be used for diagnostic.
- ELI-NP: Pulse modulators for the gamma source
- ENEA: Pulse modulators
- Eindhoven University of Technology: RF system for a compact and portable X-ray source

Company size

Medium



Procurement code(s)

Electronics and radio frequency

SCANDITRONIX MAGNET

Company profile

Scanditronix is focused on production of magnets for accelerators and our long experience makes us strong when it comes to finding the best possible ways of realizing the customers' needs. Scanditronix Magnet uses its long experience and professional engineering know-how to design and manufacture magnets for accelerators and other applications. We work closely with our customers in order to tailor magnets to suit each specific application.

Core competencies

- Magnet field simulations
- Magnet design
- Coil and yoke manufacturing
- Magnet field measurements
- Project management

Industry sectors

Manufacturing of electro magnets

References

We have delivered normal conducting magnets and coils for particle accelerators to:

- Major accelerator laboratories; CERN, Rutherford, FERMI, SLAC, MAX IV, DESY, PSI, GANIL and more,
- Major medical companies in the field of cancer treatment,
- Other industry

Company size

Small



www.scanditronix-magnet.se

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Procurement code(s)

Electrical engineering and magnets

SCANMAST

Company profile

We build our masts, towers, pipe bridges, portals and sign supports out of truss structures, making them lightweight while also maintaining plenty of load-bearing capacity. This makes them superb carriers of technology for telecommunications, lighting, cameras, signs and various types of measuring equipment.

One thing all our products have in common is the neat design that lets through a lot of the things you don't want to obscure; the sky, greenery or an arena at full capacity.

Quality and safety are important to us, which is why we never supply a mast or tower without knowing exactly where it's going to go, what kind of climate it'll be subjected to and what's going to be placed inside it. All our structures are dimensioned in accordance with the Eurocodes with national supplements.

Core competencies

- Mast
- Tower
- CCTV
- Telecommunication
- Civil Works
- Floodlights
- Camera
- Air2Fiber
- Lattice Tower
- Camera mast



www.scanmast.com

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Industry sectors

- Infrastructure
- Airports
- Harbor
- Defense
- Industry
- Oil & Gas
- Arena
- Telecommunication
- Power companies
- Power utilities
- Security
- Substations

References

Swedavia, Safe gate, Avinor, Swedish Defense, NATO, Statoil, Equinor, Statnett, Statkraft, E-on, Siemens, ABB, ESS, Teracom, Telia, Telenor, Tele2, Hi3G

Company size

Medium



Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

SCANMATIC IN SITU

Company profile

Scanmatic In Situ is Scandinavia's largest supplier of measurement and control technology within climate and environment. We offer "maximum access to reliable data" Our business concept is to provide our customers with qualified systems for measurements in soil, water and air. We supply everything from individual parts in a measuring system, to turnkey measurement solutions, where the customer gets ready to use data. This includes: design, production, installation, service, repairs, monitoring of equipment and retrieval/ storage of measurement data. We have special expertise in measuring technology, software, design, construction and production of measuring systems, and can therefore meet different types of special requirements in the area of environmental measurement. One of our foremost specialist knowledge is power supply systems - which can be adapted to different requirements and conditions where measuring systems must be operated outside the grid. We deliver these systems to both wind energy measurements and various types of research systems.

Core competencies

- Experts in environmental measurement systems
- Renewable energy Power solutions
- Dam instrumentation
- Wind Power Meteorology
- Hydrology and water



www.scanmatic.com/sminsitu

www.value.com

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Johan Lindh

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- Greenhouse gas measurements
- Sensors, instruments, dataloggers and measuring systems
- Power supply solutions

Industry sectors

- Hydropower
- Meteorology
- Renewables
- Hydrology
- Mining
- Steel
- Pulp and Paper

References

- ICOS (Integrated Carbon Observation Systems)
- Vattenfall
- Statkraft
- Swedish University of Agricultural Sciences
- University of Stockholm, Gothenburg, Uppsala and Lund
- Polar research Institute
- SMHI (Swedish Meteorological institute)
- IVL (Swedish Environmental Research Institute)
- Swedish Radiation Safety Authority
- Eolus Vind
- Nordex
- Fred Olsen Renewables
- Öresundsbron
- RISE AFRY
- SWECO
- WSP

Company size

Large



Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets

SCHNEIDER ELECTRIC

Company profile

Schneider Electric is leading the digital transformation of energy management and automation in homes, buildings, data centers, infrastructure and industries.

With global presence in over 100 countries, Schneider is the undisputable leader in power management – medium voltage, low voltage and secure power, and in automation systems. We provide integrated efficiency solutions, combining energy, automation and software.

In our global ecosystem, we collaborate with the largest partner, integrator and developer community on our open platform to deliver real-time control and operational efficiency.

We believe that great people and partners make Schneider a great company and that our commitment to innovation, diversity and sustainability ensures that life is on everywhere, for everyone and at every moment.

Core competencies

We are leading the digital transformation of energy management and automation.

We make it possible for IoT-enabled solutions to seamlessly connect, collect, analyze and act on data in real-time delivering enhanced safety, efficiency, reliability, and sustainability.

Discover EcoStruxure™: the next generation of active energy management and automation architecture.

Industry sectors

Schneider Electric automation and control products and solutions cover the breadth of the industrial, infrastructure and building sectors -- from programmable relays to motion controllers and interface modules, for applications from simple machines to complex process systems.

References

<https://www.schneider-electric.com/en/work/campaign/life-is-on/case-study/arcelormittal.jsp>

Company size

Large



www.schneider-electric.se

Schneider Electric AB

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Procurement code(s)

Gases, chemicals, waste collection and radiation equipment
Health, safety and environment
Information technology

SCANSCOT TECHNOLOGY

Company profile

Scanscot Technology offers expert consultancy within the fields of structural engineering, numerical simulation and technical support. Our expertise covers mainly industrial sectors as energy, infrastructure & buildings, industry and Big Science. Scanscot provides structural design and simulation in advanced projects, such as Big Science facilities and nuclear power plants, for national and international stakeholders as plant operators, suppliers, and safety authorities. Scanscot assists in establishing design requirements and design provisions at all levels, ranging from general codes and standards to detailed design specifications at plant/building level. Working closely with contractors, utilities, suppliers and regulatory bodies, we at Scanscot provide our assistance as expert reviewers in projects to enable accurate decisions, and to minimize project risks.

Core competencies

Structural engineering, structural design, numerical simulation, finite element, design requirements, design criteria, third party review, radiation safety, physical protection, power plant, nuclear facilities,

reactor containment, safety-related buildings, extreme loading, earthquake, airplane crash, dropped objects, explosions, missile, high pressure, high temperature, dynamic analysis, non-linear analysis, impact, regulations, codes, standards, eurocodes, asme, aci, etc-c, rcc-cw, rcc-m.

Industry sectors

- Energy
- Infrastructure & buildings
- Industry
- Big Science

References

For references, please visit: <https://scanscot.com/corporate/reference-projects/>

Company size

Small

SCANSCOT
BY TECHNIA

www.scanscot.com

Scanscot Technology AB

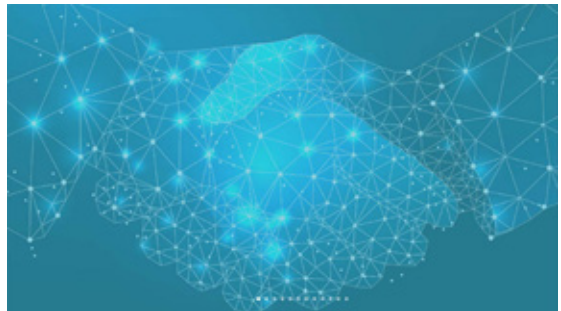
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Patrick Anderson

Tech Lead, Engineering Services
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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials



SCIENTA OMICRON

Company profile

Scienta Omicron is the leading innovator in surface science. The company provides top capabilities for the research community through its technology leadership in electron spectroscopy, scanning probe microscopy and thin film deposition. These capabilities are available in custom tailored solutions from one source with worldwide sales and service groups.

Core competencies

Scienta Omicron provides high service levels. Our aim is to be a partner for customer success in research and analysis. Our knowledge and experience are vast. We offer support for more than 30 different experimental techniques, and for each one you will find a number of specialists who can support project planning, assessment of technique

suitability, system design, equipment training, applications support and system upgrades. The main operations are based in Uppsala, Sweden and Taunusstein, Germany, with sales and service representation in all major markets around the globe.

Industry sectors

Surface science and vacuum technology

References

MAX IV laboratory

Company size

Medium



scientaomicron

www.scientaomicron.com

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Procurement code(s)

Optics and photonics
Particle and photon detectors
Vacuum and low temperature

SEMCON SWEDEN

Company profile

Semcon is an international technology company with over 30 years of experience in a vast area of technologies. Semcon offers expertise in the very front edge of product development. With over 1000 employees worldwide Semcon offers a wide range of competences, and missions in both small and big companies and institutions, national and international.

Core competencies

- Development
- Simulation
- Calculation
- Information
- Project Management
- Innovation
- Construction
- Methods
- Design
- Production and manufacturing

Industry sectors

- Automotive
- Energy
- Industry
- Life-Science
- Telecom

References

- Volvo
- AstraZeneca
- Ericsson
- ABB
- Siemens
- Essity
- Mölnlycke

Company size

Large



semcon

www.semcon.com

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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature

SIGMA

Company profile

Sigma is a group of leading consulting companies with the objective to make our customers more competitive. Our means are technological know-how and a passion for constantly finding better solutions.

Our services are provided by Sigma IT Consulting, Sigma Technology, Sigma Connectivity, Sigma Industry, Sigma Civil, and Sigma Software. Sigma Group is the parent company, developing and building the Sigma brand and our many framework agreements. Sigma Group is owned by Danir, a private investment company held by the Dan Olofsson family.

Core competencies

- Civil engineering - mechanical design, electronics, automation, radio frequencies research, design, prototypes, production and testing of physical and digital solutions
- Technology strategy
- Design strategy
- Digital design
- Product design
- Service design
- Interaction design engineering

Industry sectors

- Automotive
- Defense
- Medical device
- Pharmaceutical
- Process industry

References

- Scania
- Doro
- Volvo
- Siemens
- Vattenfall
- IKEA

Company size

Large



www.sigma.se

Sigma

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Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Health, safety and environment
Information technology
Mechanical engineering and raw materials

SIGMA LUNDINOVA

Company profile

Sigma Lundinova is a product development company, specialized in electronics, software, and project management. Combined our engineers have 500 years experience of product development in the forefront of technology. We take responsibility for the entire product cycle from design to production. We have been involved in the development of many successful products in medical technology, environmental technology, electrical vehicles, industrial and mobile telephony.

Core competencies

- Electronics
- Schematics
- PCB layout (CAD)
- Firmware
- Software
- RTOS

Industry sectors

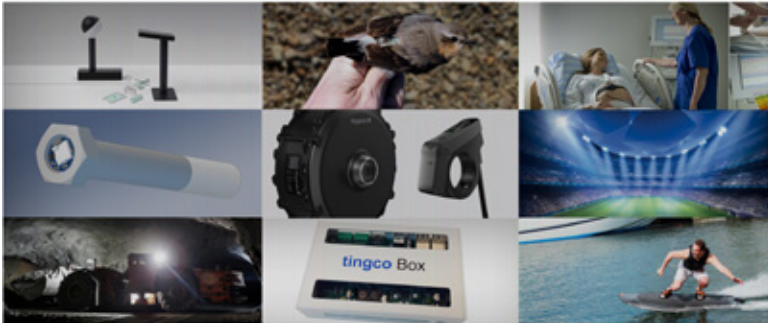
- Medical technology
- Environmental technology
- Electrical vehicles industrial
- Mobile telephony

References

- Sensors at target – ESS
- Power electronics to ozone generator - Primozone
- Power and control electronics – Orbital Systems
- Electronics and software – Neurescue

Company size

Small



www.lundinova.se

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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

SILVER WEIBULL PRODUCTION

Company profile

We are a mechanical workshop in Hässleholm, Skåne, specialist in mechanical manufacturing such as welding in stainless and carbon steel. Machining in larger bore machines and carusel lathes. ISO 9001:2015, ISO 14001:2015, ISO 3834-2:2005, EN 1090-1:2009 + A1:2011 certified. Our welders are approved according to EN ISO 9606-1.

Core competencies

Medium and heavy welding and machining

Industry sectors

- Mining
- Food
- Manufacturing industry

Company size

Small



www.silver-weibull.se

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Procurement code(s)

Mechanical engineering and raw materials

SKF SVERIGE

Company profile

A world of reliable rotation, established 1907, leading player in bearing industry, Gothenburg Sweden Head office, rolling element bearings, service, lubrication, sealings and linear motion. All industries. Hydrostatic shoe bearings with oil system, all manufactured in Sweden. Special bearings for telescopes, additional stiffness properties

Core competencies

- Bearings and related services,
- Rotating equipment performance,
- Lubrication
- Seals and condition monitoring .
- Linear motion products.

For Big Science hydrostatic shoe bearings are in many cases very interesting.

Industry sectors

All industrial sectors with rotating equipment, automotive, astronomy, defence, metals, pulp & paper, marine, energy and wind.

References

Hydrostatic bearings and engineering for ten telescopes. Linear actuators for telescopes. Bearings of any type to almost all industries. Knowledge engineering, simulations.

Company size

Large



www.skf.com

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Hans Norrman

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Procurement code(s)

Mechanical engineering and raw materials

SMOLTEK

Company profile

Smoltek specializes in development and integration of carbon nanostructure fabrication technology, mainly for the semiconductor industry and in the areas of advanced packaging and heterogeneous integration. Our technology platform is based on CMOS compatible low temperature catalytic growth processing. This enables controlled growth of exactly located and defined individual nanostructures, or clusters or films made of such nanostructures.

Core competencies

- CNF Carbon NanoFiber
- CNT Carbon NanoTubes
- Semiconductor
- Solid-state capacitor
- Super capacitor

- Interconnect
- Thermal
- Industry sectors
- Semiconductor industry
- Passive component manufacturers
- Microelectronic devices

References

Examining Carbon Nanofibers: Properties, growth, and applications
Published in: IEEE Nanotechnology Magazine
(Volume: 9 , Issue: 2 , June 2015)

Company size

Small



www.smoltek.com

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Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency

SOLECTRO

Company profile

Solectro AB is a supplier of high-precision CNC machines for manufacturing of panels, prototypes, components in areas for high-tech, electronics, medical, space, defence, aviation and automobile. Solectro AB is also a supplier of PCB board plotters, Lasersystems, PCB tools and a wide spectrum of components for industrial automation, linear axis, linear units, motors, motor controllers, aluminium profiles and CNC cutting tools.

Core competencies

With our wide spectra of products and competence we cover a lot of complete individual needs and economic framework for the technological area within the industri of high-tech, automotive, defence, space, medical and different communication technologies.

Industry sectors

- High-Tech
- Electronics
- Aviation
- Automotive
- Space
- Medical Defence
- Research facilities
- Machine building
- Communication
- Satellite
- Radio
- Tele
- Tool makers
- Construction

SOLECTRO

www.solectro.se

Solectro AB

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+46 40 536 60 0

Karoline Ljung

Sales/Logistics
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References

- High precision CNC milling machines for industry of science, defence, medical, space, automotive
- PCB Circuit milling machines for electronics
- Laser machines for electronics
- Components for industrial automation
- Wide range of supplier network

Company size

Small



Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials

SOUTH POLE

Company profile

South Pole is a system integrator with over 20 years experience in Linux and High performance computing (HPC). We do everything from building our own servers in our ISO certified production in Stockholm, to implementing the HPC or Storage solutions onsite at our customers.

Core competencies

- HPC
- Linux
- Storage
- GPU/AI
- Virtualization

Industry sectors

- Universities
- Research Institutes
- Military/defense
- Media and Entertainment
- xSP

References

- Chalmers University
- Uppsala University
- Scania
- Net Insight

Company size

Small



**SOUTH
POLE_**

www.southpole.se

South Pole AB
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Mattias Skohg
Solution Manager
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Procurement code(s)
Information technology

SPECIALTEKNIK I SVERIGE

Company profile

From concept to customized machines, modification of existing equipment, mechanical manufacturing, industrial maintenance and CE marking.

Core competencies

- Concepts
- Customized machines
- Modification
- Mechanical manufacturing

Industry sectors

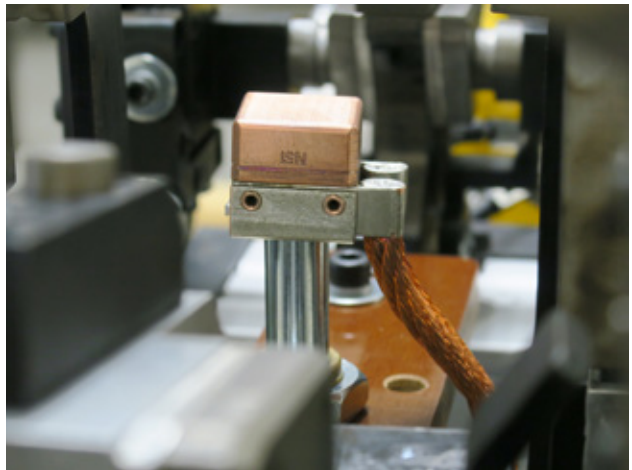
Mechanical manufacturing to the automotive, food, and pharmaceutical industry.

References

- ESS
- Pågen
- Volvo
- Atlas Copco
- Recipharm
- Santa Maria

Company size

Small



www.specialteknik.se

Specialteknik i Sverige AB

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Per Lundgren

Project Manager

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Procurement code(s)

Mechanical engineering and raw materials

STAVANGER STEEL

Company profile

Steel foundry that produces complex high alloyed steel in combination with advanced geometries.

We also take care of the following machining and finishing operations.

We can contribute with a flexible product, using the correct material in applications. We take a natural seat early in development projects to reap the benefits of using castings.

Forged stainless/high alloyed material through our sister company is also possible to supply.

Core competencies

- Material Knowhow
- Steel
- Stainless steel
- High alloyed steel
- Metallurgy
- Heat Treatment

Industry sectors

- Marine
- Process
- Defence
- Oil & Gas
- Hydropower

References

- Rolls Royce
- Somas
- National Oilwell Varco
- Andritz

Company size

Small



www.stavangersteel.se

Stavanger Steel AB

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Andreas Korzonek

Head of Sales

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andreas@stavangersteel.se

Procurement code(s)

Mechanical engineering and raw materials

STREAM ANALYZE SWEDEN

Company profile

Stream Analyze provides a platform for scalable and interactive analytics of data streams on edge devices. This software, sa.engine, is capable of running transparently on various devices, ranging from supercomputers over servers all the way down to electronic control units and embedded devices. Stream Analyze has substantial experience in integrating sa.engine in various environments and edge devices, catering to a wide variety of analytics and machine learning use cases.

Core competencies

- Interactive edge analytics engine
- Query processing and optimization engine
- Scalable data stream processing
- Database technology
- Scalable and parallel data processing, and machine learning
- Data integration and mediation
- Scientific data management

Industry sectors

- Automotive
- Manufacturing
- Utilities
- Science

References

Stream Analyze is based on the scientific work performed at Uppsala Database Lab (UDBL). Over the years, UDBL has applied its software in Big Science, including:

- ASTRON 2004 -- 2006: Data stream analytics for the LOFAR antenna array.
- CERN 2002 -- 2007: Query optimizers for software searching Higgs Smart Vortex.
- Data stream analytics for industrial applications.
- Consortium member and co-founder of eSSENce, a research network for scalable data stream processing for e-science.

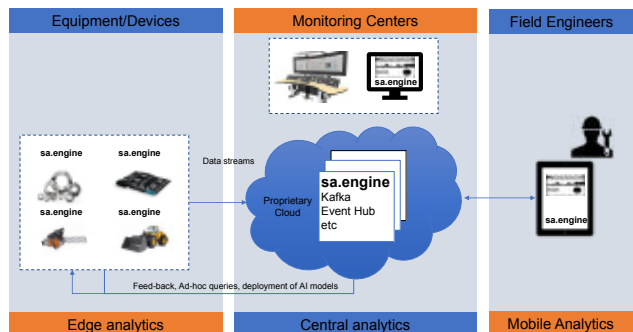
Company size

Small

221

sa.engine:

Platform for data stream analytics in real-time on edge devices



STREAM ANALYZE

www.streamanalyze.com

Stream Analyze Sweden AB

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Tore Risch

CTO

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Procurement code(s)

Information technology

STUDSVIK

Company profile

Studsvik offers a range of innovative technical solutions to our customers, creating superior value by improving reactor performance, and reducing risks and costs across the nuclear and radioactive material lifecycle. We offer advanced engineering and consultancy, fuel and materials testing, fuel and reactor management software as well as lifecycle management of nuclear and radioactive hazards, decommissioning of nuclear facilities and designing radioactive waste management processes. Studsvik Fuel and Materials Technology lead innovation through our way of thinking differently in the nuclear life cycle and provide solutions to our customers by combining our expertise, unique facilities and external networks. Studsvik Scandpower are the nuclear industry's experts in nuclear fuel and reactor physics, trusted and relied upon by more than half of the world's nuclear power plants to guide the management of the nuclear fuel cycle.

Studsvik Waste Management Technology offers license transfer of innovative patented waste treatment technologies. Studsvik Decommissioning and Radiation Protection Services are a leading service provider for the nuclear industry, within the areas of radiation protection, engineering, decommissioning, dismantling and decontamination. Studsvik Isotopes supply high quality sealed source isotopes for medical and industrial applications from our dynamic nuclear licensed manufacturing facility in Sweden.

Core competencies

Fuel testing, fuel qualification, accident tolerant fuel, materials testing, plant life management, hot cell technology, final storage research, transport of radioactive materials, nuclear transportation, sample irradiation, testing equipment, laboratory equipment, bespoke test rigs, development, research, reactor components, high dose environments, radioactive waste management technology, radioisotopes, medical isotopes, industrial isotopes, reactor analysis software, spent fuel analysis, storage optimization, radiation protection, engineering, decommissioning, dismantling, decontamination.

Industry sectors

- Nuclear
- Energy
- Research
- Engineering
- Medicine
- Space

References

For references visit www.studsvik.com

Company size

Medium

Studsvik

www.studsvik.com

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Procurement code(s)

Civil engineering, building and technical services
Gases, chemicals, waste collection and radiation equipment
Mechanical engineering and raw materials

SUNDBYBERGS MEKANISKA VERKSTAD

Company profile

We are a subcontract company specialized in advanced CNC milling and turning for aviation and space customers. We are certified according to ISO9001:2015. Among our customers is the Swedish defence manufacturer SAAB AB and also CERN.

Core competencies

Advanced CNC milling and turning.

Industry sectors

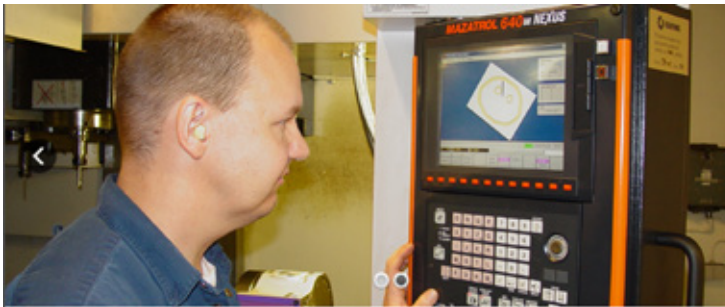
Aviation, space and defence customers.

References

- Mechanical parts for aviation and defence systems
- Mechanical parts to CERN
- Antenna systems for space satellites,
- Various housing components for nuclear and oil industry

Company size

Small



www.sunmek.se

Sundbybergs mekaniska verkstads AB

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Håkan Ekstedt

CEO

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Procurement code(s)

Mechanical engineering and raw materials

SVENNES VERKTYGSMEKANISKA

Company profile

We are a machining company that are specialized in milling and turning field. We have a total of 27 employees, 20 persons in production and 7 persons in office/engineering. Besides milling and turning we can also offer welding and hardening. Svennes was founded in 1993 and is a family owned company. Our strength is our staff with know-how, and a huge range of long-term customers that have never left us.

Core competencies

We are one of the leading companies within machining in Blekinge area, and have a long experience within machining parts for science and nuclear research area. We have through the last seven years delivered parts to different science plants as CERN and MAXIV through our customer Scanditronix Magnet AB. We have a machine capacity of 25 CNC machines that can handle parts from 10 mm up to 6000 mm. We also have a long-time experience within the marine area.

Industry sectors

- Marine
- Water
- Manufacturing Industry
- Automotive
- Energy, Mining
- Wood processing
- Machine building Industry
- Science
- Medicine

References

- SAAB Kockums
- Xylem
- NKT
- ABB
- Scanditronix
- Modig Machine

Company size

Small



www.svennes-verktygsmek.se

Svennes Verktøymekaniska AB

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Site Manager

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Procurement code(s)

Mechanical engineering and raw materials

SVEP DESIGN CENTER

Company profile

Svep Design Center develops bespoke hardware and software combined with mechanical design. We specialize in embedded products as well as connected IOT devices, and are experts at investigating and solving complicated technical problems.

Our experience goes all the way back to the 70's and the Z80 processor of the time. Today we work with everything from small MO's right through to large dedicated servers. This wide range of processors requires an extensive knowledge-base of different operating systems such as multiple RTOS variants, Linux and Windows IoT.

Core competencies

Embedded products, IOT devices, electrical design, firmware development, antenna design, wireless technologies, batteries, turn-key projects, technical investigations, sensors, ultrasonics, problem solving, AR solutions.

Industry sectors

- Medical
- Industrial
- Consumer

References

- Tunstall
- IKEA
- Mobill
- HMS

Company size

Small



www.svep.se

Svep Design Center AB

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Mikael Hegardt

Business Developer
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Procurement code(s)

Electronics and radio frequency
Information technology

SVETSMEKANO

Company profile

The company started in 1985 and is specialized in welding. We also have CNC milling and turning machines.

Core competencies

- Welding
- CNC milling
- CNC turning
- Pipebending

Industry sectors

Manufacturing industry

References

- Teracom
- MAX IV
- ArjoHuntleigh
- Granuldisk

Company size

Small



**SVETS
MEKANO AB**

Tel: 0413-175 50 Eslöv

www.svetmekanoab.se

SvetsMekano AB

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Ola Jönsson

Owner

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info@svetmekanoab.se

Procurement code(s)

Mechanical engineering and raw materials

SVETSTJÄNST I HÖGANÄS

Company profile

Installation in stainless steel pipes.

Installation takes place, for example, in nuclear power plants and food companies and biogas, which means that the work is carried out with high accuracy and quality. We work according to the various ISO criteria, for example. 5817 and 3834.

We own our WPQR, who has IWS education.

Employee welding staff has licenses: EN 287-1 141 T BW FM5 S s1-2 D10, wall thickness 1.0-4.0mm H-L045 ss gb. We also rent staff to the industry with different competencies.

Core competencies

- Quality
- Expertise
- Cost Relevant

Industry sectors

- Process industry
- Food & pharmaceutical industry
- Biochemistry
- Nuclear power

References

- Tetra Pak
- Alfa Laval

Company size

Small



www.svetstjanst.com

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Ronny Nilsson

Marketing and HR Director

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Procurement code(s)

Mechanical engineering and raw materials

SWEDISH MICROWAVE

Company profile

Swedish Microwave (SMW) is since 1986 a leading manufacturer of professional Low Noise Blockdownconverters (LNB) for the ground segments in the satellite market.

All work is in-house allowing custom-design products, short delivery times, high flexibility, quick service and support. Swedish Microwave designs and manufactures its products in Motala, SWEDEN, and has shipped to more than 134 countries. Today we are Europe's oldest manufacturer of Low Noise Block converters (LNBs), serving a global market.

Core competencies

- RF-Design for in-/outdoor use
- RF-Production
- Satellite communications
- Telecommunications
- Lab and tests up to 43 GHz
- Production of custom prototypes
- RF over fiber

Industry sectors

- Satellite Communications
- Electronics and radio frequency
- Telecommunications
- Research facilities

References

World leading telecommunication customers in 134 countries.

Company size

Small



www.smw.se

Swedish Microwave AB

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Procurement code(s)

Electrical engineering and magnets

Electronics and radio frequency

Optics and photonics

SWERIM

Company profile

The metals research institute Swerim conducts needs-based industrial research and development concerning metals and their route from raw material to finished product. As a strategic R&D partner, we strengthen our clients' competitive advantage and contribute to the development of new solutions for processes, materials and products. Swerim offers the Swedish metal industry help to effectively use and make benefit of the large scale facilities MaxIV and ESS, and also several other facilities which are in our area of competence. This can be done as a part in some of our current member research consortia, in bilateral projects or by grant financed research. Swerim has made a focused personnel investment with employment of two experts that are situated in the south of Sweden, close to the facilities. At Swerim in Kista there are also several experts with knowledge in the use of large scale facilities coupled to our material research areas.

Core competencies

- Material research
- Production- and process research
- Knowledge transfer
- Low alloyed steels
- Stainless steels
- Additive manufacturing
- Joining
- Corrosion



www.swerim.se

Swerim AB

Box 7047, SE-164 07 Kista, Sweden
+46 10 489 09 70

Louise Hagesjö

M.Sc.

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Industry sectors

- Material producers (e.g. steel, aluminium, brass, slag)
- Material users
- Vehicle producers (e.g. cars, trucks, boats)
- Vehicle users
- Mining industry
- Nuclear waste disposal
- Power generation
- Energy systems

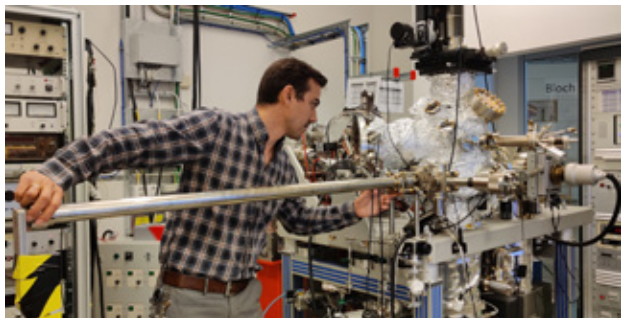
References

Examples of a variety of projects we have performed together with industry and other research facilities at different large scale facilities:

- In-situ corrosion studies of additively manufactured stainless steel by ambient pressure X-ray spectroscopy (HIPPIE, MAX IV)
- Simultaneous stress and austenite phase mapping in 3rd generation automotive steels using photons (P21.2, Petra III, DESY)
- High-resolution characterisation of secondary carbide precipitation in martensitic steels (Sans 2D, ISIS Neutron & Muon Source)
- In-situ experiment to improve computational tools for duplex stainless steels (P21 Petra III, DESY).

Company size

Medium



Procurement code(s)

Mechanical engineering and raw materials
Civil engineering, building and technical services

TELEDYNE SP DEVICES

Company profile

Teledyne SP Devices designs and manufactures world-leading modular data acquisition and signal generation instruments. Our products utilize patented calibration logic, the latest data converters, and state-of-the-art FPGA technology resulting in an unrivalled combination of high sampling rate and resolution. Products are available with a range of application-specific features and embedded, real-time signal processing. This helps our customers to overcome performance bottlenecks, shortens time-to-market, and provides system-level advantages within a wide range of application areas. SP Devices' products are employed across a wide variety of industries, including analytical instruments, remote sensing, scientific instrumentation, medical imaging, and more.

Core competencies

- Test and measurement
- Data acquisition and signal generation
- Hardware, firmware, and software design and implementation
- System-level design and implementation

Industry sectors

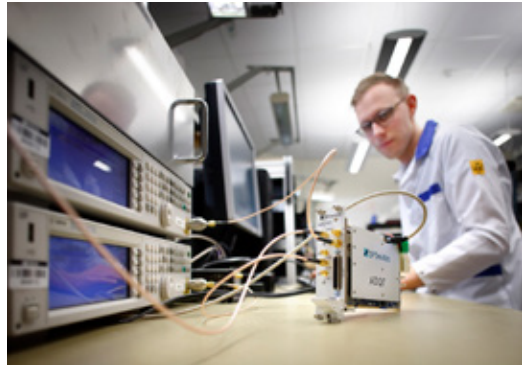
- Particle physics
- Radio astronomy
- Free-electron lasers
- Medical
- Fusion

References

Teledyne SP Devices is a trusted supplier to a wide range of industries and applications. Our data acquisition and signal generation products are deployed in industrial and research facilities across the world and examples include the neutron time-of-flight (nTOF) facility at CERN, multiple synchrotron, free-electron laser, and fusion facilities world-wide as well as airborne radar systems for Saab and the German Aerospace Center (DLR). Our products are also integrated in system-level solutions by major original equipment manufacturers (OEMs) from multiple Industry sectors.

Company size

Large



www.spdevices.com

Teledyne Signal Processing Devices Sweden AB

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Procurement code(s)

Electronics and radio frequency

TESSELLA

Company profile

AI + Data Science. Our AI work enables research teams to extract meaning from raw experimental data, free up experts and shrink the backlog of experimental results that need to be analyzed.

Cloud + HPC. We work with research organizations to maximize the potential of cloud-based platforms to provide distributed access and the shared high-power computing resources scientists need.

Robust Systems + Software. In addition to handling large volumes of data and complex calculations, systems must be robust and efficient, able to harness new instruments that support more complex experiments and respond to the multiple needs of a sophisticated scientific user base. Over the last 40 years, we have worked with our clients to meet these challenges.

Core competencies

- AI + Data Science.
- Cloud + HPC
- Robust Systems + Software

Industry sectors

- Big Science
- Life Science
- Aerospace
- Energy
- Automotive
- Oil&Gas
- Retail
- Finance
- Consumer



www.tessella.com

Tessella

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Dragan Nesic

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References

- www.tessella.com/case-studies/isis-and-tessella-boost-output-at-world-leading-neutron-source
- www.tessella.com/ai-cloud-computing-future-for-scientific-research
- www.tessella.com/news/data-analytics-consultancy-tessella-secures-software-agreements-support-global-scientific-breakthroughs
- www.tessella.com/case-studies/ceda-tessella-collaboration

Company size

Large

Procurement code(s)

Information technology

TEXOR

Company profile

Texor is a subcontractor of mainly machines and sub-assemblies for the life science and food industry. Our customers and end users are, above all, global biotech and biopharma companies worldwide. We offer the best experience of machining, welding and surface treatment of stainless steel materials such as 316L, 904L and Hastelloy. We are very often involved in our customers R&D projects with our +50 years of experience of production and assembly of stainless steel components. Texor has a word wide supplier base in terms of elastomers, plastic and stainless steel components and they all meet the highest quality from the biopharma industry.

Core competencies

- Traceability
- Documentation
- Narrow tolerances
- Stainless steel
- CNC
- Welding (TIG, MIG, MAG, orbital)
- Grinding/polish

- Electro-polish
- Certification (PED, ASME, FDA, USP, etc)
- 3:rd party inspections (Inspecta, ASME, Force, etc)
- Projects and customization with very short leadtimes

Industry sectors

- Pharmaceutical industry
- Food industry

References

- GE Healthcare,
- Merck Millipore
- Tetra Pak
- Alfa Laval

Company size

Medium



www.texor.se

Texor

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Josef Alenius

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Procurement code(s)

Mechanical engineering and raw materials

THE QUANTUM GROUP

Company profile

TQG can offer electrical power supply system solutions for scientific facilities. We can design, manufacture and test any power converter for particle accelerators and fusion energy applications with a power range of a few kW to several MW and voltage levels from a few Volts to hundreds of kV. Among these we can offer custom solutions for high precision magnet power supplies, high voltage power supplies for RF amplifiers such as klystron modulators, etc. In addition TQG is very specialised with EMC (Electromagnetic Compatibility) compliance design and troubleshooting. We can also offer various consultancy services in electrical power systems for Big Science projects.

Core competencies

- Power converters
- High voltage power supplies
- Modulators
- High voltage pulse transformers
- Scientific electrical power systems
- Power quality analysis and design
- Power electronics simulations

Industry sectors

- Science
- Medical
- Energy
- Defence

References

- High voltage pulse transformer winding systems for klystron modulators (SNS/ORNL) Oak Ridge, USA
- High voltage pulse transformer for the CERN Linac4 project, Geneva, Switzerland
- High voltage short pulse transformer for medical applications, Sweden

Company size

Small



www.thequantumgroup.eu

The Quantum Group

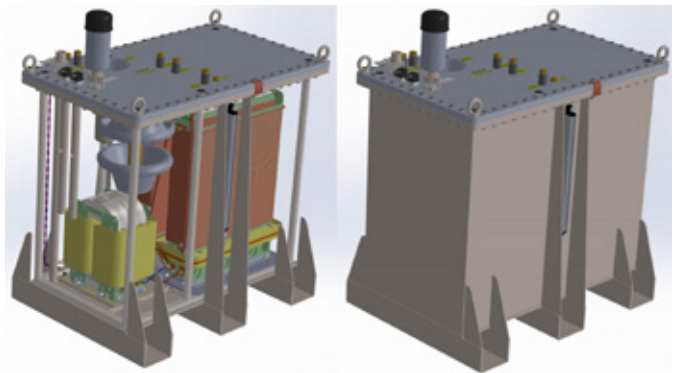
c/o Cleantech Scandinavia
Medicon Village
SE-223 81 Lund, Sweden
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Georg Hulla

Chairman of the Board
georg.hulla@tqg.se

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency



TRE-MEK I TRELLEBORG

Company profile

Tre-Mek is a high-tech lego supplier specialized in turning, milling and welding. We are located in southern Sweden with customers all over the world. At Tre-Mek we have dedicated and flexible professionals with high skills and our team delivers to satisfied customers every day.

Core competencies

- Milling
- Turning
- Welding
- IWS Measuring Service
- EdgeCam
- CNC

Industry sectors

- Food Industry
- Medical Industry
- Packaging Industry

References

- Tetra Pak AB
- Ecolean AB
- Trelleborg Industry
- Mastec

Company size

Small



www.tremek.se

Tre-Mek i Trelleborg AB

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Camilla Forsberg

Administrator
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Procurement code(s)

Mechanical engineering and raw materials

UNITEAM

Company profile

Uniteam AB, based in Gothenburg, is an international supplier of containers and module solutions for industrial and construction industry, offshore and defense industry.

Through a close cooperation with a large and competitive supplier base, we are able to offer efficient contract implementation and high quality products worldwide. Our assembly lines are located in regions with a long tradition within international ship building and we use skilled labor with relevant experience from maritime industry in order to meet specific needs of our international customers.

Core competencies

ISO Container, customized container, special container, steel module, wood module, sales and rental.

Industry sector

- Construction

References

- NKT
- SAAB
- ABB,
- ENWA
- PEAB
- FMV
- SVEVIA

Company size

Small



Uniteam

www.uniteam.com

Uniteam AB

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Thomas Hansson

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Procurement code(s)

Civil engineering, building and technical services
Mechanical engineering and raw materials

UNIVRSSES

Company profile

Univrse is a 3D Computer Vision and Machine Learning company based in Stockholm, Sweden. We have developed a set of software modules that can be integrated into robotic platforms and autonomous systems. We call these the 3DAI™ Engine. Each module in 3DAI™ Engine enables capability that contributes to increasing the perception capabilities and the autonomy of a system. 3DAI™ Engine comprises all the necessary components to enable autonomy: precise and reliable localisation of a vehicle, detection and tracking of nearby objects and semantic understanding of the environment and its evolution.

Core competencies

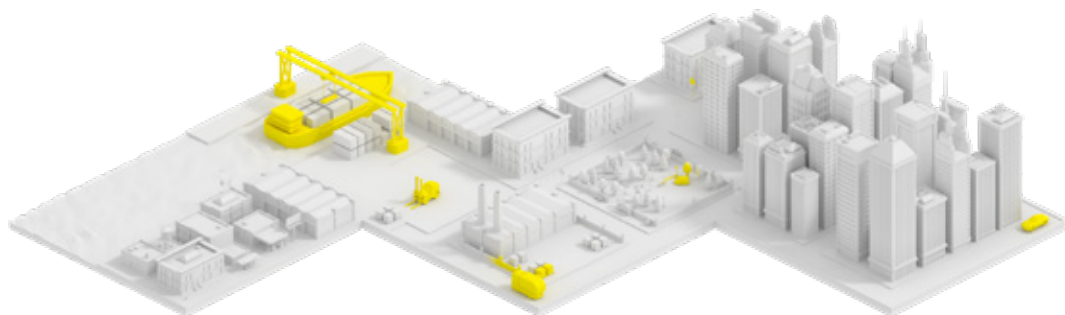
3DAI™ Engine components can be adapted and deployed in different applications where autonomy and automation is needed. Our technical focus is in areas like 3D Positioning, 3D Mapping, 3D Localization, Spatial Deep Learning and Sensor Fusion.

Industry sectors

We focus on mobile robotics and autonomous driving but have also worked in various other industries.

Company size

Small



www.univrse.com

Univrse AB

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Jonathan Selbie

CEO

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Procurement code(s)

Information technology

UNNARYD MODELL

Company profile

We produce prototypes and low volume products by milling or casting in aluminum and iron. Complete manufacturing process from design engineering and manufacturing of tools to casting, machining and verification.

Core competencies

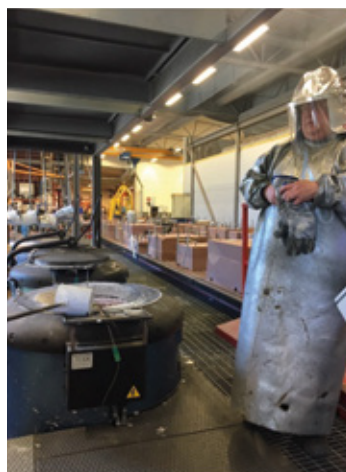
High precision and large mechanical components – manufacturing and assembly

References

CERN

Company size

Small



UNNARYD MODELL

www.unnarydmodell.se

Unnaryd Modell AB

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Stefan Larsson

Marketing Manager
stefan.larsson@unnarydmodell.se

Procurement code(s)

Mechanical engineering and raw materials

UPONOR

Company profile

Uponor is a leading global provider of systems and solutions in the fields of hygienic drinking water delivery, energy-efficient heating and cooling and reliable infrastructure. The company is active in a variety of markets in the construction sector, from residential and commercial construction to industry and civil engineering. Uponor products are available to customers in over 100 countries. We provide hygienically safe drinking water as well as energy-efficient heating and cooling. The company has committed itself to sustainability and the goal of making people's lives more pleasant.

Company size

Large



uponor

www.uponor.se

Uponor

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Suleyman Dag

Director, Innovation Management
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Procurement code(s)

Civil engineering, building and technical services

VBN COMPONENTS

Company profile

VBN Components offers six unique metals for additive manufacturing (AM) named Vibenite®. Through a patented production process they turn into materials with extreme wear and heat resistance. Compared to traditional materials, they often give an application increased performance and significantly improve the lifetime of a component. As a customer you can either order finished components from us according to your design, or get a licence which gives you the right to produce Vibenite® components in your own factory. No other company can 3D print with such high carbide content. Within the range of materials is the hardest commercially available steel in the world, Vibenite® 290, as well as a unique cemented carbide – Vibenite® 480.

Core competencies

- Metal powders
- Metal additive manufacturing
- Extremely wear-resistant components
- High-temperature stable components
- Patented alloys
- Industrial metal components

Industry sectors

- Energy
- Aerospace
- Defence
- Compressors and Pumps
- Wear components

- Transport
- Automotive
- Mining
- Plastic processing
- Food

References

- Clients that use components exposed to a lot of wear often experience a great improvement when replacing the current alloy with Vibenite®. We have for instance seen very successful examples in the energy, aerospace, automotive and food industry. Most projects are strictly confidential, but a few can be mentioned:
- Gear hobs from VBN Components have proved to run twice as long and cut twice as deep as regular gear hobs in a top, traditional steel, which lowers production cost by 30–40%.
- Knives in a food industry application have to date been running twenty (20) times longer than corresponding knives made with traditional steel, after being replaced with a more wear-resistant Vibenite® material.

Company size

Small



www.vbncomponents.com

VBN Components AB

Verkstadsgatan 8, SE-753 23 Uppsala, Sweden
+46 18 240 760

Isabelle Bodén

Customer Relations, +46 702 36 22 81
isabelle.boden@vbncomponents.com

Procurement code(s)

Mechanical engineering and raw materials



VENTANA HACKÅS

Company profile

- Casting and machining of parts with demands for close tolerances and high finish.
- Aluminium, magnesium and other special alloys.
- Welding and mounting.

Core competencies

- Casting
- Machining
- Welding
- Mounting

Industry sectors

- Aerospace
- Energy
- Maritime
- Vehicles
- Communications
- Defence

References

- SKA
- Chalmers Onsala: The "Space Funnel"



www.hpgab.se

Ventana Hackås AB

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Jörgen Eriksson

Key Account Manager

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Procurement code(s)

Mechanical engineering and raw materials

VERTICAL WIND

Company profile

Vertical wind develops wind power systems based on vertical axis technology that is suitable for slightly harsher environments than traditional horizontal axis technology. We can also customize systems for different applications: everything from large systems, 200 kW or more, in more traditional environments to small systems in extreme environments such as Antarctica.

Core competencies

- Electric power
- Wind power
- Battery charging
- Nanogrid
- Microgrid

Industry sectors

- Energy supply

References

Allan Hallgren, Uppsala Universitet
+46 79 4250355

Company size

Small



www.verticalwind.se

Vertical Wind

Vertical Wind AB
Skeppsgatan 19, SE-211 11 Malmö , Sweden

Hans Bernhoff

CEO
hans.bernhoff@verticalwind.se

Procurement code(s)

Electrical engineering and magnets

VIBE IT

Company profile

We are an IT consultancy agency with great focus on IT management, IT operations and infrastructure solutions. Our mission is to provide accessibility, reliability, discretion and personal commitment. We offer strategic approaches to technology, combining innovative solutions with established ones.

Core competencies

- IT operations
- IT infrastructure
- Cloud solutions
- PC/Mac
- Hardware and software integration
- Operating systems
- Interfaces and computer networks
- Web Solutions
- Hosting, VPS and DNS

Industry sectors

- Big Science
- Pharmaceutical
- MedTech
- Science
- Laboratory
- Chemistry

- Research facilities
- Finance
- Manufacturing
- Cleantech

References

- Certego
- Solina
- Skånefågel
- Polaris Management
- Friends of Executive
- K Z Bevakning och Säkerhetstjänst
- Schneider Electric
- Unilabs
- Sol Voltaics
- Chromalytica
- Gordiam Key
- Serstech
- IT-Relation.

Company size

Small



www.vibeit.se

Vibration IT AB

Firmagatan 8, SE-213 76 Malmö, Sweden

Robert Putica

CEO

+46 722 00 77 21

robert@vibeit.se

Procurement code(s)

Information technology



VIFLOW GROUP

Company profile

ViFlow is a group of companies that specializes in application based thermal and mechanical design, manufacturing and installation of tube heat exchangers, pressure vessels, piping systems and other process equipment to a number of Industry sectors. Our manufacturing facilities are located in Örnsköldsvik (Örnalp Unozon AB) and in Kristianstad (Ekström and Son AB). With around 100 employees and 10 000 m² manufacturing area we are staffed to take on almost any project.

Core competencies

Design and manufacturing of process equipment in materials such as titanium alloys and various types of stainless-steel grades.

Industry sectors

- Nuclear
- Oil & Gas
- Power plants
- Marine
- Chemical
- Pulp & Paper
- Mining
- Life Science

References

Heat exchangers, reactors, columns and pressure vessels to all Industry sectors. Please feel free to ask for detailed references.

Company size

Medium



www.viflow.se

Viflow Group

Sjögatan 7, SE-891 60 Örnsköldsvik, Sweden
+46 660 29 21 00

Peter Lindberg

Head of Sales & Marketing
+46 660 2921 55
peter.lindberg@viflow.se

Procurement code(s)

Mechanical engineering and raw materials
Vacuum and low temperature

VTT

Company profile

VTT is expert at manufacturing high quality components, tools, prototypes and machining of all kinds of materials. Our clients turn to us to develop ideas and produce a single or a small number of units. What's more, VTT has extensive human resources and leading-edge expertise in contract manufacturing, machine building and positioners.

Core competencies

- Construction
- Tool makers
- Processing
- High quality components
- Series manufacturing

Industry sectors

- Mining industry
- Automotive industry
- Space sector

References

- Atlas Copco
- Epiroc
- Boliden
- Esrange

Company size

Small



www.vtt.se

VTT i Skellefteå AB

Uppfinnarvägen 56, SE-931 42 Skellefteå, Sweden
+46 9103 31 80

Ulf Kristoffersson

CEO

+46 706 99 86 82

ulf.kristoffersson@vtt.se

Procurement code(s)

Mechanical engineering and raw materials

WALLINS MEKANISKA

Company profile

Wallins is a subcontractor with the competence to take care of the entire chain from design, welding, machining, surface treatment, assembly and final testing of machine equipment and advanced components. Our production is reflected by short lead times, flexibility and competent staff.

Core competencies

- Advanced 5-axis milling and CNC turning with rotating tools in various materials e.g. copper, stainless steel, alloy steel, aluminum, tungsten etc.
- Project management of the entire value chain.

Industry sectors

- Packaging
- Automotive
- Mining Industry
- Accelerators
- Research
- Manufacturing

References

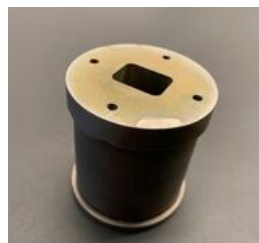
- ESS
- MAX IV
- Tetra Pak
- Metso
- Sandvik
- Koenigsegg
- A&R Carton

Company size

Small



Component in pure copper for accelerators



Component in tungsten for accelerators



www.wallinsmekaniska.se

Wallins Mekaniska

Grävmaskinvägen 3D, SE-241 38 Eslöv, Sweden
+46 413 143 56

Stefan Persson

Managing Director
stefan@wallinsmekaniska.se
+46 708 55 44 07



Procurement code(s)

Mechanical engineering and raw materials

WIRETRONIC

Company profile

Development and production of electrical special measuring tools.

Development and production of cable adapters and wireharness. Both power and signal cable

Machine Learning – Artificial Intelligence.

Core competencies

Connectivity specialist

Production of wireharness

Industry sectors

- Automotive
- Military
- Aerospace
- Manufacturing industri

References

- Volvo Cars
- Volvo AB
- Saab Dynamics
- Aston Martin
- Ferrari
- Lotus
- Toyota

Company size

Small



www.wiretronic.com

Wiretronic AB

Tenggrenstorpsvägen 14, SE-462 56 Vänersborg,
Sweden

+46 521 129 00

Christoffer Weber

VP

+46 709 24 33 83

christoffer.weber@wiretronic.com

Procurement code(s)

Electrical engineering and magnets

Electronics and radio frequency

WM PRESS

Company profile

WM Press AB provides complete solutions including design and tool manufacturing. We have specialized expertise in sheet metal processing and welding in terms of both prototype and volume production. With skilled and experienced employees who know the process from idea to finished products, we can offer a complete manufacturing process.

Core competencies

- Design
- Development
- Sheet metal forming
- Deep drawing
- 3D-laser cutting
- Roll forming
- Punching- and laser cutting
- 3D-printing
- CNC machining
- Stainless steel

Industry sectors

- Medical
- Environment
- Automotive

References

- Water and wastewater treatment
- Train brakes
- Household appliances

Company size

Small



WM PRESS AB
SHEET METAL FORMING

www.wmpress.se

WM Press AB

Svanhallsgatan 17, SE-256 57 Helsingborg, Sweden
+46 42 32 58 30

Anders Gleerup

Technical Sales
+46 70 232 58 30
anders.gleerup@wmpress.se

Procurement code(s)

Mechanical engineering and raw materials

X-OFFICIO

Company profile

X-officio is a legal practice with focus on research infrastructures and their business partners. X-officio supports research infrastructures and suppliers on a variety of legal matters such as commercial contracts, supply agreements, governance, procurement procedures, intellectual property, legal disputes and related matters.

Core competencies

- Legal / Law
- Procurement
- Governance

Industry sectors

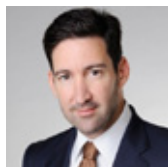
- Legal
- Procurement
- Governance

References

- ESS
- XFEL
- PRE-EST
- DANUBIUS-RI
- LifeWatch ERIC
- CESSDA ERIC
- OPERAS PP

Company size

Small



www.xofficio.eu

X-officio

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+46 769 43 53 68

Ohad Graber-Soudry

CEO
+46 769 43 53 68
ohad.graber-soudry@xofficio.eu

Procurement code(s)

Information technology
Mechanical engineering and raw materials

ZERT

Company profile

Zert AB is an engineering and IT company with specialist competences in respect of risk assessments and legislative technical documentation. Our consultants have more than 20 years of experience of forming sustainable solutions for the future, improving people's lives and our customers' competitiveness. We enrich the knowledge we have built up in our self-developed web-based programs. All in order to meet demands from the small exporting company to the global organization.

Core competencies

- Risk management
- Risk assessment
- CE-marking
- Safety of machinery
- Risk management software
- Multilingual technical information
- CCMS (Component Content Management System)

Industry sectors

- Manufacturing industry
- Paper mills
- Forestry
- Process industry
- Water
- Energy
- Gas
- Waste

Company size

Small



zert

www.zert.se

Zert AB

Nygatan 18-20 , SE-903 27 Umeå , Sweden
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Peter Levisson

CEO

peter.levisson@zert.se

Procurement code(s)

Information technology
Health, safety and environment
Gases, chemicals, waste collection and radiation equipment

ÅKERSTEDTS VERKSTADS

Company profile

At Åkerstedts we develop and manufacture industrial fans for numerous applications; such as process industri, industrial ventilation and much more. We tailor every fan according to customer requirements, and aim to achieve the highest efficiency possible for your solutions. Our fans are used today at companies like AB Volvo, Scania and TetraPak.

Core competencies

- Radial fans
- Axial fans
- Impellers
- Fan wheels
- Industrial blowers

Industry sectors

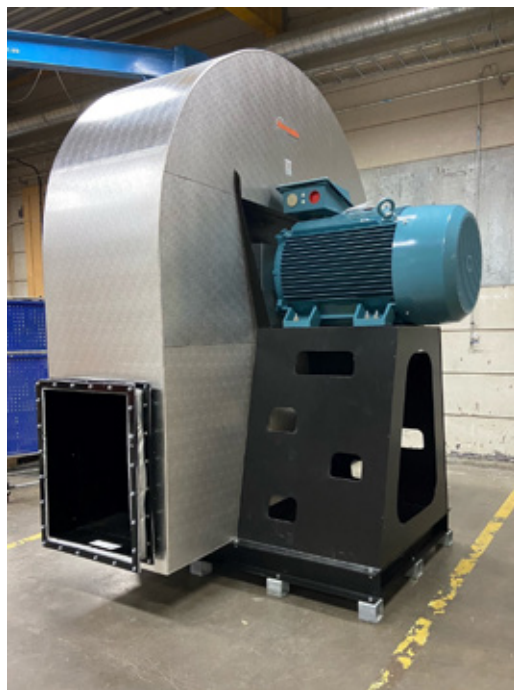
- Manufacturing industries
- Process industries
- Bioenergy
- Agriculture
- Ventilation

References

- Tornum
- Swegon
- Enerstena
- Camfil
- Absolent
- Caverion

Company size

Small



www.akerstedts.com

Åkerstedts Verkstads

Broholm, SE-535 91 Kvänum, Sweden
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Jesper Åkerstedt

CEO

jesper@akerstedts.com

Procurement code(s)

Mechanical engineering and raw materials
Civil engineering, building and technical services

ÖSTERBY GJUTERI

Company profile

Österby Gjuteri produces steel casting in short and medium batch sizes. The alloys that are cast are everything from unalloyed steel up to stainless steel and super alloys such as cobalt and nickel based alloys. Österby Gjuteri is specialized in manufacturing finished products so the operation consists of a foundry with a modern machining workshop and with the possibility of assembling the components to deliver a complete equipment. Normal casting weights are from 50 kg up to 7000 kg.

Core competencies

- Steel castings
- Stainless steel castings
- Machining
- Heat treatment
- 3D-scanning

Industry sectors

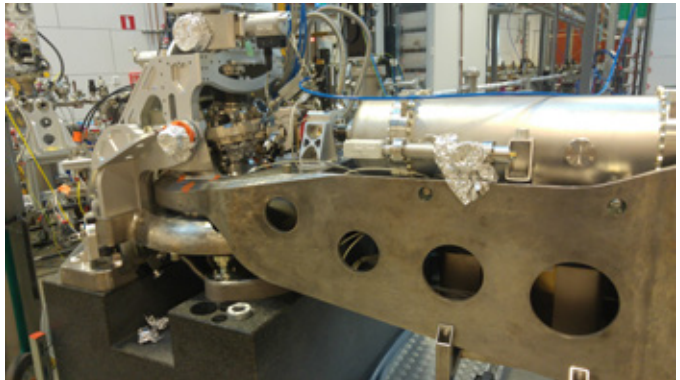
- Energy
- Maritime
- Pulp & Paper
- Offshore
- Mining
- Heavy industry
- Chemical industry

References

- Wendelstein 7-X Max IV
- Valmet
- Marine Jet Power
- Vattenfall
- Alfa Laval
- Kemira

Company size

Medium



ÖSTERBY GJUTERI

www.ogab.se

Österby Gjuteri AB

Martinvägen 8, SE-748 32 Österbybruk, Sweden.

Erik Stark

CEO and Sales Manager

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Procurement code(s)

Mechanical engineering and raw materials

ACADEMIC CONTRIBUTIONS TO BIG SCIENCE

QUICK GUIDE: HOW TO NAVIGATE

The following is a selection of current Swedish academic contributions to Big Science. Is there anything you want to update, or are you a researcher in Sweden and want your contribution to Big Science included in The Swedish Guide? Don't hesitate to get in touch!

This is a quick guide to make it easier for you to learn about the Academic Contributions

Feel free to browse around and learn about more about the 70+ academic projects presented in the guide. There are different ways to search, depending on your preferences. We are using the procurement codes developed and used by CERN.

BIG SCIENCE FACILITY

1

Search for academic projects by Big Science facility.

COORDINATING UNIVERSITY

2

Search for academic projects by coordinating university.

AT HOMEPAGE

3

Search at
www.bigsciencesweden.se

253

INDEX PROCUREMENT CODES

To facilitate and make it easier to find right supplier we are using procurement codes according to CERN.

	Civil engineering, building and technical services
	Electrical engineering and magnets
	Electronics and radio frequency
	Gases, chemicals, waste collection and radiation equipment
	Health, safety and environment
	Information technology
	Mechanical engineering and raw materials
	Optics and photonics
	Particle and photon detectors
	Vacuum and low temperature

Index sorted by Big Science facility

CERN

Advanced Resource Connector Software for ATLAS and LHC computing	259
Autonomous airship for indoor inspections	260
CERN Superconducting Cables Connection Cryostats (Cold Boxes)	261
Cold Spark System for CLIC	262
Construction of the Time Projection Chamber in ALICE at LHC	263
Contribution to the ISOLDE-experiment at CERN	264
DARKJETS	265
Development of CERN superconducting Canted Cosine Theta magnet prototype	266
Development of the RILIS/LARIS-ISOLDE laboratories at CERN	267
Coordinating institute: RISE Research Institutes of Sweden, www.ri.se	268
FINESSE – Fiber optic sensing systems	268
HELIOS	269
High Voltage Reference Divider	270
On integrity assessment of IGBT-based power stacks used in magnet power supplies for particle accelerators	271
Quench Study and RF Characterization of Crab Cavities	272
Silicon Detector Modules for ATLAS Experiment	273
Testing of Superconducting Orbit Corrector Dipole Magnets	274
The MEDIPIX Collaboration	275
Upgrade of the ALICE TPC, the GEM upgrade, Step 2	276
Upgrade of the ALICE TPC detector, RCU2 step	277

DESY

Hanseatic League of Science (HALOS)	279
Centre for X-Rays in Swedish Material Science	280
HELIOS	281
MassDiff: Development of post-processing tools for time-resolved data	282
Micro Accelerator Structure center MAS in Uppsala	283

EISCAT

EISCAT 3D Design of Antenna Elements	285
--------------------------------------	-----

ESO

ALMA Band5 Receivers	287
Extremely Large Telescope Instrumentation: HIRES and MOSAIC	288

ESS

A New Method to Model the Dynamic Structure Factor by Molecular Dynamics Simulations	290
Acceptance Tests of Cryo-Modules	291
Analysis tools for analysis of in-situ time-resolved neutron diffraction	292
Autonomous Radiation Mapping	293
Brightness	294
Cost-effective and versatile testbed for novel neutron detectors	295
Design Study of Accumulator Ring	296
Grid and Aperture Monitor Electronics	297
Hanseatic League of Science (HALOS)	298
High Power Modulators Design for the ESS Linac	299
High-rate Read-Out Electronics and Data Acquisition System	300
Low-Level RF System	301
Luminescent coatings	302
Master Oscillator for ESS	303
Modulator Design and Development	304
Neutron Reflectometry Detectors	305
Phase Reference Line	306
Remote Handling within the Active Cells Facility at the European Spallation Source, Using Digital Reality Techniques	307
Sample environment for in-situ ultra-high temperature mechanical testing	308
Solid State Power Amplifier – development of the next 400 kW power station for ESS	309
Test of the ESS High Voltage Pulse Modulator	310
Test of the Fast-Neutron Attenuation of Novel Shielding Materials	311

Testing of the ESS superconducting Elliptical cavity	312
Testing of the ESS tetrode 352 MHz radiofrequency power source	313
Testing of the ESS superconducting Spoke cavity Prototype	314
Uniaxial Stress Device for Quantum Matter Research	315

FAIR

Contribution to the CALIFA barrel R3B experiment at FAIR	317
Lund-York-Cologne Calorimeter (LYCCA)	318
Electromagnetic Calorimeter for the PANDA Experiment	319
High voltage pulse transformer systems for the FAIR klystron modulators	320
Photon- and particle calorimeter CALIFA – front end system	321

ILL

Super ADAM @ ILL	323
------------------	-----

ISIS

A New Method to Model the Dynamic Structure Factor by Molecular Dynamics Simulations	325
IMAT: Imaging and Materials Science Instrument	326
Neutron ray-tracing simulations for the upgrade of the OSIRIS spectrometer	327

ITER

Additive Manufacturing for Fabrication of 316L-Grade Components	329
EUROfusion DIVERTOR work package, ITER	330
EUROfusion WPENS	331
Fusion reactor development. Particular project: Plasma-wall interactions in fusion devices	332
ITERIS - Design and Implementation of an Integrated Modelling Infrastructure	333
Neutron diagnostics for fusion power plants	334
Modelling of plasma-surface interactions in ITER	335

MAX IV LABORATORY

Correlative nanostructure analysis using SAXS tensor tomography and ptychographic nanotomography	337
Detector for Simultaneous X-Ray Diffraction and Absorption Spectroscopy	338

Development of a new rheometer system	339
Hanseatic League of Science (HALOS)	340
HELIOS	341
High Field/High Gradient Magnets	342
NanoMAX KB-mirrors	343
Sample environment for combined nano-mechanical testing and nanodiffraction	344
The vacuum system of MAX IV 3 GeV storage ring	345
Veritas	346

XFEL

Center for X-rays in Swedish Material Science (CeXS)	348
Characterization and Fiducialization of Undulator quadrupoles	349
Hanseatic League of Science (HALOS)	350
Heat load investigations on diffractive optics: fabrication of 'zone plate' nanostructures on diamond substrate, simulations of heat transport, design of cooling systems, and heat load tests with beam	351
Instrument to increase the capacity for life-science studies SFX at XFEL	352
HELIOS	353
Laser Heaters	354
Laser Heater system for the Injector; design, production, test, delivery, and commissioning	355
Mass spectrometer and cell sorter for biology infrastructure	356
NIR Spectrometer for European XFEL	357
Sample injector and diagnostic system	358
Temperature measurement system for undulators	359

SKA

Band 1 Receiver for the Square Kilometre Array	361
Square Kilometre Array	362

OTHER

Pixel-Pad Detectors	364
IceCube extension	365

Index sorted by coordinating university

CHALMERS UNIVERSITY OF TECHNOLOGY

Uniaxial Stress Device for Quantum Matter Research

Correlative nanostructure analysis using SAXS tensor tomography and ptychographic nanotomography

IMAT: Imaging and Materials Science Instrument

A New Method to Model the Dynamic Structure Factor by Molecular Dynamics Simulations

Neutron ray-tracing simulations for the upgrade of the OSIRIS spectrometer

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Analysis tools for analysis of in-situ time-resolved neutron diffraction

Sample environment for in-situ ultra-high temperature mechanical testing

Photon- and particle calorimeter CALIFA – front end system

Additive Manufacturing for Fabrication of 316L-Grade Components

ITERIS – Design and Implementation of an Integrated Modelling Infrastructure

Detector for Simultaneous X-Ray Diffraction and Absorption Spectroscopy

Sample environment for combined nano-mechanical testing and nanodiffraction

Band 1 Receiver for the Square Kilometre Array

On integrity assessment of IGBT-based power stacks used in magnet power supplies for particle accelerators

Development of a new rheometer system at MAX IV

KTH ROYAL INSTITUTE OF TECHNOLOGY

Center for X-rays in Swedish Material Science (CeXS)

Heat load investigations on diffractive optics: fabrication of "zone plate" nanostructures on diamond substrate, simulations of heat transport, design of cooling systems, and heat load tests with beam

Modelling of plasma-surface interactions in ITER

Fusion reactor development. Particular project: Plasma-wall interactions in fusion devices

LULEÅ UNIVERSITY OF TECHNOLOGY

EISCAT 3D Design of Antenna Elements

LUND UNIVERSITY

Advanced Resource Connector Soft-ware for ATLAS and LHC computing

xHigh voltage pulse transformer systems for the FAIR klystron modulators

HELIOS

Hanseatic League of Science (HALOS)

Construction of the Time Projection Chamber in Alice at LHC

Contribution to the Isolde-experiment at CERN

Darkjets

Development of the RILIS/ LARIS-ISOLDE laboratories at CERN

Upgrade of the ALICE TPC, the GEM upgrade, Step 2

Upgrade of the ALICE TPC detector, RCU2 step

Cost-effective and versatile testbed for novel neutron detectors

Grid and Aperture Monitor Electronics

High-rate Read-Out Electronics and Data Acquisition System

Low-Level RF System

Master Oscillator for ESS

Modulator Design and Development

Neutron Reflectometry Detectors

Phase Reference Line

Test of the Fast-Neutron Attenuation of Novel Shielding Materials

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The vacuum system of MAX IV 3 GeV storage ring

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MID SWEDEN UNIVERSITY

The MEDIPIX Collaboration

Brightness

RISE

FINESSE – Fiber optic sensing systems

EUROfusion WPENS

Square Kilometre Array

EUROfusion DIVERTOR work package, ITER

High Voltage Reference Divider

STOCKHOLM UNIVERSITY

Temperature measurement system for undulators

Characterization and Fiducialization of Undulator quadrupoles

SWERIM AB

MassDiff: Development of post-processing tools for time-resolved data

UNIVERSITY OF GOTHENBURG

Instrument to increase the capacity for life-science studies SFX at XFEL

UNIVERSITY WEST

Luminescent coatings

UPPSALA UNIVERSITY

Laser Heater system for the injector; design, production, test, delivery, and commissioning

Solid State Power Amplifier – development of the next 400 kW power station for ESS

CERN Superconducting Cables Connection Cryostats (Cold Boxes)

Cold Spark System for Clic

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Quench Study and RF Characterization of Crab Cavities

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Test of the ESS High Voltage Pulse Modulator

Testing of the ESS superconducting Elliptical cavity

Testing of the ESS tetrode 352 MHz radiofrequency power source

Testing of the ESS superconducting Spoke cavity Prototype

Electromagnetic Calorimeter for the PANDA Experiment

Super ADAM @ ILL

Veritas

Laser Heaters

Mass spectrometer and cell sorter for biology infrastructure

NIR Spectrometer for European XFEL

Sample injector and diagnostic system

Neutron diagnostics for fusion power plants

IceCube extension

CERN

CERN

Coordinating university: Lund University, www.lu.se

LUNDS UNIVERSITET

ADVANCED RESOURCE CONNECTOR SOFTWARE FOR ATLAS AND LHC COMPUTING

Project description

ATLAS is the biggest instrument at the biggest machine on Earth, the Large Hadron Collider (LHC). It is 46 meters long and weighs 7000 tonnes, working like a huge camera, taking very detailed "pictures" of particle collisions. With a spacial resolution of microns, the raw size of one "picture" is 1.6 Mbytes, and with data taking rates of Megahertz, it collects several Petabytes of raw data a year. The challenge is to store this data, process it to create samples ready for analysis, and to make it available to physicists around the world in real-time. No single supercomputer exists meet this challenge, so the solution is to use the global network of supercomputers, for which our team develops software.

Team

Lund University:

- Oxana Smirnova, Doctor, team leader, specialist in scientific computing
- Balazs Konya, Doctor, specialist in distributing computing
- Florido Paganelli, systems expert, computer scientist

Core deliverables

Advanced Resource Connector (ARC) software

Industry involvement

Industry involvement in the distributed computing project comes indirectly, through high-performance computing and storage hardware, and partially through open source software.

Year

2001 –

Total budget

EUR 2 million

Collaboration(s)

- Lund University
- Uppsala University
- University of Oslo
- University of Copenhagen
- Jozef Stefan Institut
- University of Bern
- Taras Shevchenko National University of Kyiv

Hyperlink(s)

www.nordugrid.org



Procurement code(s)

Information technology

CERN

Coordinating university: Lund University, www.lu.se

AUTONOMOUS AIRSHIP FOR INDOOR INSPECTIONS



LUNDS UNIVERSITET

Project description

Efficient use of Unmanned aerial vehicles (UAV) in terms of flying time and having them work autonomously for monitoring in accelerator tunnels and other hostile environments, and at the same time avoiding contaminated dust being moved into different facilities regions. We are taking into account the radioactive environment and are improving the performance of positioning systems for autonomous navigation, operation, sensors and processing of collected data. We see that the results obtained are of interest to the research infrastructures ESS and MAX IV, which also expresses the need for autonomous radiation inspection.

Year

2019-

Total budget

EUR 200,000

Collaboration(s)

Lund University

Hyperlink(s)

<http://uav.lu.se>

Team

Lund University, Faculty of Engineering

- Anders Robertsson, Team leader, Professor, Department of Automatic Control
- Marcus Greiff, Doctoral student, Department of Automatic Control
- Rikard Tyllström, Lecturer in Aeronautical Sciences, TFHS
- Emil Rofors, Postgraduate, Department of Physics
- Kalle Åström, Professor, Department of Mathematics

Core deliverables

- Autonomous Radiation Mapping
- Isotope Composition Identification
- Mobile Gamma Spectroscopy

Procurement code(s)

Electrical engineering and magnets

Health, safety and environment

Gases, chemicals, waste collection and radiation equipment

CERN

Coordinating university: Uppsala University, www.uu.seUPPSALA
UNIVERSITET

CERN SUPERCONDUCTING CABLES CONNECTION CRYOSTATS (COLD BOXES)

Project description

The High Luminosity Large Hadron Collider (HL-LHC) at CERN is an upgrade of the LHC to achieve instantaneous luminosities a factor of five larger than the LHC nominal value. More powerful superconducting magnets are needed and their powering relies on essential and critical connections between MgB₂ cable and a high temperature superconductor current lead. These connections need to be cooled by cryogenics and must be able to carry an unprecedented current capacity of up to 100 kA each. The devices where these connections are made have to be cryogenic and high current compatible as well as compact.

Team

Uppsala University:

- R. Santiago Kern, Research Engineer, cryogenics and vacuum
- Roger Ruber, Researcher, cryogenics and superconductivity
- Tord Ekelöf, Professor, project leader

CERN:

- Vittorio Parma, Research Engineer, project engineer

Core deliverables

- Design of the different components of the cryostats
- Manufacturing
- Assembly
- Qualification testing
- All documentation pertaining to the project, such as manufacturing drawings and test reports

Year

2018–2023

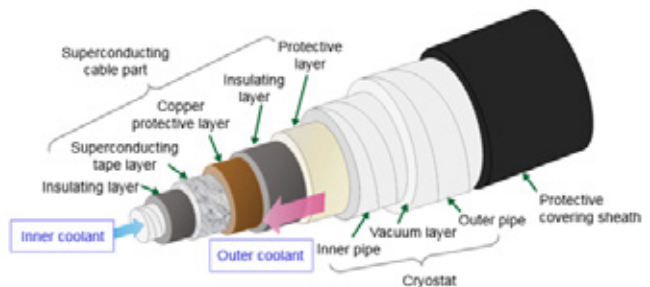
Total budget

EUR 2 million

Industry involvement

RFR Solutions

Hyperlink(s)

<http://hilumilhc.web.cern.ch>

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Vacuum and low temperature

CERN

Coordinating university: Uppsala University, www.uu.se

COLD SPARK SYSTEM FOR CLIC

Project description

A particle accelerator is an important tool of modern science and medicine. The use of the accelerators is limited to bigger research centers and larger hospitals due to their often large size and cost. The size is limited by phenomena of vacuum breakdowns where significant increase of the accelerating voltage inside the accelerator will cause an electric discharge which can destroy the machine. For safe operation we keep the accelerator longer and stay at lower voltages. Uppsala University is building a system with large planar electrodes for studies of the fundamental physics of high-fields in vacuum, important for development of accelerating technologies. The system is cooled to cryogenic temperatures and operated in a wide range of temperatures.

Team

Uppsala University:

- Marek Jacewicz, Doctor, detectors and control systems
- Johan Eriksson, Senior Lecturer, mechanical engineering
- Roger Ruber, Docent, cryogenics.

Core deliverables

- System design and requirement gathering
- Acquisition of hardware
- Manufacturing of components
- System integration and commissioning

Year

2018–

Total budget

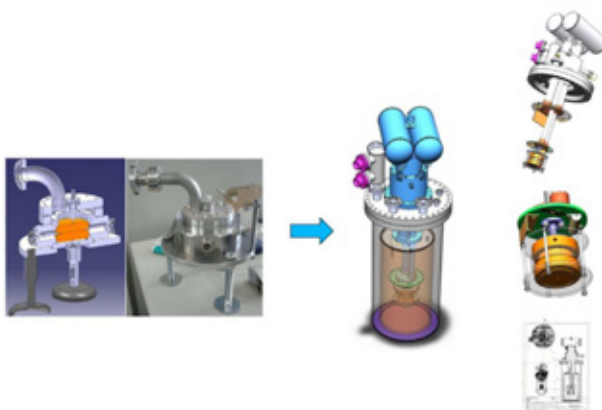
EUR 150,000

Industry involvement

- Innovatec Ceramics
- VAQTEC
- Omega Engineering

UPPSALA
UNIVERSITET

Cryo DC spark system



Procurement code(s)

Mechanical engineering and raw materials
Vacuum and low temperature

CERNCoordinating university: Lund University, www.lu.se

LUNDS UNIVERSITET

CONSTRUCTION OF THE TIME PROJECTION CHAMBER IN ALICE AT LHC

Project description

The ALICE Experiment (see figure) at LHC at CERN is designed to study collisions between Heavy nuclei at extremely high energy, a new state of matter named Quark Gluon Plasma is created where protons and neutrons do not exist but their constituents, quarks and gluons form a large volume system like in the first millionth of a second of the Big Bang. Several thousand particles are produced when the plasma expands and cools off. The ALICE experiment with its ca 1000 collaborators is designed to measure these. The main subdetector is the TPC, which records the track of ionized atoms due to passing charged particles. The TPC is read out with about 500 000 electronic channels. Each channel is a preamp/shaper 10 bit sampling ADC and 1000 samples memory. Half a million channels of digital oscilloscope in simple words. The Lund group covered prototyping and fabrication of the digital ASIC, performed robotic testing and calibration of 100000 ASICs and Manufactured 5000 circuit boards together with NOTE AB in Lund.

Team

Lund University:

- Hans Åke Gustafsson, Professor, physicist, project leader, detector expert
- Anders Oskarsson, Professor, physicist, deputy project leader, detector expert
- Lennart Österman, Research engineer, electronics, specification, circuit board design and board layout, CAD, R&D, robotic ASIC testing, quality control

Core deliverables

- Prototyping and fabrication of ALTRO ASIC (s)T microelectronics)
- Robotic testing of 50000 ALTRO ADC chips (in house)
- Robotic testing of 50000 PASA (preamp-shaping amplifier ASIC) (in house)
- Assembly of 5000 Front End boards (NOTE)

Industry involvement

NOTE

Year

2003–2005

Total budget

EUR 2.1 million

Collaboration(s)

- Lund University
- CERN
- GSI Darmstadt
- Frankfurt University
- University of Heidelberg

Hyperlink(s)

- <http://alice-collaboration.web.cern.ch/>
- <http://alice-tpc.web.cern.ch/content/tpc-front-end-electronics>
- <http://cdsweb.cern.ch/record/940643>

**Procurement code(s)**

Electronics and radio frequency
Particle and photon detectors

CERNCoordinating university: Lund University, www.lu.se**CONTRIBUTION TO THE ISOLDE-EXPERIMENT AT CERN**

LUNDS UNIVERSITET

Project description

The project concerns the Swedish membership in the ISOLDE collaboration at CERN. ISOLDE, CERN's radioactive beam facility, provides beams for experiments in nuclear physics and atomic physics, including applications in nuclear astrophysics and fundamental physics, as well as in solid-state physics, biophysics and medical physics. The experimental activities at ISOLDE are governed by a memorandum of understanding between CERN and the members of the ISOLDE collaboration represented by the respective funding agencies. The collaboration currently includes 15 countries and CERN. Sweden has been member of ISOLDE since its inception in 1967. ISOLDE is a part of CERN's general organization. It includes a user group of ca 500 university physicists with research activities at the facility. The contribution delivers support for the optimization of the daily operation of the accelerator and separator infrastructure of the facility. The collaboration also provides support to assist approved experiments.

Core deliverables

- Research infrastructure optimization
- Infrastructure assistance
- Collaboration Organisation

Team

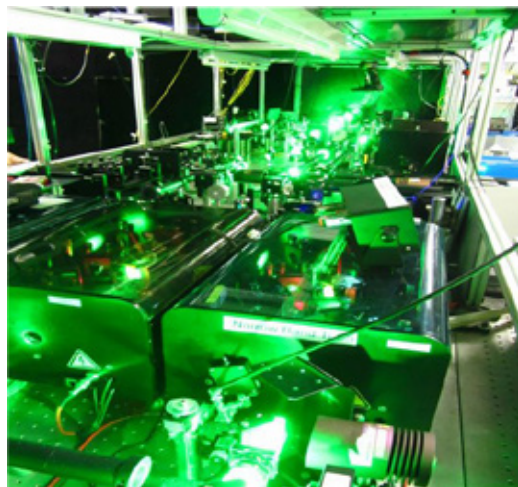
Lund University:
Joakim Cederkäll, Professor, Nuclear Physics,
Faculty of Science, Department of Physics

Year

2018-2022

Budget

EUR 270,000

**Procurement code(s)**

Particle and photon detectors
Optics and photons

CERNCoordinating university: Lund University, www.lu.se**DARKJETS****Project description**

For experiments at the Large Hadron Collider (LHC) at CERN, proton-proton collisions occur up to 30 million times per second. One cannot record all information related to each of these collisions, since the size of each “event” can surpass 1 MB. Experiment therefore select only a subset of these collision events, record them to storage and then analyze them afterwards. Novel techniques are needed in order to make the most of data that is not selected and would otherwise be discarded. The DARKJETS project delivers such a technique for the ATLAS experiment, called Trigger-object Level Analysis (TLA). In this technique, higher-level insight is obtained from a fast data analysis done in milliseconds, so that only a small subset of the information can be stored for each event. This greatly reduces the event size and allows for a much larger dataset to be recorded for e.g. searches for new physics phenomena. This project has received funding from the European Research Council (ERC) under the European Union’s Horizon 2020 research and innovation programme (grant agreement No GA679305)”

Team

Lund University, Faculty of Sciences:

- Caterina Doglioni, Senior Lecturer, specialist in data selection and data analysis, particle physics
- William Kalderon (now at Brookhaven National Lab) and Jannik Geisen, Postdocs, specialist in data selection and data analysis, particle physics
- Oxana Smirnova, Senior Lecturer, specialist in scientific computing and data processing
- Florido Paganelli, Researcher, computer scientist, system expert
- Eva Hansen, Eric Corrigan, PhD students



LUNDS UNIVERSITET

Core deliverables

- Novel technique for the ATLAS detector to record more data than traditional techniques in searches for new particle
- Commissioning of FPGA-based board for event selection in the upcoming LHC Run
- Scientific and technical peer-reviewed publications

Year

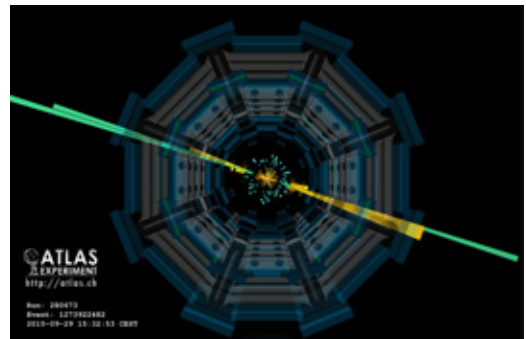
2016–2021

Total budget

EUR 1.27 million

Collaboration(s)

- Lund University
- Ohio State University
- Heidelberg University
- University of Oregon
- University of Geneva
- CERN

Hyperlink(s)www.hep.lu.se/staff/doglioni/darkjets.html

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Procurement code(s)

Information technology

CERN

Coordinating university: Uppsala University, www.uu.se

DEVELOPMENT OF CERN SUPERCONDUCTING CANTED COSINE THETA MAGNET PROTOTYPE



UPPSALA
UNIVERSITET

Project description

CERN is currently upgrading its Large Hadron Collider to increase its collision frequency (luminosity) by an order of magnitude. To do so a new type of superconducting orbit corrector dipole magnet based on the Canted Cosine Theta (CCT) design is being developed. FREIA Laboratory is aiming at signing a so called K-contract with CERN for the fabrication of a series such magnets.

Team

Uppsala University, Department of Physics and Astronomy, FREIA:

- Tord Ekelöf, Professor, project manager
- Roger Ruber, Docent, accelerator systems
- Kevin Pepitone, Research engineer

Scanditronix:

- Mikael Vieweg

CERN:

Glyn Kirby

Core deliverables

- Design of the CCT magnet
- Fabrication of the prototype
- Tests of the prototype
- Report on the test results

Year

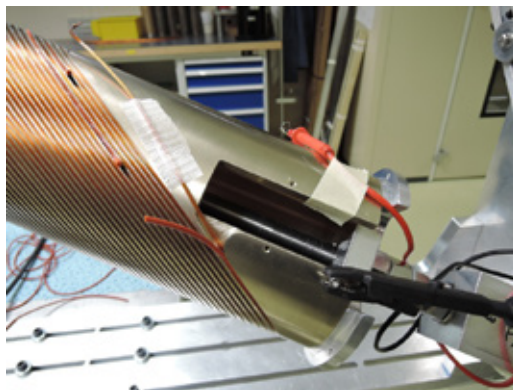
2017-2019

Total budget

EUR 500,000

Industry involvement

- Uppsala University
- Scanditronix



Procurement code(s)

Electrical engineering and magnets

Mechanical engineering and raw materials

Vacuum and low temperature

CERN

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

DEVELOPMENT OF THE RILIS/LARIS-ISOLDE LABORATORIES AT CERN



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Project description

Today ISOLDE is a major CERN installation with a user community of about 300 researchers from 80 institutions in 21 countries. The scientific program is broad and includes experiments in low-energy nuclear physics, nuclear solid-state physics, atomic-and molecular physics, nuclear astrophysics, particle physics and nuclear medicine. The research program focuses on further development of the RILIS (Resonance Ionization Laser Ion Source)-ISOLDE ionization laboratory. The RILIS-ISOLDE facility produces radioactive isotopes using the Isotope Separator On Line (ISOL) technique whereby a driver beam impinges upon a fixed target. The reaction products are ionized, extracted and then mass separated during their flight towards the experimental setup. On account of its high efficiency, speed and unmatched selectivity, the preferred method for ionizing the nuclear reaction products at the ISOLDE on-line isotope separator facility. By exploiting the unique electronic energy level fingerprint of a chosen element, the RILIS process of laser step-wise resonance ionization enables an ion beam of high chemical purity to be sent through the mass selective separator magnet. The isobaric purity of a beam of a chosen isotope is therefore greatly increased. We developed the RILIS facility further to a "state-of-the-art" system together with the newly developed pre-RILIS laboratory in order to make a reliable, ion producing CERN facility for the ISOLDE community.

Team

Lund University:

- Joakim Cederkäll, Professor, Nuclear Physics, Faculty of Science, Department of Physics
- Claes Falander, Professor, Nuclear Physics, Faculty of Science, Department of Physics

Core deliverables

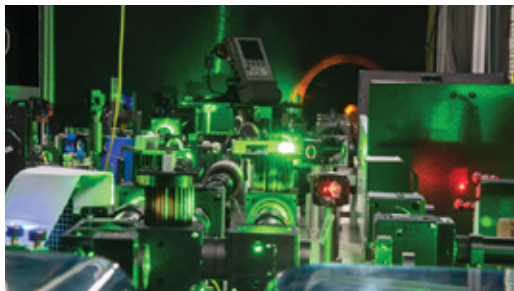
Electronic energy level "fingerprint"
RILIS (Resonance Ionization Laser Ion Source)

Year

2011-2015

Budget

EUR 200,000



Procurement code(s)

Particle and photon detectors
Optics and photons

CERN

Coordinating institute: RISE Research Institutes of Sweden, www.ri.se

FINESSE – FIBER OPTIC SENSING SYSTEMS

Project description

FINESSE is a collaborative research and training network, gathering 26 European universities, research centers and industrial partners with complementary expertise in distributed optical fibre sensor systems for a safer society.

One activity within FINESSE involved evaluating the use of fibre optic sensors for monitoring in harsh radiative environment. Indeed, any sensor to be installed in a silicon detector at CERN's LHC should ideally fulfil the requirements of being radiation resistant and insensitive to magnetic fields, while having small dimensions, reliable reading across long distances, and ease of multiplexing to form large network of sensors. Thanks to their inherent properties, fibre optics sensors have been identified as candidates to monitor relative humidity inside the detector enclosure. In this work, humidity measurement was performed every 70 cm over a single 1 km fibre using phase-sensitive Optical Time Domain Reflectometry, an advanced fibre optic sensing technique.

Team

RISE, Research Institutes of Sweden

- Kenny Hey Tow, Researcher, Fibre optic unit
- Åsa Claesson, Researcher, Fibre optic unit

Core deliverables

The optical fibers used in the study were developed and produced by RISE Fiberlab. These fibers, and the sensors built from them, were evaluated for distributed relative humidity sensing in terms of response time and sensitivity.

Year

2019

Total budget

In kind

Collaboration(s)

EPFL, Swiss Federal Institute of Technology

Hyperlink(s)

- <http://itn-finesse.eu/>
- <https://www.ri.se/en/what-we-do/expertises/fiber-optic-sensors>
- <https://www.ri.se/en/what-we-do/expertises/specialty-optical-fiber>



Procurement code(s)

Optics and photonics

CERN**Coordinating university: Lund University, www.lu.se****HELIOS****Project description**

The Helmholtz-Lund International graduate School (HELIOS) on "Intelligent instrumentation for exploring matter at different time and length scales" connects major knowledge hubs in the Baltic Sea Region: Hamburg University, DESY, and Lund University. HELIOS started in early 2021 and includes scientists from Particle Physics, Molecular Physics, Nano(bio) Science, and Ultrafast Photon Science. The aim of HELIOS is to develop the instrumentation and data acquisition systems for the next generation of photon sources and particle accelerators, in collaboration with industrial partners that we will seek within Big Science Sweden. HELIOS also aims to connect with the Hanseatic League of Science (HALOS) project for life sciences, to enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Team

Lund University

- Mathieu Gisselbrecht, Associate professor, Physics
- Caterina Doglioni, Associate professor, Physics, Particle physics
- Anders Mikkelsen, Professor, Physics, NanoLund

Core deliverables

Individual projects investigate novel solutions for (e.g.):

- Real-time data acquisition and analysis
- Image processing techniques
- Feedback control loops
- On chips miniaturization using nanotechnology for biosensing



LUNDS UNIVERSITET

Year

2021-2026

Total budget

EUR 7.9 million

Collaboration(s)

University of Hamburg

Hyperlink(s)<https://www.heliosgraduateschool.org>**Procurement code(s)**

Electronics and radio frequency
 Information technology
 Vacuum and low temperature
 Optics and photonics
 Particle and photon detectors

CERN

Coordinating institute: RISE Research Institutes of Sweden, www.ri.se

HIGH VOLTAGE REFERENCE DIVIDER



Project description

The large Hadron Collider at (CERN, was upgraded in 2014 with a new linear accelerator Linac4. Radio-frequency (RF) power requirements for the new accelerator translated into new requirements for the high-voltage measurements at the level of the klystron power supplies: Cathode and anode voltages are pulsed at -110 and -50 kV, respectively, with a repetition rate of 1.1 Hz. Voltage rise and fall times are in the range of 150 μ s, and pulse width is approximately 1700 μ s. The new reference system built by SP Technical Research Institute of Sweden proved to be able to calibrate the measurement of the flat-top voltage with an uncertainty of 0.05 %, thus ensuring that DUT performance requirement of 0.5 % could be fulfilled.

Since 2017 SP Technical Research Institute of Sweden is a part of Research Institutes of Sweden, RISE.

Team

RISE:

- Anders Bergman, Doctor, senior researcher in High-voltage Metrology
- Maria Hammarquist, Researcher in high-voltage metrology

CERN:

- M.C. Bastos, Calibration Specialist

Core deliverables

- Define the principle and modelling of the measurement system
- Purchase components
- Building a complete measuring system incl software
- Characterise the measuring system in-house at RISE 's high voltage lab
- Deliver and perform final calibration of reference system at CERN

Year

2009–2010

Total budget

EUR 55,000

Collaboration(s)

- RISE
- CERN

Hyperlink(s)

<https://ieeexplore.ieee.org/document/5682402>



Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets

CERN

Coordinating university: Chalmers University of Technology, www.chalmers.se



CHALMERS

ON INTEGRITY ASSESSMENT OF IGBT-BASED POWER STACKS USED IN MAGNET POWER SUPPLIES FOR PARTICLE ACCELERATORS

Project description

The aim of this research project was to prevent malfunctions and downtime of particle accelerators at CERN caused by failures of power electronic converters. Thousands of power electronic converters are used at CERN to supply electromagnets with current. A critical requirement is the long lifetime of at least 20 years. A failure of a power electronic converter may have a detrimental impact to the conduction of experiments and the operating cost. A method was proposed to detect the aging due to thermal stressing of the Insulated Gate Bipolar Transistor (IGBT) that is widely used in new converters' generations at CERN. This method for the IGBTs' health evaluation is applied during the converters' testing phase and during scheduled service stops.

Team

Chalmers University of Technology

- Torbjörn Thiringer, Professor
- Massimo Bongiorno, Professor

CERN

- Panagiotis Asimakopoulos, Dr, Power Electronics Engineer at Technology Department
- Konstantinos Papastergiou, Dr, Power Electronics Engineer at Technology Department
- Gilles Le Godec, Section Leader of the Medium Power Converters section

Core deliverables

- A method for the health assessment of IGBT-based power electronic converters.
- A measuring system for the application of the method.
- Power converter control strategies for thermal stressing mitigation of the IGBT switches to prolong their lifetime.

Industry involvement

ABB semiconductors, Lenzburg, offered uncovered IGBT modules to facilitate thermal measurements.

Year

2014-2018

Total budget

EUR 220,000

Collaboration(s)

Chalmers University of Technology



Procurement code(s)

Electrical engineering and magnets

CERN

Coordinating university: Uppsala University, www.uu.se

QUENCH STUDY AND RF CHARACTERIZATION OF CRAB CAVITIES

UPPSALA
UNIVERSITET

Project description

The High Luminosity LHC (HL-LHC) is an upgrade of the LHC to achieve instantaneous luminosities a factor of five larger than the LHC nominal value, thereby enabling the experiments to enlarge their data sample by one order of magnitude compared with the LHC baseline programme. The HL-LHC will rely on a number of key innovative technologies, including cutting-edge compact superconducting crab cavities with ultra-precise phase control for beam rotation.

The FREIA Laboratory will be responsible for studying the quench characteristics at full RF power of a string of two crab cavities in a horizontal cryostat. In addition the FREIA laboratory shall study the RF characteristics of several other crab cavities at low RF power in a vertical cryostat.

Core deliverables

- Test system integration and commissioning
- High and low power RF generator and LLRF control
- Electronic acquisition hardware
- Data analysis

Year

2016–2020

Total budget

EUR 2 million

Hyperlink(s)

<http://hilumilhc.web.cern.ch/>

Team

Uppsala University:

- Roger Ruber, Docent, accelerator systems
- Han Li, Doctor, superconducting cavities

Procurement code(s)

Electronics and radio frequency
Information technology
Particle and photon detectors

CERN

Coordinating university: Uppsala University, www.uu.se

SILICON DETECTOR MODULES FOR ATLAS EXPERIMENT

UPPSALA
UNIVERSITET

Project description

Production of ~1000 silicon semiconductor detector modules/hybrids in Sweden. A module consist of silicon strip sensors readout electronics and data transmission. The sensor module is assembled with high precision (<10 micrometer) using UV and chemical curing glue. Electronics is wire bonded to sensor and readout with 25 micrometer wires. Each module has in total about 4000 wire connections.

The Swedish production is an in-kind contribution to an international collaboration with several partners. The Scandinavian contribution is done together with groups from Denmark and Norway. The assembly and testing is done in clean room facilities. The work is done in collaboration between industry and academia.

Expertise and production tooling is produced by university. Assembly of modules are done in industry. Wire bonding both in industry and university. Testing done at university.

Team

Uppsala University:

- Richard Brenner, Professor specialist in: particle physics instrumentation
- Lars-Erik Lindquist, Maintenance superintendent, specialist in micro-mechanics and micro-electronics, Department of Physics and Astronomy, high energy physics

Lund University, :

- Geoffrey Mullier. Postdoc at particle physics specialist in particle physics instrumentation, Faculty of Engineering

NOTE

- Johnny Goncalves, Senior technical project manager, specialist in microelectronics production

Core deliverables

Silicon detector modules

Year

2017-

Total budget

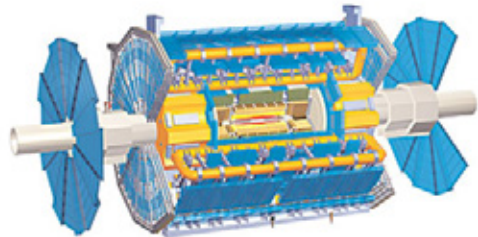
EUR 2 million

Industry involvement

NOTE

Collaboration(s)

- Uppsala University
- Lund University
- Note



Procurement code(s)

Electronics and radio frequency

CERN

Coordinating university: Uppsala University, www.uu.se

TESTING OF SUPERCONDUCTING ORBIT CORRECTOR DIPOLE MAGNETS

UPPSALA
UNIVERSITET

Project description

Between 2023-2024, the LHC will be upgraded to increase the beam luminosity by a factor of five. Many new magnets will have to be installed. Before going to the tunnel, each magnet must be trained. The training consists of powering the superconducting magnet to an ultimate current which corresponds to 110% of the nominal current. To save space, magnets consist of two perpendicularly and coaxially arranged dipole coils. FREIA's task is to train single aperture superconducting dipoles with a length of 2.5 and 1.5 m and an internal magnetic field of 2.5 and 4.5 T.m. They will be tested in the new vertical cryostat currently being installed at FREIA.

Team

Uppsala University, FREIA:

- K  vin Pepitone, Research Engineer, Department of Physics and Astronomy
- Roger Ruber, Researcher, Department of Physics and Astronomy

Core deliverables

- Training superconducting orbit corrector dipoles to the ultimate current
- Ramp rate test studies
- Thermal cycle and memory verification
- Simultaneous powering of vertical and horizontal coils

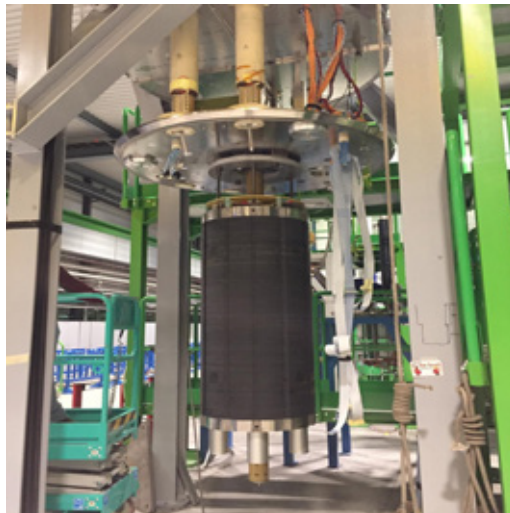
Year

2018-

Total budget

EUR 2 million

Hyperlink(s)

<https://espace.cern.ch/HiLumi/wp3/>

Procurement code(s)

Electrical engineering and magnets

Electronics and radio frequency

Mechanical engineering and raw materials

Vacuum and low temperature

CERNCoordinating university: Mid Sweden University, www.miun.se**THE MEDIPIX COLLABORATION****Project description**

The MEDIPIX collaboration, coordinated by CERN, is developing readout electronics for single photon processing pixel detectors. The objective is to make detectors for spectral X-ray imaging as well as for particle tracking. Applications outside of high-energy physics can for example be found in medical imaging and material science. Current resolution is in the keV and ns range.

Team

Mid Sweden University:

- Christer Fröjd, Professor, radiation detection and imaging
- David Krapohl, Doctor, radiation detection and imaging
- Göran Thungström, Docent, semiconductor and radiation physics
- Börje Norlin, Doctor, spectral X-ray imaging

Core deliverables

- Detector electronics and readout systems
- Sensors for different types of radiation
- Theory for spectral imaging and tracking

Year

1999–

Hyperlink(s)www.cern.ch/MEDIPIX

Mittuniversitetet
MID SWEDEN UNIVERSITY

Procurement code(s)

Civil engineering, building and technical services
Information technology
Particle and photon detectors
Optics and photons
Health, safety and environment

CERNCoordinating university: Lund University, www.lu.se**UPGRADE OF THE ALICE TPC,
THE GEM UPGRADE, STEP 2****Project description**

Project description

The exploratory phase of Quark Gluon Plasma Studies with nuclear collisions at LHC is over and focused studies on specific aspects can commence with an upgraded detector with about 100 times higher sensitivity than the baseline ALICE. Step 1 of the upgrade was made in 2015 resulting in a factor 3 larger data rate which allowed to finish the science program planned for the baseline detector 6 years earlier and to take the large upgrade step with another factor 30 increase in sensitivity to be installed 2019-2020. This involves a major change in the TPC detector technology and all readout electronics has to be replaced. All functionality of a readout chain both analog and digital is now in the same 32 channel ASIC named SAMPA. All circuit boards are new and the readout architecture is changed to have 10000 bidirectional optical links operating at 4.8Gbit/s. Lund University is involved in the SAMPA development and performs robotic testing and calibration of 90000 SAMPA chips for the final circuit board production (which has just started in the US).

Team

Lund University, Physics Department:

- David Silvermyr, Doctor, Associate Professor, Physicist, detector expert, project leader, software development
- Anders Oskarsson, Professor, Physicist, detector expert, project leader
- Lennart Österman, Research Engineer, electronics, electronics design, CAD, quality assurance robotics and automation expert
- Ulf Mjörnmark, Doctor, Research Engineer, software and data acquisition expert

Core deliverables

- Characterization and evaluation of SAMPA chip prototypes.
- Robotic testing and calibration of 90 000 SAMPA chips.
- Installation and commissioning in ALICE.

Year

2014–2020

Total budget

EUR 450,000

Collaboration(s)

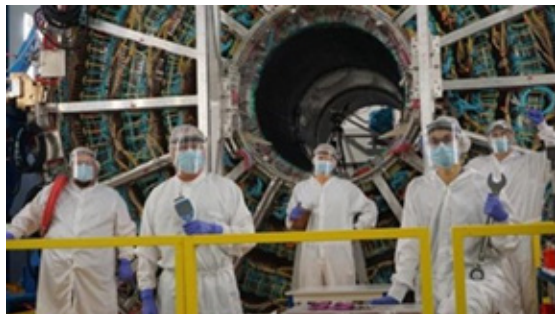
- Lund University
- Bergen University
- Oslo University
- Sao Paolo University
- Knoxville University
- Houston University
- Orsay University
- CERN
- GSI
- Oak Ridge National Laboratory
- Saclay

Hyperlink(s)

<http://alice-collaboration.web.cern.ch/>
www.youtube.com/watch?v=3tnqPbMWzqQ&feature=youtu.be



LUND UNIVERSITET

**Procurement code(s)**

Electronics and radio frequency
 Particle and photon detectors

CERN

Coordinating university: Lund University, www.lu.se

UPGRADE OF THE ALICE TPC DETECTOR, RCU2 STEP



LUNDS UNIVERSITET

Project description

Experiments in high energy physics run for several decades. Electronic components of higher performance become available over time. This motivated an upgrade of the readout electronics of the TPC detector in ALICE improving the data collection rate by a factor of 3. The figure shows reconstructed tracks in the TPC which produces huge data volumes. A science program expected to take 9 years could thus be finished in 2018 after 3 years, which translates to a saving of 600 person years just in operation of the experiment, not counting the 1000 collaborators who can complete their studies much earlier. The modernization involved new Field Programmable Gate Arrays (FPGA) for data collection which were replaced by the latest version and the readout architecture was made more parallel. The changes included massive firmware engineering and circuit board design/fabrication.

Team

Lund University:

- Anders Oskarsson, Professor, physicist, project leader, detector expert
- Lennart Österman, Research engineer, electronics lead engineer, specification, quality control, electronics design
- Mohammad Khorramnejadi, CAD engineer. PCB layout

Core deliverables

Halogen free circuit boards housing the 40 bit wide data bus for data readout.

Industry involvement

- Cervitrol
- MEPCB

Year

2013–2015

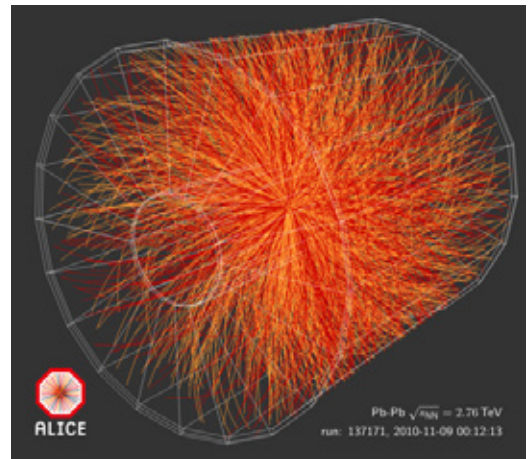
Total budget

EUR 220,000

Collaboration(s)

- Lund University
- Bergen Technical High School
- KFI
- GSI
- CERN

Hyperlink(s)

<http://alice-collaboration.web.cern.ch/>


277

Procurement code(s)

Electronics and radio frequency
Particle and photon detectors

DESY

**DESY**

Coordinating university: Lund University, www.lu.se

HANSEATIC LEAGUE OF SCIENCE (HALOS)

LUNDS UNIVERSITET

Project description

By bringing new life science users together with researchers from the large regional photon and neutron infrastructures HALOS facilitates the development of new measurement methods and instrumentation. For example the ongoing development of X-ray fluorescence imaging applications in tissue imaging and time-resolved crystallography to study protein mechanisms at PETRA III. HALOS also aims to connect with the The Helmholtz-Lund International graduate School (HELIOS) project, to further enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Year

2019-2022

Team

Includes among others

- Kajsa Paulsson, PhD, Lund University, Faculty of Medicine
- Michael Gajhede, Professor, UCPH
- Arwen Pearson, Professor, UHH
- Marite Cardenas, Professor, Malmö University
- Anders Bjorholm Dahl, Professor, DTU

Core deliverables

HALOS will build a unique collaboration between Hamburg and South-West Scandinavia, bring together the four unique research facilities MAX IV, ESS, DESY and European XFEL, and create a centre for integrated, world-leading Life Science innovation and research. In the work package for Cross Border Research different activities are arranged such as seminars, webinars, workshops, summer/winter schools, match-making and not least funding of 6 month projects. The funding of 6 month projects is given to only projects with industry outreach plans and of high innovation potential. The work in the WP will result in increased awareness, competence development and increased use of large scale facilities in Life Science research and innovation. In the workpackage Regional Development the HALOS community in Hamburg and Southwest Scandinavia work to improve the conditions for using the large scale Research Infrastructures including

topics mobility, remote access, innovation and tech-transfer and science cities and develop joint key messages and strategies, bi- and multi-lateral agreements.

Industry involvement

Companies involved or selected for targeted out-reach activities include: ReceptorPharma, ImplexionPharma, Leo Pharma, Lundbeck, Avilex Pharma, Acesion Pharma, Borregaard, Colloidal Resources Competence, Axiom Insights, Thermofisher, Abbott, NIOM, Corticalis, Catalyst Biosciences.

Total budget

EUR 3.6 million

Collaboration(s)

- Lund University
- Universität Hamburg
- University of Copenhagen
- MAX IV
- ESS
- Malmö University
- Region Skåne
- DESY
- European XFEL
- City of Hamburg
- Technical University of Denmark
- Aarhus University
- Capital Region of Denmark
- Medicon Valley
- Alliance EMBL

Hyperlink(s)

www.halos.lu.se

Procurement code(s)

Electrical engineering and magnets
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature
Optics and photonics
Particle and photon detectors
Health, safety and environment

DESY

Coordinating university: KTH Royal Institute of Technology, www.kth.se

CENTRE FOR X-RAYS IN SWEDISH MATERIAL SCIENCE



Project description

The PETRA III Swedish Node is distinctive in its capability to obtain signals deep inside materials with high measurement time resolution. The PETRA III Swedish Node comprises i) the Swedish Material Science (s)MS) beamline at the PETRA III synchrotron in Hamburg and ii) the Center for X-rays in Swedish Material Science (CeXS). CeXS safeguards Swedish interests at PETRA III and acts as the academic host of the SMS beamline. CeXS activities include: i) raising awareness about research possibilities; ii) providing training and support about why, when and how to use high-energy x-rays; and, iii) disseminating results. A key contribution of CeXS is ensuring a use perspective is taken in decision making about ongoing operational developments and upgrade planning.

Team

Royal Institute of Technology, KTH

- Peter Hedström, Professor, Team leader, Department Materials Science and Engineering, Director of CeXS, specialist in high-energy x-rays for metals
- Linköping University
- Fredrik Eriksson, Professor, Department of Physics, Chemistry and Biology, Vice-Director of CeXS. Specialist in high-energy x-rays for thin films.
- CeXS
- Denise McCluskey, Manager of CeXS.

Core deliverables

- Events
- Training
- Reports

Industry involvement

Swedish companies are being engaged in projects using the facilities at PETRA III, DESY. Projects can be internal to the company or in collaboration with universities or research institutes.

Year

2019-2024

Total budget

EUR 100,000

Collaboration(s)

- CeXS is hosted at KTH Royal Institute of Technology
- CeXS is supported by Linköping University
- All Swedish universities are welcome to request information and support from CeXS

Hyperlink(s)

www.cexs.kth.se



Procurement code(s)

Civil engineering, building and technical services



LUNDS UNIVERSITET

DESY

Coordinating university: Lund University, www.lu.se

HELIOS

Project description

The Helmholtz-Lund International graduate School (HELIOS) on "Intelligent instrumentation for exploring matter at different time and length scales" connects major knowledge hubs in the Baltic Sea Region: Hamburg University, DESY, and Lund University. HELIOS started in early 2021 and includes scientists from Particle Physics, Molecular Physics, Nano(bio) Science, and Ultrafast Photon Science. The aim of HELIOS is to develop the instrumentation and data acquisition systems for the next generation of photon sources and particle accelerators, in collaboration with industrial partners that we will seek within Big Science Sweden. HELIOS also aims to connect with the Hanseatic League of Science (HALOS) project for life sciences, to enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Team

Lund University

- Mathieu Gisselbrecht, Associate professor, Physics
- Caterina Doglioni, Associate professor, Physics, Particle physics
- Anders Mikkelsen, Professor, Physics, NanoLund

Core deliverables

Individual projects investigate novel solutions for (e.g.):

- Real-time data acquisition and analysis
- Image processing techniques
- Feedback control loops
- On chips miniaturization using nanotechnology for biosensing

Year

2021-2026

Total budget

EUR 7.9 million

Collaboration(s)

University of Hamburg

Hyperlink(s)

<https://www.heliosgraduateschool.org>


Procurement code(s)

Electronics and radio frequency
Information technology
Vacuum and low temperature
Optics and photonics
Particle and photon detectors

DESY

Coordinating institute: Swerim AB Swedish Research Institute for Mining, Metallurgy and Materials), www.swerim.se



MASSDIFF: DEVELOPMENT OF POST-PROCESSING TOOLS FOR TIME-RESOLVED DATA

Project description

The project started with Vinnova funding based on industrial needs to analyze existing time-resolved diffraction experiments and continued with internal resources from Swerim.

Within the project, a program tool was developed for visualization and fitting of diffraction peaks. The tool can be used to convert data type, visualize, and inspect many data sets and perform quantitative analysis after performing peak fitting operations. The program enables single and multi-peak fitting using the internal engine, and LeBail/Pawly/Rietveld analysis by using Topas or Topas-Academic (and currently being developed for MAUD). The standalone version of the program is user-friendly and does not require any programming skills. For experienced users who need new functionalities or modification, the source code is also available. The program tool has continued to be developed and tested within several diffraction projects e.g. Vinnova-funded projects for data collected at different photon and neutron facilities as well as laboratory-based diffraction data.

Team

Swerim, Stainless steels & non-ferrous metals:

- Shirin Nouhi, Ph.D., Researcher
- Tuerdi Maimaitiyili, Ph.D., Researcher
- Johannes Brask, M.Sc., Researcher
- David Lindell, Ph.D., Group manager

Core deliverables

- Simple and user-friendly software package to visualize high number of diffraction data.
- Simple analysis using single/multiple peak fitting for residual stress and phase analysis.
- A simple interface to prepare and run more complex and comprehensive analysis of diffraction data e.g. Rietveld analysis.

Industry involvement

- Outokumpu, Alfa Laval

Year

2019-2020

Total budget

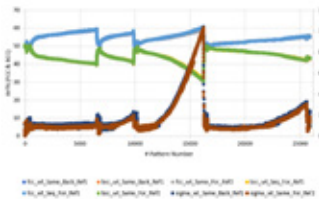
EUR 200,000

Collaboration(s)

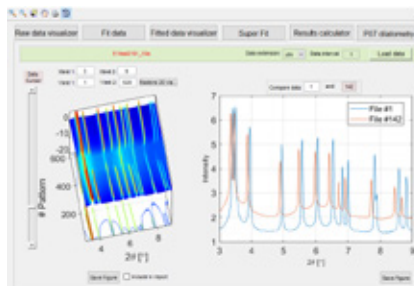
Data from P07 high energy material science beamline at PETRA III have been used.

Hyperlink(s)

- <https://www.vinnova.se/p/utveckling-av-programvara-for-efterbehandling-av-in-situ-difraktionsmatningar-i-metalliska-material/>
- <https://www.swerim.se/en/services/analyses-testing-studies/large-scale-facilities>



Phase quantity extracted from >25000 diffraction patterns after Rietveld analysis.



Screenshot from the developed toolbox: raw data visualisation window.

Procurement code(s)

Information technology

Mechanical engineering and raw materials



UPPSALA
UNIVERSITET

DESY

Coordinating university: Uppsala University, www.uu.se

MICRO ACCELERATOR STRUCTURE CENTER MAS IN UPPSALA

Project description

To meet new demands from accelerator physics strategies on the rise the Micro Accelerator Structure center (MAS) in Uppsala was founded. It will aid Big Science facilities around the world in constructing microfabricated devices utilizing e.g. lithography methods in clean room environments. The first collaboration for delivering such hardware are with DESY in Germany which currently are constructing a test accelerator setup, Sinbad where the centre will play a vital part in producing micro machined structures, sample holders, controllers and setups.

Team

Uppsala University:

- Mathias Hamberg, Researcher, Department of Physics and Astronomy, FREIA
- Mikael Karlsson, Senior Lecturer, Department of Engineering Sciences, Applied Materials Science
- Pontus Forsberg, Researcher, Department of Engineering Sciences, Applied Materials Science
- Anders Rydberg, Professor at Department of Engineering Sciences, Solid State Electronics

DESY:

- Ulrich Dorda

Core deliverables

- Micro fabricated structures of various nature
- Sample mounts
- Test and evaluation setup
- Laser routing system
- Vacuum chamber design
- Hexapod implementation
- PLC control systems design
- Design of system
- Fabrication in Cleanroom environment
- Installation of setup
- Tests and Improvements

Year

2015-2025

Total budget

EUR 1 million

Collaboration(s)

- Uppsala University
- FAU
- PECS
- DESY Research Centre



Procurement code(s)

Electronics and radio frequency
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature
Particle and photon detectors
Optics and photons

EISCAT

EISCAT

Coordinating University: Luleå University of Technology, www.ltu.se

EISCAT 3D DESIGN OF ANTENNA ELEMENTS**Project description**

EISCAT 3D is a radar system that will consist of five phased-array antenna fields located in the northernmost areas of Finland, Norway and Sweden. It will be operated by EISCAT Scientific Association. LTU also worked on possible configurations of the antenna array with respect to the hardware and electromagnetic properties. The work also led to electrical and mechanical front end design, and included an investigation of timing solutions and antenna calibration methods.

Team

Luleå Technical University, Industrial Electronics:

- Jonny Johansson, Associate Professor
- Johan Borg, Senior lecturer
- Gunnar Isaksson, Research engineer
- Tore Lindgren, Research assistant

Core deliverables

- Antenna element specifications
- Antenna array configurations
- Front end electronics
- Antenna timing and calibration

Industry involvement

- National Instruments
- WSI
- Gäddede Elektronik
- Gelab
- Microbit

Year

2010–2014

Total budget

EUR 1 million



EISCAT 3D test array on the EISCAT site in Tromsø.
Photo: Craig Heinselman Heinselman

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Information technology

ESO

Coordinating university: Chalmers University of Technology, www.chalmers.se

ALMA BAND5 RECEIVERS

Project description

The ALMA (Atacama Large Millimeter/Submillimeter Array) Observatory is the world's largest radio-astronomy observatory consisting of 66 radio telescopes, with a 12-metre diameter, working as an interferometer with largest baseline of 16 km. All telescopes are placed at approximately 5000 m altitude, at Chajnantto Plato in the Chilean Andes. For optimal performance of the observatory, each telescope is equipped with an identical receiver system with ultimate sensitivity. To meet the expectations of the astronomers, especially in their search for water in the universe and understanding of the origins of life in the Solar system, the consortium led by the Chalmers Group of Advanced Receiver Development, developed and deployed the most sensitive radio-astronomy receiver system operating between 158 and 211 GHz also known as ALMA Band 5. The Band 5 receivers operate at cryogenic temperatures of around 4 K using superconducting components as well as advanced circuits and systems, resulting in a sensitivity close to the quantum limit (35 K, SSB noise temperature). The Band 5 receiver has the lowest noise temperature out of all other ALMA bands to date.

Team

Chalmers University of Technology, GARD, Onsala Space Observatory:

- V. Belitsky, Professor, Department of Space, Earth and Environment, advanced receiver development
- V. Desmaris, Associate Professor, Department of Space, Earth and Environment, advanced receiver development
- A. Pavolotsky, Senior Research Engineer, Department of Space, Earth and Environment, advanced receiver development

Core deliverables

- 6 prototype receivers after Phase I (2012)
- 70 receivers + 10 spares after Phase II (2018)

Year

2006-2018

Total budget

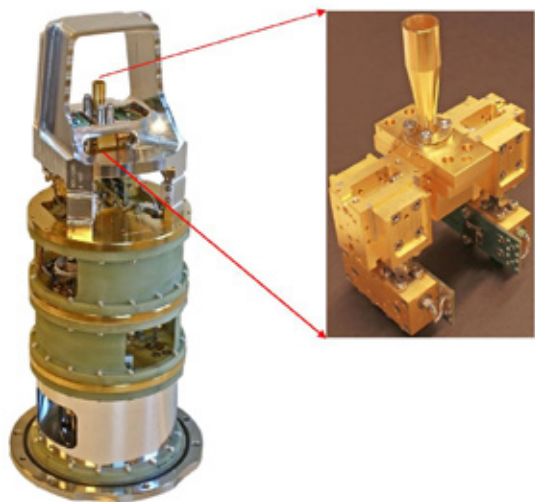
EUR 10.7 million

Collaboration(s)

- Chalmers University of Technology
- Netherlands Research School for Astronomy, (NOVA),
- National Radio Astronomy Observatory,
- European Southern Observatory (ESO)

Hyperlink(s)

<https://www.aanda.org/articles/aa/abs/2018/03/aa31883-17/aa31883-17.html>



Procurement code(s)

Electronics and radio frequency

ESO

Coordinating university: Uppsala University, www.uu.se

EXTREMELY LARGE TELESCOPE INSTRUMENTATION: HIRES AND MOSAIC



UPPSALA
UNIVERSITET

Project description

The 39m ELT will be the largest astronomical telescope ever built. For spectroscopic analysis, the light collected by the ELT will be carried by optical fibers to the spectrometers called HIRES and MOSAIC. Three major Swedish universities (Lund, Stockholm and Uppsala) take active parts in design and construction of these instruments. The coupling of fibers with other optical elements is crucial for efficiency and stability. The new instruments will measure the values of fundamental physical constants back in time, the expansion rate of the Universe etc. They will also search for atmospheres around Earth, -such as exoplanets, and make chemical analysis in order to detect signatures of life.

The project also involved the development of a unique technology for CO₂ laser fusion of fiber cores with other optical components that matches high requirements of astronomical instrumentation and repeatedly delivers excellent quality.

Team

Uppsala University:

Nikolai Piskunov, professor, specialist in stars and exoplanets, astronomical spectroscopy

Core deliverables

- For HIRES: 32 optical bundles with 64 or 96 fibers each coupled to microlens arrays on both sides.
- For MOSAIC: 2000 bundles with 7 fibers each coupled to re-imaging optics on one side and to image slicer on the other.

Year

2018-2027

Total budget

EUR 4.5 million

Industry involvement

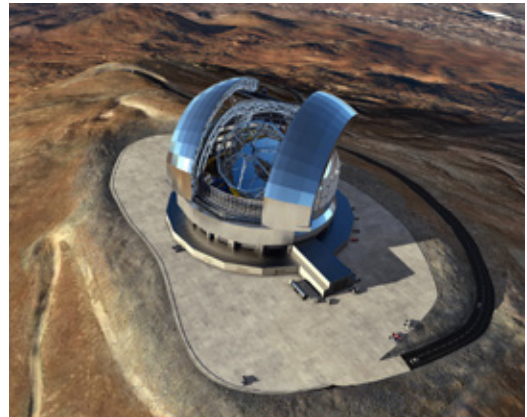
- Nyfors
- ELT instruments

Collaboration(s)

- Uppsala University
- Stockholm University
- Lund University

Hyperlink(s)

<http://www.arcetri.astro.it/~hires>



Procurement code(s)

Information technology
Mechanical engineering and raw materials
Optics and photons

ESS

289

ESS

Coordinating university: Chalmers University of Technology,

A NEW METHOD TO MODEL THE DYNAMIC STRUCTURE FACTOR BY MOLECULAR DYNAMICS SIMULATIONS

Project description

In this collaborative project between Chalmers, ESS, ISIS and the Niels Bohr Institute we aimed to overcome the difficulty to interpret and understand inelastic and quasielastic neutron scattering data (information about molecular and atomic motions) by developing a new computer modelling method to model the dynamic structure factor, $S(Q, \omega)$. The method is a dynamical correspondence to the Empirical Potential Structure Refinement (EPSR) method used to produce structural models of materials in quantitative agreement with neutron and x-ray diffraction data. The developed tool is a computer-based simulation tool that can then model the dynamic data (how atoms and molecules move) from neutron scattering by refining the model potentials in a molecular dynamics simulation until the simulation can reproduce the experimentally measured data.

Core deliverables

- A software package for modelling the dynamics of basically all types of molecular systems.
- New computer modelling method to model the dynamic structure factor, $S(Q, \omega)$, by molecular dynamics (MD) simulations.
- The computer simulation community get a unique possibility to refine their interatomic model potentials (or force-fields) for ordinary MC and MD simulations.
- This method provides new possibilities to interpret and understand inelastic and quasielastic neutron scattering data.

Year

2017-2022

Total budget

EUR 850,000

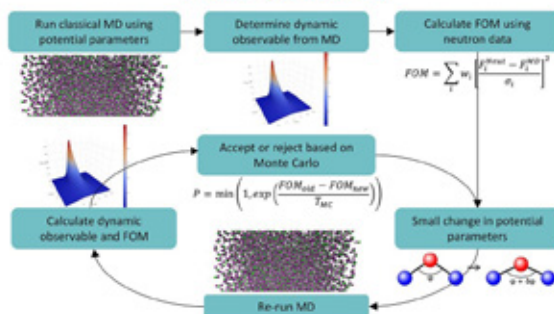
Team

- Jan Swenson, Professor, Chalmers University of Technology, Department of Physics
- Heloisa Bordallo, Associate professor, Niels Bohr Institute, Condensed Matter Physics
- Anders Markvardsen, Researcher, ISIS Neutron and Muon Source, STFC
- Thomas Holm Rod, Researcher, European Spallation Source

Collaboration(s)

- Chalmers University of Technology
- Niels Bohr Institute
- ISIS Neutron and Muon Source
- European Spallation Source

The Algorithm



Procurement code(s)

Information technology

ESSCoordinating university: Uppsala University, www.uu.seUPPSALA
UNIVERSITET**ACCEPTANCE TESTS OF CRYO-MODULES****Project description**

A part of the linear accelerator for the European Spallation Source being built in Lund will contain thirteen cryo-modules that host two superconducting spoke cavities each. Before lowering them into the tunnel for the final assembly, they need to be fully tested and validated under cryogenic conditions and at high power to ensure they will meet the requirements once they are in operation.

Team

Uppsala University:

- R. Santiago Kern, Research engineer, cryogenics and vacuum
- Han Li, Researcher, radio-frequency and cavity testing
- Rolf Wedberg, Research engineer, radio-frequency power amplifiers
- Roger Ruber, Researcher, project leader

Core deliverables

- Definition of a test plan
- Procedure for formal acceptance of a cryo-module
- Mechanical, electrical and vacuum checks of each cryo-module after arrival
- Cryogenic cooldown
- High power radio-frequency tests
- Radiation monitoring
- All pertaining documentation such as test reports

Year

2018–2020

Total budget

EUR 5 million

Hyperlink(s)<https://europeanspallationsource.se/accelerator>**Procurement code(s)**

Civil engineering, building and technical services

Electrical engineering and magnets

Electronics and radio frequency

Information technology

Mechanical engineering and raw materials

Vacuum and low temperature

Particle and photon detectors

Gases, chemicals, waste collection and radiation equipment

Health, safety and environment

ESS

Coordinating university: Chalmers University of Technology, www.chalmers.se

ANALYSIS TOOLS FOR ANALYSIS OF IN-SITU TIME-RESOLVED NEUTRON DIFFRACTION



Project description

The unprecedented neutron flux at the engineering diffractometer BEER at ESS will enable in-situ diffraction to be performed during thermomechanical loading approaching industrial processes and/or service conditions. In order to fully exploit this possibility, computational tools capable of reverse modelling of competing deformation mechanisms in complex materials are required. Such models are not publicly available. The project will develop and implement a state-of-the-art elastic-viscoplastic self-consistent (EVPSC) crystal plasticity model for analysis and prediction of grain scale response in complex engineering materials during conditions of simultaneously varying load and temperature. In a separate project, this will be made publicly available as a user friendly web application through the ESS data management center. Notably, the models are equally applicable for experiments carried out at constant wavelength neutron sources and monochromatic or energy dispersive X-ray diffraction stations at synchrotrons.

Core deliverables

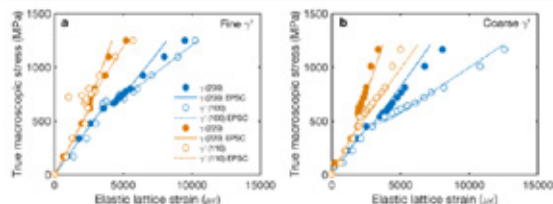
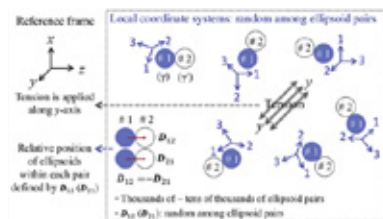
Development and implementation of a finite strain elastic-viscoplastic self-consistent crystal plasticity model for temperature dependent simulation of multiphase materials with or without crystallographic relationships and lattice coherency, including optimization engine for calibration against in-situ neutron scattering data.

Year

2017–2019

Total budget

EUR 200,000



Team

Chalmers University of Technology:

- Magnus Hörnqvist Colliander, Docent, senior researcher, Department of Physics
- Hongjia Li, Doctor, Postdoc
- Magnus Ekh, Professor, Industrial and Materials Sciences
- Fredrik Larsson, Professor, Industrial and Materials Sciences

Procurement code(s)

Information technology

ESS

Coordinating university: Lund University, www.lu.se

AUTONOMOUS RADIATION MAPPING



LUNDS UNIVERSITET

Project description

During commissioning, operation and decommissioning of nuclear power plants, particle accelerators and industries dealing with radioactive materials, there is a need to monitor radiation levels and isotope composition over large swathes of land surrounding the facilities. Ideally, this would be done regularly by an automated system which we are developing.

Year

2019-

Team

Lund University, Faculty of Engineering

- Emil Rofors, Postgraduate, Department of Physics
- Rolf Johansson, Professor, Department of Automatic Control
- Anders Robertsson, Team leader, Professor, Department of Automatic Control
- Marcus Greiff, Doctoral student, Department of Automatic Control
- Rikard Tyllström, Lecturer in Aeronautical Sciences, TFHS
- Christopher Rääf, Professor, Department of Translational Medicine

Core deliverables

- Autonomous Radiation Mapping
- Isotope Composition Identification
- Mobile Gamma Spectroscopy

Industry involvement

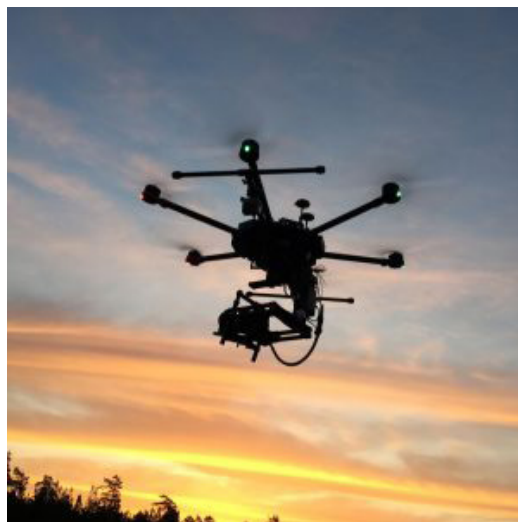
- Barsebäck Nuclear Power Plant
- European Spallation Source

Total budget

EUR 200,000

Hyperlink(s)

<http://uav.lu.se>



Procurement code(s)

Electrical engineering and magnets
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment

ESS

Coordinating university: Mid Sweden University, www.miun.se

BRIGHTNESS

Project description

BrightnESS is a large infrastructure project within HORIZON2020. Part of the project concerned addressing the resolution challenge. In this activity, we developed neutron detectors based on MEIXPIX-type readout electronics using silicon sensors coated with a suitable neutron converter. Resolutions below 100 μm can then be achieved.

Team

Mid Sweden University:

- Christer Fröjd, Professor, radiation detection and imaging
- David Krapohl, Doctor, radiation detection and imaging

Core deliverables

Pixel detectors for high resolution neutron imaging.

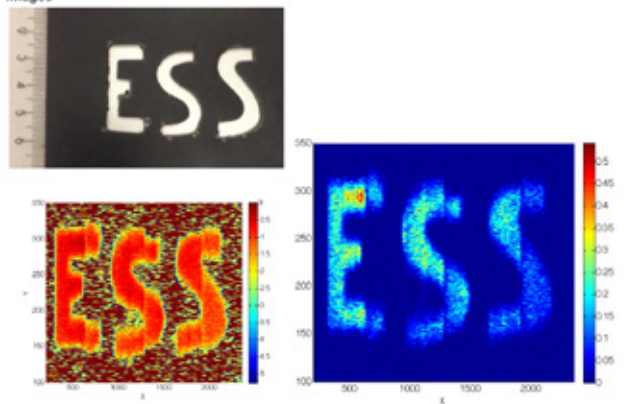
Year

2016–2019



Mittuniversitetet
MID SWEDEN UNIVERSITY

Images



Procurement code(s)

Information technology

Particle and photon detectors

ESS

Coordinating university: Lund University, www.lu.se

COST-EFFECTIVE AND VERSATILE TESTBED FOR NOVEL NEUTRON DETECTORS



LUNDS UNIVERSITET

Project description

ESS aspires to be the world's brightest neutron source. With this ambition comes the need for novel, highly sophisticated instrumentation able to handle record-breaking neutron fluxes. Such development, however, requires frequent and affordable access to neutrons.

This need is addressed by the Source Testing Facility (s)TF at Lund University. Operated by the SONNIG group, the STF is a fully functioning user facility. It boasts a complete range of gamma-ray and neutron sources and is equipped with advanced nuclear physics infrastructure for characterizations of detectors. As there are no reactors or accelerators involved, the STF provides a round-the-clock available locale for prototype development and commissioning to its ESS users.

Team

Lund University, Division of Nuclear Physics:

- Kevin Fissum, Doctor, senior lecturer in nuclear physics
- Francesco Messi, Doctor, researcher in neutron instrumentation
- Hanno Perrey, Doctor, researcher in neutron metrology

Core deliverables

- Provide laboratory space
- Design and construction of the facility
- Purchasing of equipment
- Commissioning of infrastructure
- User support

Year

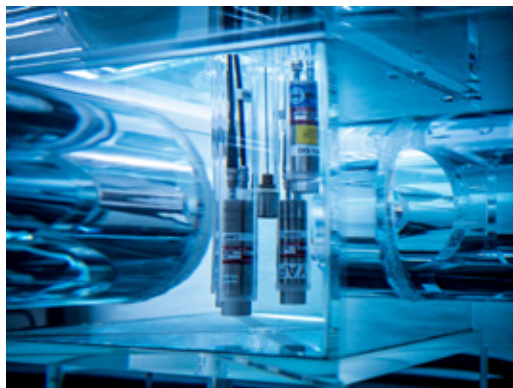
2015–

Total budget

EUR 400,000

Hyperlink(s)

www.nuclear.lu.se/forskning/neutronfysik



Procurement code(s)

Civil engineering, building and technical services
Information technology
Particle and photon detectors
Optics and photons
Gases, chemicals, waste collection and radiation equipment

ESS

Coordinating university: Uppsala University, www.uu.se

DESIGN STUDY OF ACCUMULATOR RING

Project description

An EU/H2020 supported Design Study is being carried out with the objective to use the powerful ESS linear accelerator to generate a very intense neutrino beam, for the study of neutrino oscillations using a very large underground water Cherenkov neutrino detector. For this a ca 400 m circumference accumulator ring will be needed, with the purpose to compress the ESS linac pulse from 3 ms to 1.3 microsecond duration. The FREIA laboratory is leading the work to design this ring, which will contain magnets, vacuum chambers, collimators and other beam transport equipment. The design work, which will be based on computer simulations, is made particularly challenging by the exceptionally high beam charge to be stored in the accumulator ring.

Team

Uppsala University, Department of Physics and Astronomy, FREIA:

- Maja Olvegård, Researcher
- Tord Ekelöf, Project Manager
- Ye Zou, Postdoc

CERN:

- Elena Wildner
- Horst Schönauer

IPHC Strasbourg:

- Elia Bouquerel

Core deliverables

- Formulation of the ESSnuSB accumulator requirements
- Elaboration of the ESSnuSB accumulator design using different computer codes to simulate the performance iteratively
- Written report on the optimized ESSnuSB accumulator design

Potential industry involvement

Scanditronix

Year

2017–2021

Total budget

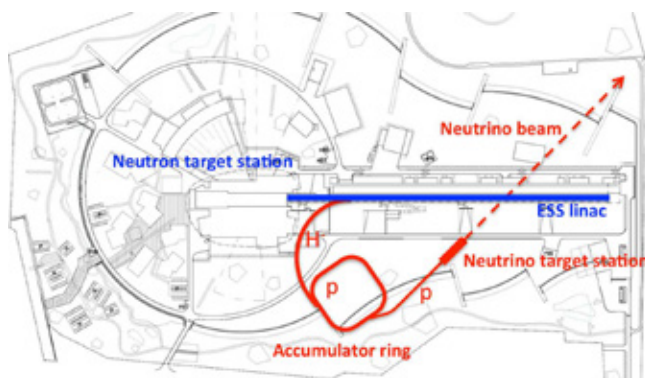
EUR 500,000

Hyperlink(s)

<http://essnusb.eu/site/wp3>



UPPSALA
UNIVERSITET



Procurement code(s)

Electrical engineering and magnets
Vacuum and low temperature
Particle and photon detectors

ESS

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

GRID AND APERTURE MONITOR ELECTRONICS



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Project description

The European Spallation Source (ESS) is generating neutrons by hitting a tungsten target with proton beam pulses. The energy of the pulses needs to be spread out in order not to destroy the target. This is done by a rastering system. Crucial components are the measurement devices used to make sure that the beam is spread out sufficiently and that it is still in the right place. The task of Lund University is to design the electronic part of these measurement systems, including the algorithms that analyze the position of the beam and reports the results to the ESS control and protection systems. This places high demand on accuracy and reliability on the system developed.

Team

Lund University: Faculty of Engineering:

- Anders J Johansson, Docent, RF and accelerator systems, communications engineering,
- Markus Törmänen, Docent, RF electronics, electrical engineering,
- Liang Liu, Docent, high speed signal processing, communications engineering

Core deliverables

- System design and requirement gathering
- Electronic acquisition hardware design
- High speed data analysis in FPGA hardware
- System integration and commissioning

Years

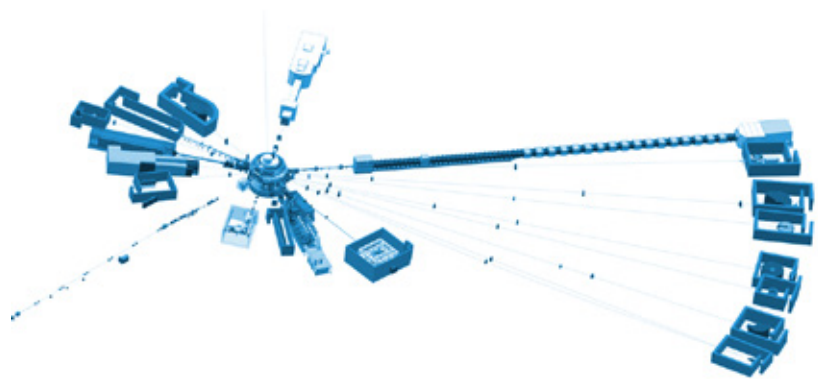
2018–

Total budget

EUR 130,000

Collaboration(s)

- Lund University
- ESS (ERIC)
- Institute of Modern Physics, China
- Japan Proton Accelerator Research Complex, Japan



Procurement code(s)

Electronics and radio frequency Information technology



LUNDS UNIVERSITET

ESS**Coordinating university: Lund University, www.lu.se****HANSEATIC LEAGUE OF SCIENCE (HALOS)****Project description**

By bringing new life science users together with researchers from the large regional photon and neutron infrastructures HALOS facilitates the development of new measurement methods and instrumentation. For example the ongoing development of X-ray fluorescence imaging applications in tissue imaging and time-resolved crystallography to study protein mechanisms at PETRA III. HALOS also aims to connect with the The Helmholtz-Lund International graduate School (HELIOS) project, to further enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Year

2019-2022

Team

Includes among others

- Kajsa Paulsson, PhD, Lund University, Faculty of Medicine
- Michael Gajhede, Professor, UCPH
- Arwen Pearson, Professor, UHH
- Marite Cardenas, Professor, Malmö University
- Anders Bjorholm Dahl, Professor, DTU

Core deliverables

HALOS will build a unique collaboration between Hamburg and South-West Scandinavia, bring together the four unique research facilities MAX IV, ESS, DESY and European XFEL, and create a centre for integrated, world-leading Life Science innovation and research. In the work package for Cross Border Research different activities are arranged such as seminars, webinars, workshops, summer/winter schools, match-making and not least funding of 6 month projects. The funding of 6 month projects is given to only projects with industry outreach plans and of high innovation potential. The work in the WP will result in increased awareness, competence development and increased use of large scale facilities in Life Science research and innovation.

In the workpackage Regional Development the HALOS community in Hamburg and Southwest Scandinavia work to improve the conditions for using the large scale Research Infrastructures

including topics mobility, remote access, innovation and tech-transfer and science cities and develop joint key messages and strategies, bi- and multi-lateral agreements.

Industry involvement

Companies involved or selected for targeted out-reach activities include: ReceptorPharma, ImplexionPharma, Leo Pharma, Lundbeck, Avilex Pharma, Acesion Pharma, Borregaard, Colloidal Resources Competence, Axiom Insights, Thermofisher, Abbott, NIOM, Corticalis, Catalyst Biosciences.

Total budget

EUR 3.6 million

Collaboration(s)

- Lund University
- Universität Hamburg
- University of Copenhagen
- MAX IV
- ESS
- Malmö University
- Region Skåne
- DESY
- European XFEL
- City of Hamburg
- Technical University of Denmark
- Aarhus University
- Capital Region of Denmark
- Medicon Valley
- Alliance EMBL

Hyperlink(s)www.halos.lu.se**Procurement code(s)**

Electrical engineering and magnets
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature
Optics and photonics
Particle and photon detectors
Health, safety and environment

ESS

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

HIGH POWER MODULATORS DESIGN FOR THE ESS LINAC



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Project description

Following the project for the development of the reduced scale modulator prototype, the Faculty of Engineering of Lund University (LTH) was a key partner in the design of the full scale modulator units on a build-to-print basis. A total quantity of 33 modulators will be required to power up the ESS accelerator to an average beam power of 5MW. Each modulator delivers very high quality pulsed power at 115kV/100A amplitude with pulse widths of 3.5ms and pulse repetition rates of 14Hz. Altogether, they will constitute a park with total installed pulse power of 380MW and will represent more than 300 ton of the worldwide most sophisticated power electronics. Other than pulse quality, the quality of the power consumed from the AC electrical network needed to comply with the relevant standards, in order to not disturb the whole electrical grid in Lund area. This feature was achieved thanks to the utilization of Active Front End devices in combination with a constant power capacitor charging scheme, a subsystem well researched previously by LTH for several industrial applications. Compactness, reliability and cost effectiveness were also very important advantages of the proposed topology and design. The complexity of their design and its unprecedented level of requirements put this development at the forefront of modulator developments at a worldwide scale and will be part of a new state of the art reference.

Team

Lund University, Faculty of Engineering

- Carlos A. Martins, Team leader, Senior lecturer, Industrial Electrical Engineering and Automation
- Max Collins, PhD student, Industrial Electrical Engineering and Automation
- Mats Alakula, Prof. and head of department, Industrial Electrical Engineering and Automation
- Getachew Darge, Research assistant, Industrial Electrical Engineering and Automation

Core deliverables

High Voltage power electronics expertise

- Magnetostatic and Electrostatic design of the High Voltage modules with Finite Element Analysis
- Global optimization studies of the complete modulator system in Matlab
- Simulation studies of the electrical circuits and control algorithms
- 3D CAD design of the complete modulator unit on a build-to-print basis. Development of control and Human Machine Interface software

Industry involvement

- LM Halvarsson Consulting AB, has delivered the complete 3D CAD mechanical design of the modulators on a build-to-print basis
- Loayza Dynamics AB, has delivered the complete software package for the modulator control and Human Machine Interface in Labview/CompactRIO NI environment

Year

2016-2020

Total budget

EUR 1.1 million



Procurement code(s)

Electrical engineering and magnets
Mechanical engineering and raw materials
Electronics and radio frequency

ESS

Coordinating university: Lund University, www.lu.se

HIGH-RATE READ-OUT ELECTRONICS AND DATA ACQUISITION SYSTEM



LUNDS UNIVERSITET

Project description

The novel neutron detectors developed for reflectometry at ESS require dedicated high-speed electronics as well as custom-made data-acquisition (DAQ) software to process and store the record-breaking amount of data produced at such instruments. The SONNIG group of Lund University, in collaboration with the Detector Group of ESS and the Data Management and Software Centre of ESS, have been assigned the task of designing and commissioning a high-performing DAQ system.

Lund University has delivered front-end electronics capable of high rates as well as a scalable and modular DAQ software to acquire and save data almost one thousand times faster than the state-of-the-art in the field.

Core deliverables

- Design, production and commissioning of electronics cards
- Conceptualization and implementation of software
- Providing development resources
- Integration and commissioning of complete systems

Year

2018

Total budget

EUR 500,000



Team

Lund University, Division of Nuclear Physics:

- Francesco Messi, Doctor, Researcher
- Hanno Perrey, Doctor, Researcher

ESS:

- Francesco Piscitelli, Doctor, Detector Scientist
- Niels Bohr Institute
- Troels Blum, Doctor, Researcher

Procurement code(s)

Electronics and radio frequency
Information technology

ESS

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

LOW-LEVEL RF SYSTEM**Project description**

We have designed and developed the low-level RF system for ESS, which is the system that controls the acceleration of the particles. It is a very sensitive process, which requires the highest precision in all parts of the design, both electronics and software. After an in-depth analysis of the requirements and the solutions used at other facilities, we designed a tailored solution for ESS. To fulfill all requirements, including availability, we required newly developed hardware. This was developed in collaboration with our partners in Poland, Germany and Spain, thanks to the in-kind form of the ESS project. During the whole process, the distributed development process has been coordinated by LU. Today the system is in production and will be installed in 2019.

Team

Lund University, Faculty of Engineering,

- Anders J Johansson, Docent, RF system design, LLRF systems
- Bo Bernhardsson, Professor, automation control
- Markus Törmänen, Docent, RF design
- Anders Svensson, M.Sc., RF electronics
- Olof Troäng, M.Sc., control for LLRF systems

Core deliverables

- System design
- Automatic control algorithms
- Test benches
- LLRF test systems
- Project coordination

Industry involvement

Struck

Years

2011-2019

Total budget

EUR 4 million

Collaboration(s)

- Lund University
- The Polish Electronics Group
- DESY
- ESS Bilbao



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Procurement code(s)

Electronics and radio frequency
Information technology

ESS

Coordinating university: University West, www.hv.se

LUMINESCENT COATINGS

Project description

ESS is the world's most powerful neutron source and acts as a giant microscope where neutrons are used to analyze samples at atomic and molecular levels. Simply described, 5 megawatt strong proton beams are shot at a very high speed on a target that looks like a rotating wheel. University West has been selected as an ESS partner to develop a luminescent coating that will light up when the strong proton beam hits the "target wheel" in the ESS facility. The coating is of crucial importance in order to be able to ensure and verify that the profile of the proton beam meets the target, and that the neutrons are delivered correctly to the instruments in the plant

Year

2017-

Total budget

EUR 200,000

Team

University West

- Professor Shrikant Joshi, Team leader, University West
- Research engineer Stefan Björklund

Core deliverables

- Development of Luminescent Coatings for critical parts of the ESS installation.
- Development of the thermal spray application of these coatings.
- Investigation of how the process might have an effect on material properties of the ESS parts.
- Coating the real parts.

Industry involvement

We have started to involve TSE AB (Thermal Spray Engineering AB, tse.se) since we have the goal together with ESS that the Company TSE would be the one to do the actual spray work on the real parts for ESS.



Procurement code(s)

Mechanical engineering and raw materials

ESS

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

MASTER OSCILLATOR FOR ESS

Project description

To work properly the European Spallation Source is dependent on accurate timing and synchronization. The accelerator is pulsed 14 times a second, and every part of the 600 meter machine must work in pico-second synchronization with the internal structure of the pulses. In addition, the target wheel and the scientific experimental stations must also be synchronized to the pulses. Lund University developed the timing strategy for ESS, and have designed the master oscillator that will drive all the different timing systems utilized. This includes a specially designed dielectric resonator housed in a cavity delivered by the local industry, and the electronic circuitry needed to run it and to distribute the signals to the facility.

Team

Lund University, Faculty of Engineering:

- Anders J Johansson, Docent, RF system design
- Anders Svensson, Master of science, RF electronics



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Core deliverables

- Design of master oscillator
- Prototype and tests

Industry involvement

Cervitrol

Year

2012-2018

Total budget

EUR 50,000



Procurement code(s)

Electronics and radio frequency

ESS

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

MODULATOR DESIGN AND DEVELOPMENT

Project description

ESS will be the world's most powerful neutron source. This source has at its heart a linear accelerator which fires protons at a tungsten target, producing the powerful neutron beam. The linear accelerator is fed, at the first stage of the powering chain, by 33 modulators which have to deliver, each one, 11,5 megawatts peak and 600 kilowatts average power, at a rate of 14 pulses per second. While this should be possible by scaling up standard technology, it quickly became clear that there was not enough budget and space. Furthermore, the impact of such huge amount of pulse power in the local electrical power network in Lund municipality would have been seriously affected by flicker and harmonic distortions.

The research group, led by Carlos Martins, performed critical work together with the power converter team at ESS, designing, testing and commissioning critical parts for the ESS modulator following a novel topology. The final engineered solution reduced budgeted costs of modulator components by 70% and the space requirements by 80%, while factors like reliability, the quality of both the output pulse and of the power absorbed from the electrical network reached unprecedented performance.

Team

Lund University, Faculty of Engineering:

- Carlos Martins, Senior lecturer, power converters high-voltage modulator design, Industrial electrical engineering and automation
- Mats Alaküla, Professor, power converters high-voltage modulator design, industrial electrical engineering and automation
- Max Collins, Doctoral student, Industrial electrical engineering and automation
- Avo Reinap, Assistant professor, power converters high-voltage modulator design, Industrial electrical engineering and automation

Core deliverables

- High voltage power electronics
- Power converters for physics applications
- New solid state high power modulator system design
- High voltage pulse transformer design
- Complete prototype system design and construction
- Test, commissioning and verification
- Full system design specifications, build-to-print instructions, procurement documentation, follow up of series production contract

Industry involvement

AQ Elautomatik, Herman Anderssons Plåt, Plåtmekano, Carlsson & Möller

Year

2013-2018

Total budget

EUR 1.2 million

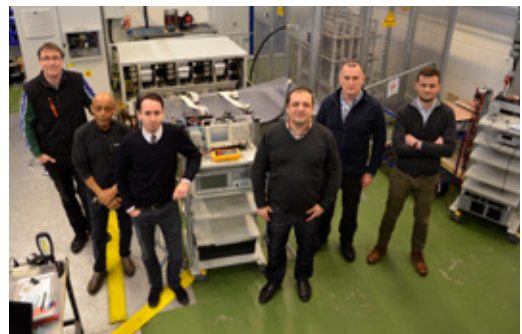
Hyperlink(s):

<https://europeanspallationsource.se/article/how-do-you-power-worlds-most-powerful-linacs>



LUNDS UNIVERSITET

Lunds Tekniska Högskola



Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials

ESS

Coordinating university: Lund University, www.lu.se

NEUTRON REFLECTOMETRY DETECTORS

Project description

ESS will be the most powerful neutron source in the world. The unprecedented neutron flux has made the development of new detector technology necessary. In particular, Neutron Reflectometry is facing a huge challenge: the required instantaneous rate capability is on the order of one thousand times higher than what current state-of-the-art detectors can achieve, and the spatial resolution needs to improve fourfold.

After three years of intense development, the Multi-Blade detector fulfills all the above requirements and has been accepted to be the detector used on the two reflectometry instruments built at ESS: ESTIA and FREIA.

Team

Lund University, Division of Nuclear Physics:

- Francesco Messi, Doctor, Researcher ESS:
- Francesco Piscitelli, Doctor, Detector Scientist University of Perugia:
- Giacomo Mauri, Master of Science



LUNDS UNIVERSITET

Core deliverables

Neutron detector for cold and thermal neutrons

Year

2016-2020

Total budget

EUR 400,000

Hyperlink(s)

- Journal of Instrumentation, vol. 13, no. 03, p. P05009, 2018. doi:10.1088/1748-0221/13/05/P05009
- Journal of Instrumentation, vol. 13, no. 03, p. P03004, 2018. doi:10.1088/1748-0221/13/03/P03004



Procurement code(s)

Particle and photon detectors

ESS

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

PHASE REFERENCE LINE

Project description

The linear accelerator at ESS is dependent on high precision synchronization between the different acceleration stages. The stages have to be within 0.1 degree of each other at 704 MHz, which equals sub-picoseconds accuracy. One important part of achieving this is to have a highly stable time, or in this case phase, reference distribution. This is done by a thermally controlled coaxial cable where we have designed the algorithms and thermal system that keeps it to within 0.1 degree Celsius for a length of 600 meters.

Team

Lund University, Faculty of Engineering:

- Bo Bernhardsson, Professor
- Björn Olofsson, Professor
- Pontus Andersson, Master of Science
- Rolf Johansson, Professor

ESS:

- Rihua Zeng

Core deliverables

- Design of thermal system
- Design of automatic control algorithms
- Test bench and tests

Industry involvement

- Eurotherm
- Beckhoff
- Pentronic AB
- KIMA

Years

2015-2017

Total budget

EUR 65,000



LUNDS UNIVERSITET
Lunds Tekniska Högskola



Procurement code(s)

Electronics and radio frequency

Mechanical engineering and raw materials

ESS

Coordinating university: Lund University, Faculty of Engineering, www.lth.se



LUNDS UNIVERSITET
Lunds Tekniska Högskola

REMOTE HANDLING WITHIN THE ACTIVE CELLS FACILITY AT THE EUROPEAN SPALLATION SOURCE, USING DIGITAL REALITY TECHNIQUES

Project description

This project aimed to show possibilities of using Digital Reality (Augmented Reality and Virtual Reality) techniques in the remote handling within the Active Cells Facility at the European Spallation Source. The remote handling within similar environments as the Active Cells Facility has normally been performed using radiation shielding windows. As the operations get more complex, and both Virtual Reality and Augmented Reality technologies get cheaper, more advanced, more robust, and easier to use, there is a growing interest in trying to apply these technologies for better control and monitoring within these environments. This project was set to test requirements on hardware and software these kinds of solutions would have, and which designs would be most promising as these technologies get better. Different ideas were explored by researching existing documentation and exploring existing solutions and products. Experiments on these ideas were conducted on different products that were commercially available at the time. Different solutions were tried using these products and were then evaluated using both informal and formal user tests. The results from these tests indicated that the application of Digital Reality techniques to the remote handling within the Active Cells Facility could indeed prove to be very useful. The Active Cells Facility at the European Spallation Source are now built without radiation shielding windows as a result of this project.

Team

Lund University

- Joakim Eriksson, Team leader, Research engineer, Head of VR lab
- Emil Boman, Student, Department of Design Science
- Lukas Smisovsky, Student, Department of Design Science
- Günter Alce, Reseracher, Ergonomics and Aerosol Technology

Core deliverables

Augmented Reality (AR) Virtual Reality (VR) replacing windows in Active Cell Facilities
Interface development

Year

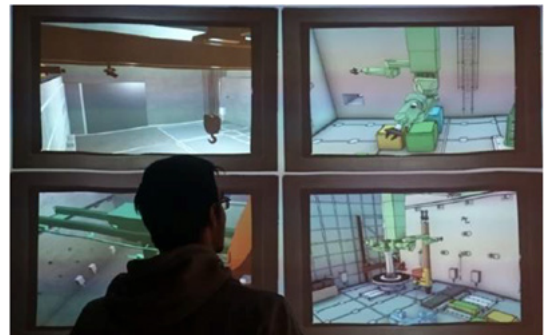
2016

Total budget

EUR 25,000

Hyperlink(s)

<http://lup.lub.lu.se/luur/>



Procurement code(s)

Information technology

ESS

Coordinating university: Chalmers University of Technology, www.chalmers.se

SAMPLE ENVIRONMENT FOR IN-SITU ULTRA-HIGH TEMPERATURE MECHANICAL TESTING



Project description

There is a large societal need for structural materials capable of withstanding temperatures in the ultra-high temperature (UHT) range, here defined as temperatures above 1100°C. Development of such materials poses significant scientific and technological challenges and in order to address these challenges, it is vital to understand the deformation mechanisms at the operating temperatures. The unprecedented neutron flux and intended detector combination at the engineering diffractometer BEER at ESS will provide a unique tool for this purpose. Within the project, a sample environment, in the form of a furnace adapted for mounting on the BEER stress rig, will be developed. The furnace will allow in-situ mechanical testing during neutron diffraction experiments to be performed at temperatures up to at least 1600°C, and will be a part of the standard sample environment pool for BEER.

Year

2017–2020

Total budget

EUR 940,000

Collaboration(s)

- Conceptual and detailed design of sample environment
- Manufacturing and testing of sample environment prototype
- Delivery of final hardware to BEER at ESS

Universities involved

- Chalmers University of Technology
- Linköping University
- KTH Royal Institute of Technology
- Nucelar Physics Institute Prague

Team

Chalmers University of Technology:

- Magnus Hörnqvist Colliander, Docent, senior researcher in physics

Linköping University:

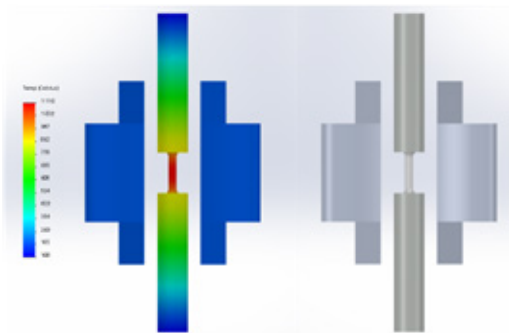
- Ru Lin Peng, Professor, Engineering Materials

KTH Royal Institute of Technology:

- Peter Hedström, Docent, Materials Science and Engineering

Nucelar Physics institute Prague:

- Premysl Beran, Doctor, Instrument Scientist at BEER at ESS



Procurement code(s)

Mechanical engineering and raw materials

ESS

Coordinating university: Uppsala University, www.uu.se

SOLID STATE POWER AMPLIFIER – DEVELOPMENT OF THE NEXT 400 KW POWER STATION FOR ESS



UPPSALA
UNIVERSITET

Project description

To ensure a continuous improvement of the operations at ESS in the long term and, to benefit from cutting edge technology, the FREIA laboratory at Uppsala University has undertaken the development of a Radio Frequency (RF) Solid State Power Amplifier (s)SPA station of 400 kW at 352 MHz. SSPA offers many advantages compared to vacuum tube technology, such as: (i) longer lifetime and longer mean time between failures (MTBF) considering more than 10 years operation 24/7, (ii) additional safety using much lower voltages i.e. 50 V v.s. 16 kV, (iii) additional redundancy in operation by combining many SSPAs, (iv) support from a mature and growing semiconductor industry while (v) vacuum tube manufacturers suffer from obsolescence and their number is continuously decreasing. The output power of SSPA modules is relatively low (i.e. 1 kW) and many SSPAs need to be combined in order to produce the peak power levels required. Power combination is key for enabling the economic viability of the system. In the same time, we develop adaptive control mechanisms to make hundreds of amplifier pulse in concert with optimal energy efficiency. ESS will operate 26 power stations, each of 400 kW peak power at 352 MHz.

Year

2017 - ongoing

Team

Uppsala University

- Dragos Dancila, Associate professor, Department of physics and astronomy
- Kristiaan Pelckmans, Associate professor, IT, Division of Systems and Control
- Anders Rydberg, Professor, Department of physics and astronomy, FREIA
- Alireza Kasaee, Postdoc, Department of physics and astronomy, FREIA
- Renbin Tong, Student, Department of Electrical Engineering, Solid state electronics

Core deliverables

Solid State power amplifier modules at kilowatt level and high power combiners development up to 400 kW and up to 300:1 combination ratio. Adaptive control procedure for up to 400 amplifiers optimization. Specific design for superconductive cavity particle accelerators. System design and specifications. High speed data analysis and control using FPGA. System integration and commissioning. High power testing bench and continuous development.

Industry involvement

- ESS, Sweden
- ESRF, France
- CERN, Switzerland
- GE Healthcare – collaboration on SSPA for cyclotrons
- Exir AB – waveguides and combiners
- Percyro AB – signal generators and adaptive control

Total budget

EUR 1 million



Procurement code(s)

Electronics and radio frequency
Electrical engineering and magnets
Information technology
Mechanical engineering and raw materials

ESS

TEST OF THE ESS HIGH VOLTAGE PULSE MODULATOR

Coordinating university: Uppsala University, www.uu.se

Project description

The high beta cavities of ESS use Klystrons as power sources. The klystrons are powered by HV modulators. We will work towards improving the overall reliability of the system.

Year

2017–

Total budget

EUR 1 million

Team

Uppsala University, FREIA:

- Rolf Wedberg, Research engineer, Department of Physics and Astronomy
- Dragos Dancila, Docent, Department of Engineering Sciences, Solid State Electronics
- Tord Peterson, Research engineer, Department of Physics and Astronomy
- Long Huang Duc, PhD student, Department of Engineering Sciences, Solid State Electronics
- Han Li, Researcher Department of Physics and Astronomy

Collaboration(s)

- Uppsala University
- Lund University

Core deliverables

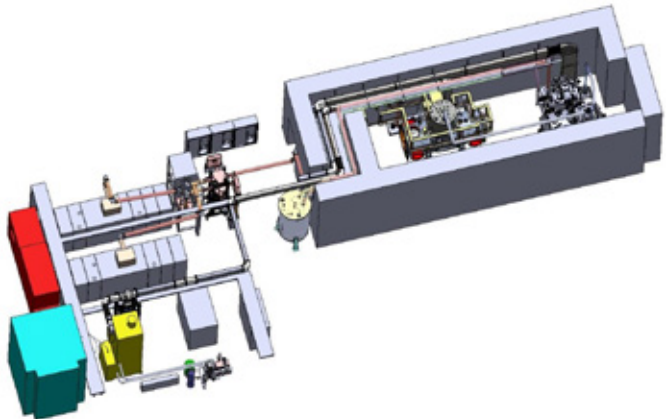
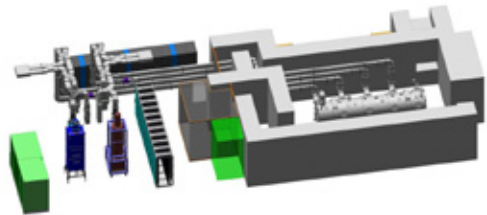
- System design
- System characterization

Industry involvement

Ampegon



UPPSALA
UNIVERSITET



Procurement code(s)

Electronics and radio frequency

ESS

Coordinating university: Lund University, www.lu.se

TEST OF THE FAST-NEUTRON ATTENUATION OF NOVEL SHIELDING MATERIALS



LUNDS UNIVERSITET

Project description

The process of neutron creation at ESS results in an intensive radiation field consisting of many different types of particles. Therefore, effective shielding is absolutely essential at such facilities for both radiation safety and for minimizing unwanted background noise in the scientific instruments.

Specialized bulk shielding concretes have been developed at ESS for this purpose. The materials were then tested at the Source Testing Facility at Lund University. The specialized infrastructure present there allowed to characterize the energy-dependent attenuation of fast neutrons by the different concretes as well as by reference samples. The results were then used to successfully validate simulations of the materials.

Team

Lund University, Division of Nuclear Physics:

- Kevin Fissum, Doctor, Senior Lecturer in Nuclear Physics
- Hanno Perrey, Doctor, Researcher in Neutron Metrology

ESS:

- Douglas DiJulio, Doctor, Radiation Physicist

Core deliverables

- Design and tuning of the experimental setup
- Performing the measurement
- Data analysis

Year

2016

Total budget

EUR 3,500

Hyperlink(s)

<https://doi.org/10.1016/j.nima.2017.03.064>



Procurement code(s)

Information technology
Particle and photon detectors

ESSCoordinating university: Uppsala University, www.uu.se**TESTING OF THE ESS SUPERCONDUCTING ELLIPTICAL CAVITY****Project description**

ESS will adopt elliptical multi-cell superconducting cavities with a beta value of 0.86 to accelerate the proton beam up to 2 GeV at the last section of the linac. A 5-cell high-beta cavity for the ESS project was tested with high power at FREIA Laboratory. A pulse mode test stand based on a self-excited loop was used in this test. The qualification of the cavity package involved a 5-cell elliptical cavity, a fundamental power coupler, a cold tuning system, LLRF system and an RF station. These tests represented an important verification before the series production. Fruitful studies of the test chain, RF conditioning, high power performance and experience of this cavity have been done in this test.

Year

2018

Total budget

EUR 50,000

Collaboration(s)

- Uppsala University
- Saclay

UPPSALA
UNIVERSITET

312

Team

Uppsala University:

- Han Li, researcher RF and accelerator systems
- Rolf Wedberg, Researcher high power RF system
- Rocio Santiago-Kern, Engineer researcher cryogenic system
- Tor Lofnes, Engineer LLRF system

Core deliverables

- Test stand based on self-excited loop development
- Test method and algorithm design
- Data acquisition and control software development
- Coupler RF conditioning
- RF test in high vacuum and cryogenic system
- Data analysis
- Test result report

**Procurement code(s)**

Electrical engineering and magnets
Electronics and radio frequency



UPPSALA
UNIVERSITET

ESS

Coordinating university: Uppsala University, www.uu.se

TESTING OF THE ESS TETRODE 352 MHZ RADIOFREQUENCY POWER SOURCE

Project description

The 26 spoke cavities of ESS are powered by tetrode amplifiers at 352 MHz.

In Freia Laboratory we have two prototypes from different manufacturers to work with.

We will describe the modifications which had to be made and what the consequence it will make.

Team

Uppsala University, FREIA:

- Rolf Wedberg, Research engineer Department of Physics and Astronomy
- Dragos Dancila Docent, Department of Engineering Sciences, Solid State Electronics
- Tord Peterson, Research engineer, Department of Physics and Astronomy
- Long Huang Duc, PhD student Department of Engineering Sciences, Solid State Electronics
- Han Li, Researcher, Department of Physics and Astronomy

Core deliverables

System design

Industry involvement

- Thales
- Itelco
- DB Elletronica

Year

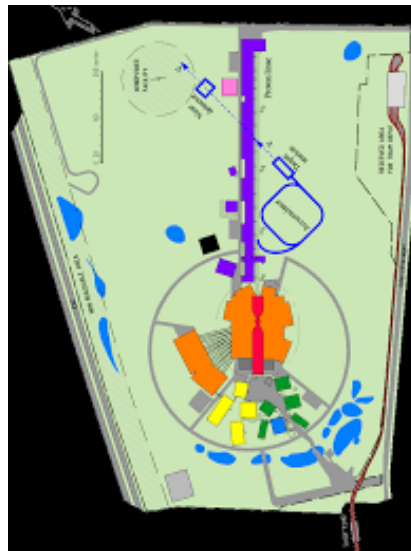
2017–

Total budget

EUR 1 million

Collaboration(s)

- Uppsala University
- Lund University



Procurement code(s)

Electronics and radio frequency

ESS

Coordinating university: Uppsala University, www.uu.se

TESTING OF THE ESS SUPERCONDUCTING SPOKE CAVITY PROTOTYPE

UPPSALA
UNIVERSITET

Project description

ESS is an accelerator-driven neutron spallation source, which will use spoke cavities in its superconducting linac. Since this type of cavity is new and the study of its performance is still ongoing, it becomes the key challenge of the whole project. The testing of the double-spoke prototype cavity for the ESS project at high power has been conceded to Uppsala University, Sweden. The qualification of the prototype cavity, involving a superconducting spoke cavity, a fundamental power coupler, cryogenic system, LLRF system and RF station, represents an important verification before the module assembly. The study of the test configuration, RF conditioning history and first high power performance of this cavity provides an important input for ESS.

Core deliverables

- Test stand design and building up
- Test method and algorithm design
- Data acquisition and control software development
- Coupler RF conditioning
- RF test in high vacuum and cryogenic system
- Data analysis
- Test result report

Year

2017

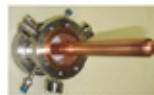
Total budget

EUR 70,000

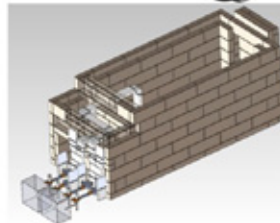
Team

Uppsala University:

- Han Li, Researcher RF and accelerator systems
- Rolf Wedberg, researcher high power RF system,
- Rocio Santiago-kern, Engineer researcher cryogenic system
- Tor Lofnes, Engineer LLRF system



Power Coupler



Horizontal cryostat and test bunker at FREIA Laboratory

Procurement code(s)

Electronics and radio frequency

Mechanical engineering and raw materials



ESS

Coordinating university: Chalmers University of Technology, www.chalmers.se

UNIAXIAL STRESS DEVICE FOR QUANTUM MATTER RESEARCH

Project description

Quantum matter is a class of materials having great potential for technological applications, ranging from MRIs at hospitals to hard disk drives. Understanding their fundamental properties in various environmental conditions is essential to implement them in our everyday lives. In this regard, a new uniaxial stress device for neutron scattering experiments is being developed for the BIFROST instrument at the future European Spallation Source (ESS) in Lund – Sweden. The aim is to explore, with exceptional precision, quantum materials on the molecular level under extreme conditions.

Team

Chalmers University of Technology

- Yasmine Sassa, Assistant professor, Department of Physics

KTH (Royal Institute of Technology)

- Martin Månsson, Associate professor, Department of Applied Physics

DTU (Technical University of Denmark) / ESS (European Spallation Source)

- Rasmus Toft-Petersen, Researcher, ESS and DTU
- Paul Scherrer Institute, Switzerland
- Marc Janoscsek, Associate professor, Laboratory for Neutron and Muon Instrumentation (LIN)
- Gediminas Simutis, Postdoc, Laboratory for Neutron and Muon Instrumentation (LIN)

Core deliverables

Develop and test uniaxial stress device for inelastic neutron scattering experiments. At the end of the developmental period, the goal is to have the pressure device available for users at the BIFROST instrument.

Year

2021-2023

Total budget

EUR 475,000

Collaboration(s)

- Chalmers University of Technology
- KTH Royal Institute of Technology
- European Spallation Source
- Paul Scherrer Institute, Switzerland

Procurement code(s)

Mechanical engineering and raw materials

FAIR

Coordinating university: Lund University, www.lu.se

CONTRIBUTION TO THE CALIFA BARREL R3B EXPERIMENT AT FAIR



LUNDS UNIVERSITET

Project description

This project concerns investment for the CALIFA barrel detector of the R3B experiment at FAIR (the Facility for Antiproton and Ion Research) in Darmstadt, Germany. In 2010 Sweden signed the FAIR agreement and thereby became member of the new facility. The laboratory is planned to be the main user laboratory for Swedish nuclear physics for the coming 15-20 years. This specific application comes as part of the in-kind contributions to detector systems at FAIR that has been developed in dialogue between the Swedish FAIR consortium (s)FAIR) and the research council. It consists of a contribution to scintillator crystals and readout devices to the barrel part of the calorimeter for the R3B experiment. The technical design report (TDR) for the detector was completed in 2011 following a period of R&D on detector design. The Lund, Chalmers and KTH groups are the main Swedish participants in this detector development program where the Lund group has the responsibility in Sweden for scintillator and readout devices for the CALIFA barrel. The main purpose of CALIFA is to detect charged particles and gamma-rays from reactions with exotic ion beams at relativistic energies. The CALIFA barrel consists of CsI(Tl) crystals of varying geometry coupled to readout devices. The funding requested in this application will be dedicated to purchase of detector units as described in the TDR. FAIR is currently under construction and this investment is part of the Swedish contribution to FAIR.

Team

Lund University:

- Joakim Cederkäll, Professor, Nuclear Physics, Faculty of Science, Department of Physics,
- Bo Jakobsson, Professor, Nuclear Physics, Faculty of Science, Department of Physics,
- Pavel Golubev, Senior Lecturer, Nuclear Physics, Faculty of Science, Department of Physics

KTH Royal Institute of Technology:

- Torbjörn Bäck, Associate professor, Nuclear Physics

Chalmers University of Technology:

- Thomas Nilsson, Professor, subatomic and plasma Physics, Department of Physics

Year

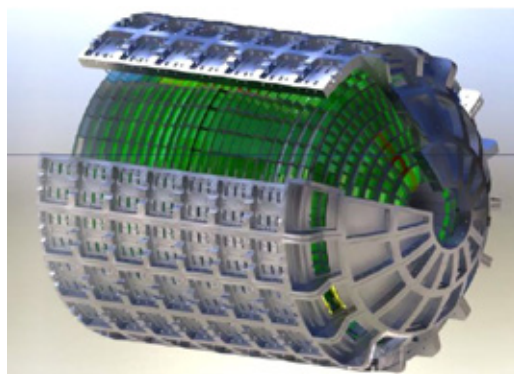
2013-2017

Total budget

EUR 340,000

Collaboration(s)

- Lund University
- KTH Royal Institute of Technology
- Chalmers University of Technology



Procurement codes

Particle and photon detectors
Optics and photons

FAIR

Coordinating university: Lund University, www.lu.se

LUND-YORK-COLOGNE CALORIMETER (LYCCA)



LUNDS UNIVERSITET

Project description

LYCCA is a core detector of the HISPEC experiment within NUSTAR-FAIR. The main objective is to uniquely identify exotic nuclear reaction products by their mass A and charge Z . These nuclei are produced in nuclear reactions induced by relativistic radioactive ion beams. These beams are going to be provided by the new Super-Fragment Separator. Typical kinetic energies of the reaction products of interest are some 100-300 MeV/u, which corresponds to some 30-40% of the speed of light. The identification of the exotic nuclei is based upon event-by-event time-of-flight, energy loss (ΔE), and total energy (E) measurements, eventually in conjunction with a magnetic spectrometer. R&D and provision of the ΔE - E detector modules is the main Swedish contribution to LYCCA.

Year

2010-2019

Total budget

EUR 250,000

Collaboration(s)

- Lund University, Sweden
- Universität zu Köln, Germany
- University of York, United Kingdom
- GSI Darmstadt, Germany

Hyperlink(s)

www.nuclear.lu.se/english/research/basic-nuclear-physics/nustar/lycca/

318

Team

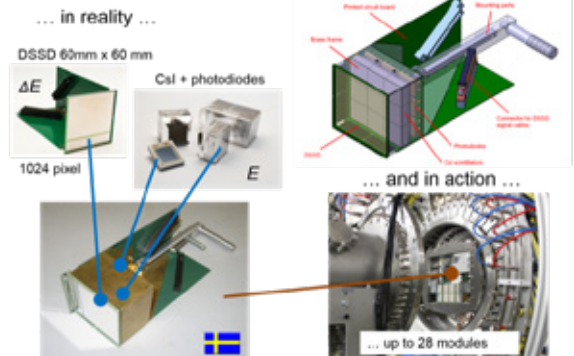
Lund University

- Pavel Golubev, Team leader, Division of Nuclear Physics
- Dirk Rudolph, Division of Nuclear Physics Universität zu Köln
- Peter Reiter, Institut für Kernphysik
- Stefan Thiel, Institut für Kernphysik University of York
- Mike Bentley, Department of Physics

Core deliverables

- Thirty (30) LYCCA DSSSD-CsI ΔE - E detector modules (tailor-made)
- The LYCCA CsI read-out electronics (GSI-EE development)
- The LYCCA high- and low-voltage supplies (commercial NIM modules)

LYCCA telescopes ...



Procurement code(s)

Particle and photon detectors

FAIRCoordinating university: Uppsala University, www.uu.se**ELECTROMAGNETIC CALORIMETER
FOR THE PANDA EXPERIMENT**UPPSALA
UNIVERSITET**Project description**

PANDA is an experiment at FAIR, Darmstadt, Germany, which uses a beam of antiprotons to study the strong force. A key element of the PANDA detector is its electromagnetic calorimeter (EMC) consisting of about 16 000 PWO crystals to measure photons from antiproton induced interactions. Uppsala is responsible for developing and producing read out electronics for the EMC:

- Sampling analog-to-digital converters (s)ADCs with built-in intelligence for feature extraction from the signals (time and energy) using FPGAs.
- Data Concentrators that synchronize the data from the SADCs, build events and perform first level analysis. These units are also based on FPGAs

Team

Uppsala University:

Pawel Marcienewski, Doctor, digital electronics design

Core deliverables

- Electronics hardware design, testing and production.
- Radiation resistance tests of electronics
- Electronic acquisition hardware design
- High speed data analysis in FPGA hardware
- System integration and commissioning

Industry involvement

- Semicon
- Crytur

Year

2016–

Total budget

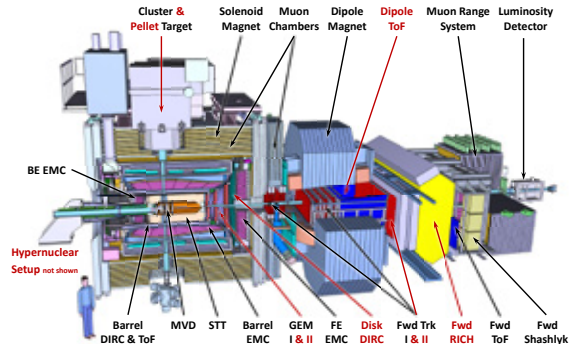
EUR 2.6 million

Collaboration(s)

- Uppsala University
- Stockholm University

Hyperlink(s)

<https://panda.gsi.de/article/electromagnetic-calorimetry>

**Procurement code(s)**

Electronics and radio frequency
Information technology
Particle and photon detectors

FAIRCoordinating university: Lund University, www.lu.se**HIGH VOLTAGE PULSE TRANSFORMER SYSTEMS FOR THE FAIR KLYSTRON MODULATORS**

LUNDS UNIVERSITET

Project description

To generate the required antiproton beam intensity for the FAIR PANDA experiment, a dedicated proton LINAC (pLINAC) for the FAIR accelerator chain is being constructed. Klystron modulators are power converters within the high power RF system of the pLINAC. Here, seven modulator systems with a nominal pulse power amplitude of 115 kV / 54 A, an effective pulse width of 360 μ s and a pulse repetition rate of up to 5 Hz are required. These modulators are to be based on pulse transformers whose characteristics largely determine the modulator output pulse quality. This project has considered electromagnetic modeling and optimal design of pulse transformers to deliver a compact system ensuring the RF power requirements of the FAIR pLINAC are met.

Core deliverables

- Global optimization study of high voltage pulse transformer and auxiliary systems accounting for pre-existing klystron modulator primary stage.
- Complete electromagnetic design of high voltage pulse transformer.
- Circuit simulation and Multiphysics simulation of FAIR klystron modulator system.
- Production of a full scale prototype device.
- Experimental verification of prototype device and the design procedure.

Industry involvement

Production of the full scale prototype device will be contracted to industrial partners.

Year

2019-2021

Total budget

EUR 120,000

Team

Lund University:

- Max Collins, PhD, Industrial Electrical Engineering and Automation

FAIR:

- Sven Pütz, Engineer for High Voltage, Power Electronics and Pulsed Power Systems, Accelerator Operations - Linac RF (ACC - LRF)

Procurement code(s)

Electrical engineering and magnets
Electronics and radio frequency
Mechanical engineering and raw materials

FAIR

Coordinating university: Chalmers University of Technology, www.chalmers.se

PHOTON- AND PARTICLE CALORIMETER CALIFA – FRONT END SYSTEM



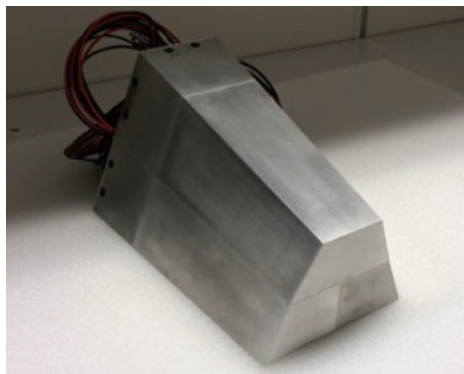
Project description

The CALIFA photon and particle calorimeter is a part of the experimental set up for Reactions with Relativistic Radioactive Beams (R3B) at the FAIR facility. It is one of the key detectors and will detect gamma rays and light charged particles. Chalmers is contributing R&D on the forward end-cap of the CALIFA – including the hybrid LaBr₃-LaCl₃ phoswich detector and the associated slow control and readout electronics. The work included the technical design, prototyping, pre-series, procurement and delivery of the system.

Team

Chalmers University of Technology:

- Thomas Nilsson, Professor, experimental subatomic physics
- Håkan T. Johansson, Research engineer, advanced software and computing hardware
- Andreas Martin Heinz, Associate professor subatomic physics



Core deliverables

- Research and Development of detector system in line with scientific requirements
- Detector specification and design
- System integration
- Detector system production
- DAQ and controls, signal processing computers/ FPGAs
- Integration, prototyping, pre-series, procurement and delivery of system

Industry involvement

Saint-Gobain Cristeaux et Detecteurs

Year

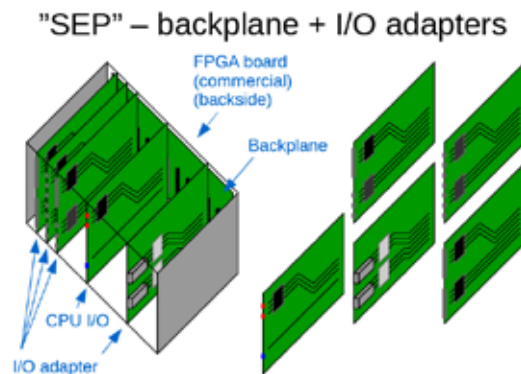
2010-2023

Total budget

EUR 850,000

Collaboration(s)

- Chalmers University of Technology
- SFAIR consortium



Procurement code(s)

Electronics and radio frequency
Information technology
Particle and photon detectors

322

ILL

ILL

Coordinating university: Uppsala University, www.uu.se

SUPER ADAM @ ILL

Project description

The Super ADAM instrument is a state of the art neutron reflectometer located at the highest neutron flux research reactor worldwide. At the facility scientists conduct both cutting edge fundamental science and applied research for industrial projects.

Super ADAM offers unique information not available by any other research tool in such areas as:

- magnetic layers, superlattices, heterostructures and magnetic meta-materials
- self-assembly of surfactants, polymers, lipids and proteins at solid and liquid interfacets
- rearrangement processes in thin films (e.g. diffusion, annealing, exchange, swelling etc.)
- encapsulation in and release from thin films e.g. drug delivery materials
- chemical and biochemical surface interactions and reactions
- hydrogen in metals
- ionic and magnetic liquids

Team

Uppsala University:

- Alexei Vorobiev, Doctor, infrastructure manager,
- Björgvin Hjörvarsson, Professor, magnetism, hydrogen in metals, AM,

Lund University, Faculty of Engineering:

- Tommy Nylander, Professor, soft matter and bio-science

Linköping University:

- Jens Birch, Professor, advanced materials, thin films

Core deliverables

Unique information on structure (e.g. composition, thickness and roughness, density, interdiffusion, crystalline state, magnetic state) and properties (e.g. phase transitions, reactivity, durability) of:

- solid-state and soft-matter ultrathin films and multilayers
- bare solid-liquid and solid-solid interfaces
- 2D artificially patterned and self-ordered structures

Year

2013–

Total budget

EUR 10 million

Collaboration(s)

- Uppsala University
- Lund University
- Linköping University

Hyperlink(s)

- <https://www.ill.eu/users/instruments/instruments-list/superadam/description/instrument-layout/>
- <http://www.physics.uu.se/research/materials-physics+/super-adam/>



Procurement code(s)

Electrical engineering and magnets

Mechanical engineering and raw materials

ISIS

Coordinating university: Chalmers University of Technology,

A NEW METHOD TO MODEL THE DYNAMIC STRUCTURE FACTOR BY MOLECULAR DYNAMICS SIMULATIONS



Project description

In this collaborative project between Chalmers, ESS, ISIS and the Niels Bohr Institute we aimed to overcome the difficulty to interpret and understand inelastic and quasielastic neutron scattering data (information about molecular and atomic motions) by developing a new computer modelling method to model the dynamic structure factor, $S(Q, \omega)$. The method is a dynamical correspondence to the Empirical Potential Structure Refinement (EPSR) method used to produce structural models of materials in quantitative agreement with neutron and x-ray diffraction data. The developed tool is a computer-based simulation tool that can then model the dynamic data (how atoms and molecules move) from neutron scattering by refining the model potentials in a molecular dynamics simulation until the simulation can reproduce the experimentally measured data.

Team

- Jan Swenson, Professor, Chalmers University of Technology, Department of Physics
- Heloisa Bordallo, Associate professor, Niels Bohr Institute, Condensed Matter Physics
- Anders Markvardsen, Researcher, ISIS Neutron and Muon Source, STFC
- Thomas Holm Rod, Researcher, European Spallation Source

Core deliverables

- A software package for modelling the dynamics of basically all types of molecular systems.
- New computer modelling method to model the dynamic structure factor, $S(Q, \omega)$, by molecular dynamics (MD) simulations.
- The computer simulation community get a unique possibility to refine their interatomic model potentials (or force-fields) for ordinary MC and MD simulations.
- This method provides new possibilities to interpret and understand inelastic and quasielastic neutron scattering data.

Year

2017-2022

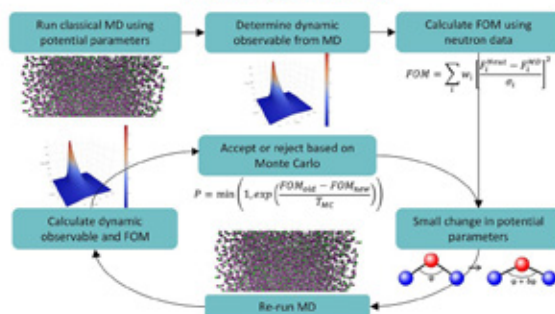
Total budget

EUR 850,000

Collaboration(s)

- Chalmers University of Technology
- Niels Bohr Institute
- ISIS Neutron and Muon Source
- European Spallation Source

The Algorithm



Procurement code(s)

Information technology

ISIS

Coordinating university: Chalmers University of Technology, www.chalmers.se

IMAT: IMAGING AND MATERIALS SCIENCE INSTRUMENT



Project description

IMAT (Imaging and Materials Science & Engineering) is a neutron imaging and diffraction instrument for studies of a broad range of materials science related problems. IMAT will offer a combination of imaging and spatially resolved diffraction modes such as standard neutron radiography, neutron tomography, energy-dispersive imaging, neutron strain scanning, crystallographic structure and phase analysis, texture analysis, and non-destructive testing. Examples of fields of study include the non-destructive and in-situ testing of materials for applications in aerospace and transportation, civil engineering, energy storage, geoscience, biology, soil-plant systems, palaeontology and cultural heritage.

Team

Chalmers University of Technology, Department of Chemistry and Chemical Engineering

- Sten Eriksson, Professor
- Maths Karlsson, Associate professor
- Dariusz Wardecki, postdoc
- ISIS Neutron and Muon Source
- Stephen Hull, Professor, Crystallography Group Leader
- Genoveva Burca, Researcher, Instrument Scientists at IMAT
- Winfried Kockelmann, Researcher, Instrument Scientists at IMAT
- Nigel Rhodes
- Jeff Sykora, ISIS Detector Group
- David McPhail, ISIS Detector Group
- Francesco Zuddas, ISIS Instrument Design Group

Core deliverables

- Design, procurement, manufacturing, testing and installation of large diffraction detector arrays at 90 degrees
- Design, specifications, mounting system, shielding, purchasing and installation of radial collimators at 90 degrees
- Community building and transferring of know-how to the Swedish community

Year

2014-2021

Total budget

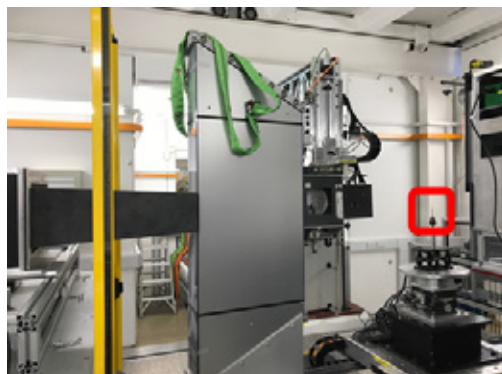
EUR 1.3 million

Collaboration(s)

- Chalmers University of Technology
- ISIS Neutron and Muon Spallation Source

Hyperlink(s)

www.isis.stfc.ac.uk/Pages/Imat.aspx



Procurement code(s)

Optics and photonics

Particle and photon detectors

ISIS

Coordinating university: Chalmers University of Technology, www.chalmers.se

NEUTRON RAY-TRACING SIMULATIONS FOR THE UPGRADE OF THE OSIRIS SPECTROMETER



Project description

OSIRIS is a cold-neutron high-flux near-backscattering neutron spectrometer combined with a long-wavelength diffractometer, located at the ISIS Neutron and Muon Source. In this project we designed a new silicon analyzer and detector system for OSIRIS, with the use of neutron ray-tracing simulations as well as analytical calculations, which will improve the resolution and increase the dynamic range of the instrument. We further designed a new elliptic super-mirror neutron guide for OSIRIS that will significantly increase the flux and focus of the neutron beam on sample position, which will allow the routine measurement of smaller samples. These developments will facilitate challenging studies of novel materials and ensure that OSIRIS remains a highly competitive instrument.

Team

- Maths Karlsson, Associate professor, Chalmers University of Technology, Department of Chemistry and Chemical Engineering
- Max Wolff, Professor, Uppsala University, Department of Physics and Astronomy
- Adrien Perrichon, Postdoc, Uppsala University, Department of Physics and Astronomy
- Felix Fernandez-Alonso, Professor, ISIS Neutron and Muon Source, Group Leader in Molecular Spectroscopy
- Franz Demmel, Researcher, ISIS Neutron and Muon Source, Instrument Scientist on OSIRIS

Core deliverables

- Design study supported by ray-tracing simulations of a new silicon analyzer and detector system for OSIRIS
- Design study supported by ray-tracing simulations of an elliptic super-mirror guide for OSIRIS

Year

2017-2021

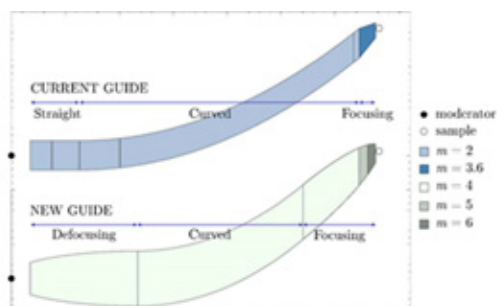
Total budget

EUR 700,000

Collaboration(s)

- Chalmers University of Technology
- Uppsala University
- ISIS Neutron and Muon Source

Hyperlink(s)

www.isis.stfc.ac.uk/Pages/osiris.aspx


Procurement code(s)

Information technology
Particle and photon detectors
Optics and photonics



ITER

Coordinating university: Chalmers University of Technology, www.chalmers.se

ADDITIVE MANUFACTURING FOR FABRICATION OF 316L-GRADE COMPONENTS

Project description

The main objective is to demonstrate how a subdivision of a final structure could be produced in stainless steel 316L(N)-IG-grade with electron beam melting (EBM) followed by post-EBM hot isostatic pressing (HIP). As alternative way, selective melting (LS/SLM) has also been explored. The characteristics of raw materials and processing have been explored in detail and the quality control of the powder material, process and optimized parameters to achieve a fully dense material have been clarified. A large number of block specimens have been fabricated and delivered for testing. The approach to manufacture a large section by sub-division and subsequent joining using hot isostatic pressing (HIP) has been explored. The surface preparation and optimization of post-EBM joining of parts by HIP has been addressed and parameters to achieve successful joints with good metallurgical bonding have been developed.

Team

Chalmers University of Technology:

- Lars Nyborg, Professor, specialist in materials design, powder technology and additive manufacturing, surface technology
- Eduard Hryha, Professor, specialist in materials design, powder technology and additive manufacturing, division of materials and manufacturing, industrial and materials science

Mid-Sweden University:

- Lars-Erik Rännar, Docent, specialist in EBM technology, additive manufacturing, Quality management and mechanical engineering

Stockholm University:

- Zhijian James Shen, Professor, specialist in SLM technology, department of materials and environmental chemistry

Swerim:

- Hans Magnusson, Specialist in HIP and powder technology, materials modelling

Core deliverables

- Certification and assessment of high quality metal powder for intended application
- Development and delivery of test specimens for mechanical testing and radiation testing
- Development of design for AM-fabrication of intended product for ITER
- Process development and process optimization for material by AM
- HIP process and surface preparation for optimized HIP-joining of AM-fabricated specimens developed
- Scientific publications
- Patent application

Industry involvement

- Carpenter Powder Products
- Sandvik Materials Technology

Year

2015-2017

Total budget

EUR 510,000

Collaboration(s)

- Chalmers University of Technology
- Mid Sweden University
- Stockholm University
- Swerim

Procurement code(s)

Mechanical engineering and raw materials

ITER

Coordinating university institute: RISE Research Institutes of Sweden, www.ri.se

EUROFUSION DIVERTOR WORK PACKAGE, ITER

Project description

The divertor is an area of a fusion reactor, where impurities and waste material are removed from the plasma while the reactor is still operating. This allows control over the buildup of fusion products in the fuel and removes impurities in the plasma originating from the vessel lining. The divertor is a geometrically complex design, where the pieces are water-cooled and surface materials are exposed to severe environmental and thermal conditions.

The EUROfusion work package Divertor (WP-DIV) integrates the design and technology R&D of power exhaust solutions for the divertor regions and limiters of the existing devices Wendelstein 7-X stellarator and JT-60SA Tokamak, as well as the future devices I-DTT and DEMO. The RISE mechanical laboratory in Borås will contribute with mechanical testing of materials and components for the divertor designs.

The department of mechanics at RISE is a team of researchers and skilled engineers in solid mechanics with expertise in fracture mechanics, computational material mechanics, fatigue and structural dynamics. Together with skilled personnel in our accredited mechanics laboratory, they serve the needs of both industry clients and publicly funded research projects. In the present project, experts in other parts of RISE contribute special competence in microscopic characterization, fractography and measurement of thermal properties.

Core deliverables

- Mechanical testing
- Material analysis
- Material properties

Total budget

EUR 125,000

Collaboration(s)

- RISE Research Institutes of Sweden
- CEA, Cadarache and Mines St Etienne
- Max-Planck-Institut für Plasmaphysik (MPG-IPP)



Year

2021-2024

Team

RISE Research Institutes of Sweden

- Ola Widlund, PhD, Senior researcher, Unit director, Mechanical reliability
- Johan Sandström, PhD, senior researcher, Structural and solid mechanics, Mechanical reliability
- Pooya Tabib, PhD, researcher, Mechanical reliability

Procurement code(s)

Mechanical engineering and raw materials

ITER

Coordinating university institute: RISE Research Institutes of Sweden, www.ri.se

EUROFUSION WPENS**Project description**

The aim of the project is to investigate Lithium fire safety, in particular relating to the Lithium Loop (LL) facility. LL divertors is a possible solution to outstanding fusion reactor technology issues, while potentially improving reactor plasma performance. There are however risk and safety concerns regarding LL. Risk assessment and fire mitigation scenarios will be investigated in a scenario that contain around 10 m³ of lithium circulating at a rate of 0.104 m³/s at elevated temperatures. Although lithium is the least reactive of the alkali metals, many exothermic reactions chemical reactions are possible in contact with common gases and materials such as oxygen, nitrogen, water, CO₂ and concrete.

Experimental approaches on lithium fire safety oriented to prevention of ignition will be developed according to the reference RISE testing apparatus and capabilities. A first draft matrix of experiments to develop in the WPENS frame will be prepared in view of DONES fire safety requirements, which could be review in later stages. First experimental results will be obtained and reported.

The Fire Research unit is a part of Fire Technology at RISE. Fire Research is a team of researchers and skilled engineers in fires with expertise in fire dynamics, fire resistance, forest fires, fire simulations and structural mechanics. Together with skilled personnel in our accredited fire test laboratory, they serve the needs of both industry clients and publicly funded research projects.

Team

RISE Research Institutes of Sweden

- Johan Anderson, PhD, Senior researcher, Fire Research
- Johan Sjöström, PhD, Senior researcher, Structural and solid mechanics, Fire Research
- Emil Hallberg, Technician, Test engineer, Fire Research
- Fredrik Kahl, Technician, Test engineer, Fire Research

Core deliverables

- Fire safety of Lithium
- Li ignition prevention experiments
- Risk assessments of Lithium and Lithium fires
- Material analysis

Year

2021-2024

Total budget

EUR 542,000

Collaboration(s)

RISE Research Institutes of Sweden
IFMIF-DONES

Hyperlink(s)

<https://www.ri.se/en/what-we-do/our-areas/fire-safety>, <https://www.ri.se/en/test-demo/fire-simulation>

**Procurement code(s)**

Mechanical engineering and raw materials
Health, safety and environment
Gases, chemicals, waste collection and radiation equipment

ITER

Coordinating university: KTH Royal Institute of Technology, www.kth.se

FUSION REACTOR DEVELOPMENT. PARTICULAR PROJECT: PLASMA-WALL INTERACTIONS IN FUSION DEVICES



Project description

Design and construction of a next step controlled fusion device (ITER) is preceded by development, selection and characterization of materials relevant for plasma-facing components– especially for the first wall and the divertor. Tungsten and beryllium were selected for ITER; results obtained also by the KTH group influenced that choice.

Material erosion, transport and re-deposition leading to the fuel accumulation in wall materials top the list of urgent priority issues to be assessed in present-day devices to provide the best possible predictions for a reactor. Experimental work is carried out at Joint European Torus (JET), ASDEX Upgrade, and WEST, and also in linear simulators of plasma-surface interactions. Materials are examined using a large number of material research techniques.

Year

2007–

Team

KTH Royal Institute of Technology, School of Electrical Engineering and Computer Science, Department of Fusion Plasma Physics

- Marek Rubel, Team leader, professor
- Per Brunsell, professor
- Per Petersson, researcher
- Henric Bergsåker, associate professor
- Laura Dittrich, student

Uppsala University, Department of Physics

- Daniel Primetzhofer, professor

Core deliverables

- Testing of beryllium and tungsten behaviour under plasma operation
- Determination of the impact of material migration and mixing on the wall composition and retention of hydrogen isotopes

- Mechanism of dust generation and detailed characterisation of particles
- Mechanism and efficiency of fuel removal and wall conditions under ion cyclotron-assisted plasma operation
- Development of diagnostic tools and the determination of the plasma impact on diagnostic components

Total budget

EUR 2.2 million (estimate)

Collaboration(s)

- KTH Royal Institute of Technology
- Uppsala University
- EURO-fusion Consortium
- Culham Centre for Fusion Energy, Joint European Torus (JET), UK
- Forschungszentrum Juelich, Germany
- Warsaw University of Technology, Poland

Hyperlink(s)

www.euro-fusion.org
www.iter.org



Procurement code(s)

Particle and photon detectors

ITER

Coordinating university: Chalmers University of Technology, www.chalmers.se



ITERIS – DESIGN AND IMPLEMENTATION OF AN INTEGRATED MODELLING INFRASTRUCTURE

Project description

ITER is the next generation of fusion experiments and is aimed at demonstrating the feasibility of fusion energy as a viable energy source for the future. It is currently under construction with a first plasma expected 2025. The ITERIS consortium was set up to bring the long-term European activity on simulation and modeling as a basis for the future ITER analysis environment. The project defines the data model for ITER, the related access tools and implements a workflow orchestration tool for developing simulations on the modelling platform. The prototype installation has now been adopted by the ITER organization and is promoting this for developments and use of the global fusion community with the continued support from the consortium.

Team

Chalmers University of Technology:

- Pär Strand, Professor, specialist in plasma physics and fusion, plasma physics and fusion energy group, astronomy and plasma physics, space earth and environment

Core deliverables

- Schema for data dictionary
- Database structure and access tools
- Workflow orchestration and workflow components
- Physics modules

Industry involvement

Areva

Year

2011-

Total budget

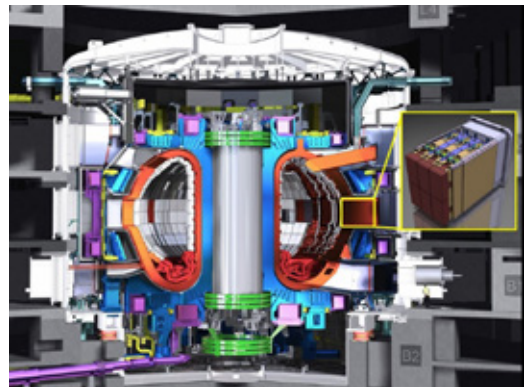
EUR 1.7 million

Collaboration(s)

- CEA
- Chalmers
- EPFL

Hyperlink(s)

<http://iopscience.iop.org/article/10.1088/0029-5515/55/12/123006>



Procurement code(s)

Information technology

ITERCoordinating university: Uppsala University, www.uu.se**NEUTRON DIAGNOSTICS FOR FUSION POWER PLANTS**UPPSALA
UNIVERSITET**Project description**

ITER's main goal is to demonstrate the feasibility of key technologies for the development of future power plants based on fusion energy. ITER is under construction in Cadarache (France) and it is expected to start operation in 2026. In parallel to ITER, the conceptual design of a Demonstration Fusion Power Plant (DEMO) is underway. DEMO is intended to be the single step between ITER and a commercial reactor: it is expected to deliver electricity to the grid in 2050. The measurement of the 2.5 and 14 MeV neutron yield and energy spectrum is required for the determination of the fusion power produced, for the optimal operation of such devices and, ultimately, for the steady state production of electricity.

Design, construction, installation, commissioning and operation of neutron flux monitors and spectrometers in present day fusion devices such as JET and MAST and development of neutron diagnostics for ITER, DEMO and DTT.

Team

Team Uppsala University, Department of Physics and Astronomy, Division of Applied Nuclear Physics:

- Göran Ericsson, Team leader, Professor, specialist in neutron diagnostics for fusion plasmas
- Marco Cecconello, Professor, specialist in neutron diagnostics for fusion plasmas
- Sean Conroy, Researcher, specialist in Monte Carlo neutron transport simulations
- Anders Hjalmarsson, Researcher, specialist in neutron diagnostics for fusion plasmas
- Eric Anderson-Sunden, Researcher, specialist in neutron diagnostics for fusion plasmas
- Jacob Eriksson, Researcher, specialist in fusion neutron physics modelling

Core deliverables

- TOFOR and MPRu2.5 and 14 MeV neutron spectrometers for JET
- Collimated 2.5 MeV neutronflux monitor for MAST
- Design of a High Resolution Neutron

Spectrometer and of Radial Neutron Camera for ITER for 14 MeV neutrons

- Conceptual design of neutronflux monitor for DEMO and DTT 14 MeV and 2.5 MeV
- Fast data acquisition (0.2 – 2 GSs) and analysis software
- Suites of interpretative software tools for physics modelling and prediction

Industry involvement

- Teledyne SPDevices
- Gammadata
- CAEN
- Strängbetong
- Spectrum Instrumentation
- Scionix
- JCS

Year

1996

Total budget

EUR 3 million

Collaboration(s)

- Culham Centre for Fusion Energy, UK
- Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA)
- Institute of Plasma Physics and Laser Microfusion, Warsaw
- Institute for Plasma Science and Technology, CNR, Milan
- Princeton Plasma Physics Laboratory, US

Hyperlink(s)

www.physics.uu.se/research/applied-nuclear-physics/groups/fusion-diagnostics-group

Procurement code(s)

Particle and photon detectors



ITER

Coordinating university: KTH Royal Institute of Technology, www.kth.se

MODELLING OF PLASMA-SURFACE INTERACTIONS IN ITER

Project description

The provision of plasma-facing components (PFC) with a sufficient lifetime is one of the major technological obstacles to be overcome in the development of thermonuclear fusion reactors such as ITER. The PFC integrity is mostly threatened by fast transient power loading on millisecond timescales during which surface melting is essentially inevitable due to the high plasma stored energies. The metallic melt is subject to plasma-induced forces which displace the material and may cause large-scale surface deformations as well as create droplets. Re-solidified droplets are the main source of dust whose amount in ITER is stringently restricted by nuclear licensing. It is, thus, crucial to model the consequences of melt events and droplet survival.

Team

Royal Institute of Technology, KTH

- S. Ratynskaia, Professor, Plasma Physics
- P. Talias, Ph.D., Researcher, Plasma Physics
- L. Vignitchouk, Ph.D., Researcher, Computational Plasma Physics

Core deliverables

- Development and validation of numerical model for macroscopic melt motion (the MEMOS-U code)
- Development and validation of numerical model for dust / droplet transport and life-time (the MIGRAINE code)
- Impact of electron emission on tokamak edge plasmas.
- Theory and experiments of dust remobilization.
- Theory and experiments of dust adhesion.

Year

2016-

Total budget

EUR 1.1 million

Collaboration(s)

- Max Planck Institute for Plasma Physics, Garching, Germany
- Culham Centre for Fusion Energy, UK
- Institute for Plasma Science and Technology - CNR Milano, Italy
- Dutch Institute for Fundamental Energy Research, Netherlands



Procurement code(s)

Electrical engineering and magnets

336 MAX IV LABORATORY

MAX IV LaboratoryCoordinating university: Chalmers University of Technology, www.chalmers.se**CORRELATIVE NANOSTRUCTURE ANALYSIS
USING SAXS TENSOR TOMOGRAPHY AND
PTYCHOGRAPHIC NANOTOMOGRAPHY****Project description**

The project aims to explore the complementarity of information obtained with SAXS and coherent X-ray imaging on fuel cell electrode materials. Fuel cell electrode materials are porous nanomaterials with structural features across multiple length scales. The goal within this project is to provide a non-invasive structural characterization of porous nanocomposite materials on the meso- and nanoscale in order to gain insights on the structure performance relation in fuel cell electrode materials. The project is set up in a close collaboration between the SAXS beamlines at MAXIV (ForMAX and CoSAXS) and the corresponding cSAXS beamline at the Swiss Light Source at PSI. It includes method transfer of SAXS imaging in 2D and 3D transfer from PSI where it is well established to the beamlines at MAXIV.

Team

Chalmers University of Technology

- Marianne Liebi, Associate professor, Physics
- Christian Appel, Postdoc, Swiss Light Source / MAXIV
- Manuel Guizar-Sicairos, Researcher, Swiss Light Source

Lund University

- Ann Terry, Researcher, MAX IV Laboratory
- Kim Nygård, Researcher, MAX IV Laboratory

Core deliverables

- Method development in SAXS imaging in 2D and 3D.
- Correlation of SAXS tensor tomography with high resolution coherent techniques such as ptychography on catalyst composite material.
- Knowledge transfer from PSI to MAXIV for scanning SAXS experiments.
- Implement the scanning SAXS and SAXS tensor tomography analysis scripts to CoSAXS (and ForMAX) pipeline.

Year

2020-2023

Total budget

EUR 495,000

Collaboration(s)

- Chalmers University of Technology
- MAX IV Laboratory, Lund University
- SLS, Paul Scherrer Institute, Villigen, Switzerland

Procurement code(s)

Mechanical engineering and raw materials

MAX IV LaboratoryCoordinating university: Chalmers University of Technology, www.chalmers.se**DETECTOR FOR SIMULTANEOUS X-RAY
DIFFRACTION AND ABSORPTION
SPECTROSCOPY****Project description**

The Balder beamline is designed for X-ray absorption and emission spectroscopy in the medium and hard X-ray energy range, i.e., 2.4-40 keV. The high brilliance from the 3 GeV storage ring in combination with the beamline construction allows for time resolved measurements down to sub-second time resolution to be performed in operando conditions. The implementation of an additional two-dimensional detector on a robotic arm will provide diffraction (long-range ordering) information truly simultaneous with chemical state and fine structure information for many different materials. The scattered intensity is monitored when the energy is scanned over an absorption edge such that the diffraction becomes anomalous. It is thus possible to determine which of the elements in a material that contribute to certain diffraction peaks. Knowledge about the long-range order also paves the way for more thorough analysis of chemical state and fine structure of complex materials.

Team

Chalmers University of Technology:

- Per-Anders Carlsson, Professor, Materials and Surface Science, Department of Chemistry and Chemical Engineering

Lund University:

- Konstantin Klementiev, Doctor, Beamline Manager at Balder, MAX IV
- Justus Just, Doctor, postdoc at Balder, MAX IV

Core deliverables

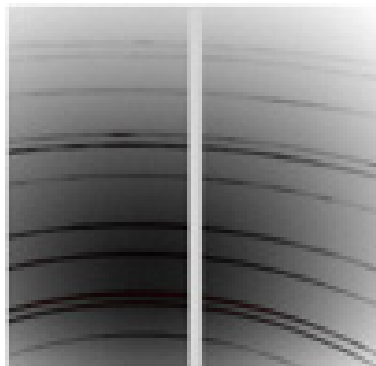
- Specification and purchasing of 2D detector
- Assembling of 2D detector and robotic arm incl. software control
- Software development for synchronous control and acquisition
- Demonstration of synchronous measurements on catalytic materials

Year

2018-2020

Total budget

EUR 500,000



First diffraction image of a Cu-block measured at Balder.

Procurement code(s)

Particle and photon detectors

MAX IV LaboratoryCoordinating university: Chalmers University of Technology, www.chalmers.se**DEVELOPMENT OF A NEW RHEOMETER SYSTEM****Project description**

A new rheometer system is being developed into a state-of-the-art Rheo-SAXS sample environment at the MAX IV Laboratory in Lund, Sweden. MAX IV Laboratory is a Swedish national laboratory providing scientists from academia and industry with the brightest X-rays available in the world. Thus, the aim is to have a sample environment focused on Swedish academic and industrial strengths as well as have an international appeal through unique testing possibilities.

Team

Chalmers University of Technology

- Roland Kádár, Team Leader, Associate Professor, Department of Industrial and Materials Science
- Marianne Liebi, Assistant Professor, Department of Physics
- Aleksandar Matic, Professor, Department of Physics

Lund University, MAX IV

- Kim Nygård, Beamline Scientist & Project Manager, MAX Laboratory
- Anne Terry, Beamline Scientist & Group Manager, MAX IV Laboratory

**Core deliverables**

Develop and test several unique rheo-SAXS testing possibilities. At the end of the developmental period, the goal is to have the rheometer sample environment available for external users at ForMAX and CoSAXS beamlines.

Year

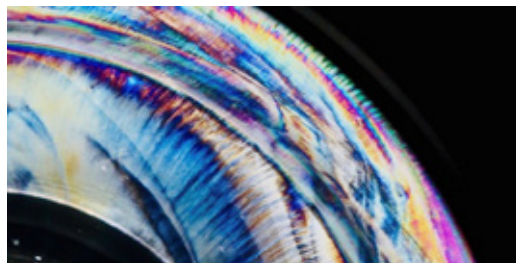
2020-2022

Total budget

EUR 420,000

Hyperlink(s)

<https://www.chalmers.se/en/departments/ims/news/Pages/New-unique-test-opportunities-in-bio-based-materials-at-MAX-IV.aspx>

**Procurement code(s)**

Mechanical engineering and raw materials



LUNDS UNIVERSITET

MAX IV Laboratory**Coordinating university:** Lund University, www.lu.se**HANSEATIC LEAGUE OF SCIENCE (HALOS)****Project description**

By bringing life science users together with researchers from the large regional photon and neutron infrastructures HALOS facilitates the development of new measurement methods and instrumentation. For example the ongoing development of X-ray fluorescence imaging applications in tissue imaging and time-resolved crystallography to study protein mechanisms at PETRA III. HALOS also aims to connect with the Helmholtz-Lund International graduate School (HELIOS) project, to further enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Year

2019-2022

Team

Includes among others

- Kajsa Paulsson, PhD, Lund University, Faculty of Medicine
- Michael Gajhede, Professor, UCPH
- Arwen Pearson, Professor, UHH
- Marite Cardenas, Professor, Malmö University
- Anders Bjorholm Dahl, Professor, DTU

Core deliverables

HALOS will build a unique collaboration between Hamburg and South-West Scandinavia, bring together the four unique research facilities MAX IV, ESS, DESY and European XFEL, and create a centre for integrated, world-leading Life Science innovation and research. In the work package for Cross Border Research different activities are arranged such as seminars, webinars, workshops, summer/winter schools, match-making and not least funding of 6 month projects. The funding of 6 month projects is given to only projects with industry outreach plans and of high innovation potential. The work in the WP will result in increased awareness, competence development and increased use of large scale facilities in Life Science research and innovation.

In the workpackage Regional Development the HALOS community in Hamburg and Southwest Scandinavia work to improve the conditions for using the large scale Research Infrastructures

including topics mobility, remote access, innovation and tech-transfer and science cities and develop joint key messages and strategies, bi- and multi-lateral agreements.

Industry involvement

Companies involved or selected for targeted out-reach activities include: ReceptorPharma, ImplexionPharma, Leo Pharma, Lundbeck, Avilex Pharma, Acesion Pharma, Borregaard, Colloidal Resources Competence, Axiom Insights, Thermofisher, Abbott, NIOM, Corticalis, Catalyst Biosciences.

Total budget

EUR 3.6 millions

Collaboration(s)

- Lund University
- Universität Hamburg
- University of Copenhagen
- MAX IV
- ESS
- Malmö University
- Region Skåne
- DESY
- European XFEL
- City of Hamburg
- Technical University of Denmark
- Aarhus University
- Capital Region of Denmark
- Medicon Valley
- Alliance EMBL

Hyperlink(s)www.halos.lu.se**Procurement code(s)**

Electrical engineering and magnets
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature
Optics and photonics
Particle and photon detectors
Health, safety and environment

MAX IV Laboratory**Coordinating university: Lund University, www.lu.se****HELIOS****Project description**

The Helmholtz-Lund International graduate School (HELIOS) on "Intelligent instrumentation for exploring matter at different time and length scales" connects major knowledge hubs in the Baltic Sea Region: Hamburg University, DESY, and Lund University. HELIOS started in early 2021 and includes scientists from Particle Physics, Molecular Physics, Nano(bio) Science, and Ultrafast Photon Science. The aim of HELIOS is to develop the instrumentation and data acquisition systems for the next generation of photon sources and particle accelerators, in collaboration with industrial partners that we will seek within Big Science Sweden. HELIOS also aims to connect with the Hanseatic League of Science (HALOS) project for life sciences, to enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Team

Includes among others

- Kajsa Paulsson, PhD, Lund University, Faculty of Medicine
- Michael Gajhede, Professor, UCPH
- Arwen Pearson, Professor, UHH
- Marite Cardenas, Professor, Malmö University
- Anders Bjorholm Dahl, Professor, DTU

Core deliverables

Individual projects investigate novel solutions for (e.g.):

- Real-time data acquisition and analysis
- Image processing techniques
- Feedback control loops
- On chips miniaturization using nanotechnology for biosensing

Year

2021-2026

Total budget

EUR 7.9 million

Collaboration(s)

University of Hamburg

Hyperlink(s)<https://www.heliosgraduateschool.org>

LUNDS UNIVERSITET

**Procurement code(s)**

Electronics and radio frequency
 Information technology
 Vacuum and low temperature
 Optics and photonics
 Particle and photon detectors

MAX IV LaboratoryCoordinating university: Lund University, Faculty of Engineering, www.lth.se**HIGH FIELD/HIGH GRADIENT MAGNETS****Project description**

The MAX IV 3 GeV electron storage ring in Lund, Sweden, represents the new generation of light sources that uses a 20-fold 7-bend achromat lattice to achieve a bare lattice emittance of 330 pm in a relatively short circumference of 528 m. The large number of strong bending magnets per achromat requires a compact magnet design that is achieved by use of small aperture (\varnothing 25 mm) magnets integrated into one common block i.e. each achromat has 7 magnet blocks. The project aims at demonstrating the feasibility of use small aperture (\varnothing 11 mm) and high field/high gradient permanent/hybrid magnets in frame of the upgrade concept for a future diffraction-limited light sources within the constraints of the existing MAX IV 3 GeV ring tunnel.

Team

Lund University, MAX IV Laboratory:

- Alexey Vorozhtsov, Magnet engineer

Core deliverables

Electromagnetic & mechanical design, manufacturing and magnetic measurements of the following hybrid magnet prototypes:

- Gradient dipole: aperture $H \geq 15$ mm, yoke length ≤ 300 mm, field strength $B_0 = (0.5-0.6)$ T, gradient up to 70 T/m
- Quadrupole: aperture $\varnothing = (11/12)$ mm, yoke length ≤ 100 mm, gradient up to 250 T/m
- Sextupole: aperture $\varnothing \geq 15$ mm, yoke length ≤ 150 mm, gradient $B''/2$ up to 20 kT/mm²
- Magnet block containing the magnets listed above.

Potential industry involvement

- Scanditronix
- Danfysik

Year

2019-2021

Total budget

EUR 300,000

Potential Collaboration(s)

Synchrotron SOLEIL, France
ISA, Centre for Storage Ring Facilities, Denmark

Hyperlink(s)

<https://www.maxiv.lu.se/about-us/governance/vision-goals-values/>



LUNDS UNIVERSITET
Lunds Tekniska Högskola

**Procurement code(s)**

Electrical engineering and magnets
Mechanical engineering and raw materials

MAX IV LaboratoryCoordinating university: Lund University, Faculty of Engineering, www.lth.se**NANOMAX KB-MIRRORS****Project description**

NanoMAX is a Hard X-ray monochromatic nanoprobe experimental station at MAX IV. The second experimental station at NanoMAX beamline use two plane-elliptical in Kirkpatrick-Baez configuration to achieve a spot size in the 100-1000 nm range. In order to meet the high demands of stability at MAXIV and high level of accuracy for the attenuation of the mirrors a in-house design was developed. The design is influenced by MAXIV alignment principle with one alignment unit per degree of freedom. Flexure links and a cage made from invar is the backbone of the design with low thermal drift. The mirror supports are designed to exclude the gravitational effect and the mirrors have a figure error of less than 1 nm.

Team

Lund University MAX IV

- Ulf Johansson, Team leader, Beamline Scientist
- Gerardina Carbone, Beamline Scientist
- Sebastian Kalbfleisch, Instrument Scientist
- Linus Roslund, Mechanical Designer
- Karl Åhnberg, Mechanical Designer

Core deliverables

- Stability
- Alignment
- Thermal drift
- In-house design and development

Industry involvement

- Jtec
- Arrema Mekano
- FMB Berlin
- Pfeiffer Vacuum

Year

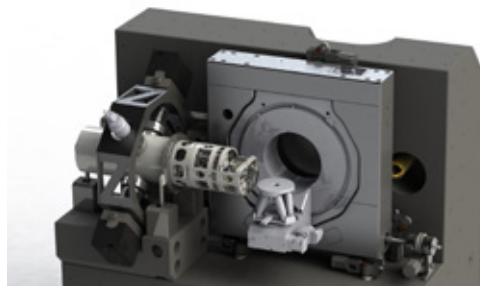
2016-2017

Total budget

EUR 350,000



LUNDS UNIVERSITET
Lunds Tekniska Högskola

**Procurement code(s)**

Mechanical engineering and raw materials
Optics and photonics

Max IV LaboratoryCoordinating university: Chalmers University of Technology, www.chalmers.se**SAMPLE ENVIRONMENT FOR COMBINED NANO-MECHANICAL TESTING AND NANODIFFRACTION****Project description**

The purpose of the project is to develop and implement a sample environment for in-situ nanomechanical testing at MAX IV. The set-up will be based on a nanoindenter instrument intended for in-situ operation in scanning electron microscopes (s)EMs, which will be adapted for use on synchrotron beam lines. The sample environment can be transferred to SEMs in order to verify experimental setups before attempts at synchrotron beamlines, and to perform correlative experiments. The setup will be flexible to allow testing of different materials (metals, ceramics, polymers and biological materials such as bone and wood), and the modular design will allow upgrades to accommodate e.g. tensile testing as well as high-temperature, cryogenic and dynamic deformation conditions. The instrument will be part of the standard sample environment pool at MAX IV.

Core deliverables

- Definition of requirements and specifications of in-situ nanoindenter equipment.
- Definition and development of approach for integration into MAX IV control and data management system
- Acquisition and installation of nanoindenter, including commissioning at both NanoMAX beamline and Chalmers SEMs.
- Demonstration of correlated tests at MAX IV and Chalmers.

Year

2017–2019

Total budget

EUR 370,000

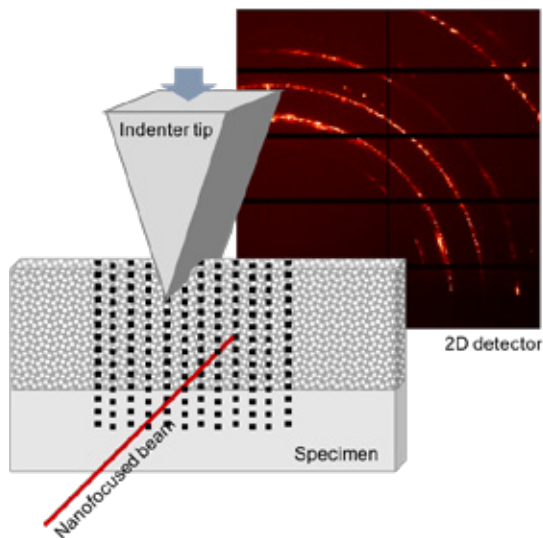
Team

Chalmers University of Technology:

- Magnus Hörnqvist Colliander, Docent, senior researcher in physics

Lund University, MAX IV Laboratory:

- Gudrun Lotze, Doctor, Postdoc sample environment and detector systems
- Stefan Carlson, Doctor, group manager sample environment and detector systems
- Gerardina Carbone, Doctor, instrument scientist at Nano MAX beamline

**Procurement code(s)**

Mechanical engineering and raw materials

MAX IV LaboratoryCoordinating university: Lund University, www.lu.se**THE VACUUM SYSTEM OF MAX IV
3 GEV STORAGE RING**

LUNDS UNIVERSITET

Project description

Some of the characteristics of recent ultra-low-emittance (fourth generation) storage-ring designs and possibly future diffraction-limited storage rings are a compact lattice combined with small magnet apertures. Such requirements present a challenge for the design and performance of the vacuum system. The vacuum system should provide the required vacuum pressure for machine operation and be able to handle the heat load from synchrotron radiation. Small magnet apertures result in the conductance of the chamber being low. One way to provide the required vacuum level via distributed pumping, which can be realized by the use of a non-evaporable getter (NEG) coating of the chamber walls. In addition, the chamber walls can work as distributed absorbers if they are made of a material with good thermal conductivity, and distributed cooling is used at the location where the synchrotron radiation hits the wall. The vacuum system of the 3 GeV storage ring of MAX IV is unique, it has a very small aperture, combined with being 100% NEG coated, a feature which is the first to be implemented in fourth generation storage rings.

Team

Lund University, MAX IV Laboratory:

- Eshraq Al-Dmour, Vacuum engineer
- Marek Grabski, Vacuum engineer

Core deliverables

- Implementation of small vacuum aperture all over the storage ring.
- 100% NEG coating as source of pumping down.
- Realizing the technique for the power removal from synchrotron radiation on the chambers wall.

Industry involvement

FMB Berlin

Year

2012-2014

Total budget

EUR 6 million

Collaboration(s)

- Lund University
- CERN
- ESRF
- ALBA

Hyperlink(s)www.maxiv.lu.se**Procurement code(s)**

Mechanical engineering and raw materials
Vacuum and low temperature

Max IV LaboratoryCoordinating university: Uppsala University, www.uu.se**VERITAS****Project description**

The project concerns the design and construction of a high resolution soft x-ray emission beamline for material science at MAX IV. Key parts of the project concern development of components for improved performance, both in collaboration with vendors but also as University in-house development and manufacturing.

The beamline consists of a 57 m +10 m long stretch of vacuum and optical components to shape and transmit soft x-ray photons to a sample where they will interact with the electronic structure of the material being studied.

Team

Uppsala University:

- Marcus Agåker, Project leader, procurement, instrument design
- Carl-Johan Englund, Senior research engineer, mechanical design
- Pierre Fredriksson, Shop engineer, mechanical manufacturing
- Nial Wassdahl, Researcher, assembly and testing
- Joseph Nordgren, Senior Professor, instrumentation design

Core deliverables

Project management, design, mechanical part production and installation.

Year

2011–2019

Budget

EUR 8.7 million

Industry involvement

- FMB Berlin
- Toyama
- Jtec
- Piltz Optics
- SKS
- EWCON
- Surface Concepts
- Englund Engineering
- Pfeiffer Vacuum
- Österby Gjuteri

Collaboration(s)

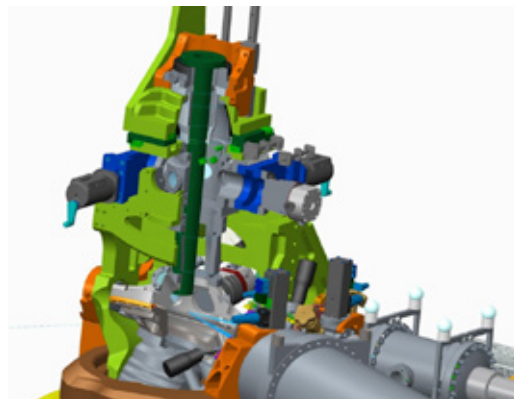
- Uppsala University
- Lund University
- Linköping University

Hyperlink(s)

www.maxiv.lu.se/accelerators-beamlines/beamlines/veritas/



UPPSALA
UNIVERSITET

**Procurement code(s)**

Mechanical engineering and raw materials
Vacuum and low temperature
Particle and photon detectors
Optics and photons

XFEL

347

XFEL

Coordinating university: KTH Royal Institute of Technology in Stockholm, www.kth.se

CENTER FOR X-RAYS IN SWEDISH MATERIAL SCIENCE (CEXS)



Project description

The PETRA III Swedish Node is distinctive in its capability to obtain signals deep inside materials with high measurement time resolution. The PETRA III Swedish Node comprises i) the Swedish Material Science (s)MS) beamline at the PETRA III synchrotron in Hamburg and ii) the Center for X-rays in Swedish Material Science (CeXS). CeXS safeguards Swedish interests at PETRA III and acts as the academic host of the SMS beamline. CeXS activities include: i) raising awareness about research possibilities; ii) providing training and support about why, when and how to use high-energy x-rays; and, iii) disseminating results. A key contribution of CeXS is ensuring a use perspective is taken in decision making about ongoing operational developments and upgrade planning.

Core deliverables

- Scientific Direction of the Swedish Material Science beamline at PETRA III
- Scientific overview articles
- Popular science articles
- Education and training
- News about issues related to PETRA III
- Industry involvement
- Research support
- Education and training

Year

2019-2022

Total budget

EUR 100,000

Collaboration(s)

KTH Royal Institute of Technology Linköping University

Hyperlink(s)

cexs.kth.se

Team

KTH (Royal Institute of Technology) Linköping University

- Peter Hedström, Professor, Material Science and Engineering
- Denise McCluskey, PhD, Material Science and Engineering, Unit of Properties
- Linköping University
- Jens Birch, Professor, Department of Physics, Chemistry and Biology, Thin Film Physics
- Fredrik Eriksson, Associate professor, Department of Physics, Chemistry and Biology, Thin Film Physics



Procurement code(s)

Information technology
Particle and photon detectors

XFEL

Coordinating university: Stockholm University, www.su.se

CHARACTERIZATION AND FIDUCIALIZATION OF UNDULATOR QUADRUPOLES



Project description

Control and measurements of magnets for the European XFEL. Measurement of magnetic Axis with 2-micrometer resolution, measurement of distance between magnetic axis and fiducials within 50 micrometers.

Year

2010

Total budget

N/A

Team

Stockholm University, Manne Siegbahn Laboratory

- Anders Hedqvist, Researcher
- Fredrik Hellberg, Researcher

ESS

- Håkan Danared, Researcher

Core deliverables

Measured specified properties of magnets.

Procurement code(s)

Electrical engineering and magnets



LUNDS UNIVERSITET

XFEL**Coordinating university:** Lund University, www.lu.se**HANSEATIC LEAGUE OF SCIENCE (HALOS)****Project description**

By bringing new life science users together with researchers from the large regional photon and neutron infrastructures HALOS facilitates the development of new measurement methods and instrumentation. For example the ongoing development of X-ray fluorescence imaging applications in tissue imaging and time-resolved crystallography to study protein mechanisms at PETRA III. HALOS also aims to connect with the The Helmholtz-Lund International graduate School (HELIOS) project, to further enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Year

2019-2022

Team

Includes among others

- Kajsa Paulsson, PhD, Lund University, Faculty of Medicine
- Michael Gajhede, Professor, UCPH
- Arwen Pearson, Professor, UHH
- Marite Cardenas, Professor, Malmö University
- Anders Bjorholm Dahl, Professor, DTU

Core deliverables

HALOS will build a unique collaboration between Hamburg and South-West Scandinavia, bring together the four unique research facilities MAX IV, ESS, DESY and European XFEL, and create a centre for integrated, world-leading Life Science innovation and research. In the work package for Cross Border Research different activities are arranged such as seminars, webinars, workshops, summer/winter schools, match-making and not least funding of 6 month projects. The funding of 6 month projects is given to only projects with industry outreach plans and of high innovation potential. The work in the WP will result in increased awareness, competence development and increased use of large scale facilities in Life Science research and innovation.

In the workpackage Regional Development the HALOS community in Hamburg and Southwest Scandinavia work to improve the conditions for using the large scale Research Infrastructures

including topics mobility, remote access, innovation and tech-transfer and science cities and develop joint key messages and strategies, bi- and multi-lateral agreements.

Industry involvement

Companies involved or selected for targeted out-reach activities include: ReceptorPharma, ImplexionPharma, Leo Pharma, Lundbeck, Avilex Pharma, Acesion Pharma, Borregaard, Colloidal Resources Competence, Axiom Insights, Thermofisher, Abbott, NIOM, Corticalis, Catalyst Biosciences.

Total budget

EUR 3.6 million

Collaboration(s)

- Lund University
- Universität Hamburg
- University of Copenhagen
- MAX IV
- ESS
- Malmö University
- Region Skåne
- DESY
- European XFEL
- City of Hamburg
- Technical University of Denmark
- Aarhus University
- Capital Region of Denmark
- Medicon Valley
- Alliance EMBL

Hyperlink(s)www.halos.lu.se**Procurement code(s)**

Electrical engineering and magnets
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature
Optics and photonics
Particle and photon detectors
Health, safety and environment

XFEL

Coordinating university or institute: KTH Royal Institute of Technology in Stockholm, www.kth.se



HEAT LOAD INVESTIGATIONS ON DIFFRACTIVE OPTICS: FABRICATION OF 'ZONE PLATE' NANOSTRUCTURES ON DIAMOND SUBSTRATE, SIMULATIONS OF HEAT TRANSPORT, DESIGN OF COOLING SYSTEMS, AND HEAT LOAD TESTS WITH BEAM

Project description

The heat load on X-ray optics is very high at Free Electron Lasers. The purpose of this Project was to develop X-ray optics with effective heat transport and design of cooling systems.

Team

KTH (Royal Institute of Technology)

- Ulrich Vogt, Professor, Applied Physics

Core deliverables

X-ray optics with properties suitable for high-intensity Free Electron Lasers, in particular the European XFEL.

Year

2010

Total budget

N/A

Procurement code(s)

Optics and photonics

XFEL

Coordinating university: University of Gothenburg, www.gu.se

INSTRUMENT TO INCREASE THE CAPACITY FOR LIFE-SCIENCE STUDIES SFX AT XFEL



UNIVERSITY OF
GOTHENBURG

Project description

The aim of the Serial Femtosecond Crystallography (s)FX) instrument is to increase the capacity for life-science studies at the European X-ray Free Electron Laser (EU-XFEL). To this end we have built an instrument that can run parasitically to, or independently of, the Single Particles and Biomolecules (s)PB) instrument that was the first beamline constructed at the European XFEL. To accommodate a second (s)FX) instrument, we refocus the XFEL beam after it passes through the SPB instrument. This is possible because the X-ray beam is essentially unaffected by the very small samples probed in the first instrument. Together, these end stations provide an invaluable resource for screening and measuring single molecules, nano- and micro-crystals, viruses and more.

Industry involvement

- FMB Oxford, UK
- JJ X-ray, Denmark
- JTech, Japan
- Pfeiffer Vacuum, Germany Suna Precision, Germany

Year

2014-2018

Total budget

EUR 20.5 million

Collaboration(s)

University of Gothenburg, Sweden, University of Hamburg, Germany, University of St Andrews, UK, University of Oxford, UK, La Trobe University, Australia, Uppsala University, Sweden, Stockholm University, Sweden, Lund University, Sweden, Arizona State University, US, University of Lübeck, Germany, Diamond Light Source, UK, Medical Research Council Laboratory of Molecular Biology, UK, Karolinska Institute, Sweden, Paul Scherrer Institute, Germany, NSF BioXFEL Science and Technology Center, US, Ministry of Education, Science, Research and Sport of the Slovak Republic, DESY, Germany, Max Planck Society, Germany

Hyperlink(s)

www.xfel.eu/facility/instruments/spb_sfx/sfx_user_consortium/index_eng.html



Procurement code(s)

Particle and photon detectors
Vacuum and low temperature

Team

University of Gothenburg

- Richard Neutze, Team leader, Professor Department of Chemistry and Molecular Biology
- University of Hamburg
- Henry Chapman, Prof. Dr., Division Director, Center for Free-Electron Laser Science, DESY
- University of Oxford
- James H. Naismith, Professor, Structural Biology
- European XFEL
- Adrian Mancuso, Professor, Lead Scientist of the Single Particles

Core deliverables

- In-atmosphere end station including:
- Fixed target sample delivery system (Roadrunner) Jungfrau detector (4 Megapixels)
- Liquid jet sample delivery system
- Optical pump laser technology
- In-vacuum end station including:
- Liquid jet sample delivery system
- AGIPD (detector), 4 Mpx and megahertz rate compatible Optical laser pump technology
- Diagnostic tools including: Wavefront monitor
- Intensity and position monitor(s) Spectrum monitor

XFEL

Coordinating university: Lund University, www.lu.se,

HELIOS**Project description**

The Helmholtz-Lund International graduate School (HELIOS) on "Intelligent instrumentation for exploring matter at different time and length scales" connects major knowledge hubs in the Baltic Sea Region: Hamburg University, DESY, and Lund University. HELIOS started in early 2021 and includes scientists from Particle Physics, Molecular Physics, Nano(bio) Science, and Ultrafast Photon Science. The aim of HELIOS is to develop the instrumentation and data acquisition systems for the next generation of photon sources and particle accelerators, in collaboration with industrial partners that we will seek within Big Science Sweden. HELIOS also aims to connect with the Hanseatic League of Science (HALOS) project for life sciences, to enhance use of the unique research centers in the area (MAX IV, ESS, DESY and XFEL).

Team

Lund University

- Mathieu Gisselbrecht, Associate professor, Physics
- Caterina Doglioni, Associate professor, Physics, Particle physics
- Anders Mikkelsen, Professor, Physics, NanoLund

Core deliverables

Individual projects investigate novel solutions for (e.g.):

- Real-time data acquisition and analysis
- Image processing techniques
- Feedback control loops
- On chips miniaturization using nanotechnology for biosensing

Year

2021-2026

Total budget

EUR 7.9 million

Collaboration(s)

University of Hamburg

Hyperlink(s)

<https://www.heliosgraduateschool.org>



LUNDS UNIVERSITET

**Procurement code(s)**

Electronics and radio frequency
Information technology
Vacuum and low temperature
Optics and photonics
Particle and photon detectors

XFEL

Coordinating university: Uppsala University, www.uu.se

LASER HEATERS**Project description**

The European XFEL is the world's largest and most brilliant free electron laser. It is located at DESY, Hamburg, Germany and produces high intensity x-ray light pulses used for various state of the art synchrotron light investigations. It consist of a 3,4km long electron accelerator utilizing magnet structures for light creation. XFEL is used an enormous microscope. To overcome potential problems with the distributions of the electrons travelling in bunches a laser heater was implemented. The laser heater is Sweden's largest in-kind contribution into the XFEL project.

Team

Uppsala University

- Mathias Hamberg, Researcher, Department of Physics and Astronomy, FREIA
- Frank Brinker
- Christopher Gerth
- Evgeny Schneidmiller
- Lutz Winkelmann

Core deliverables

- Ultra high vacuum (UHV) electron vacuum chambers, with extreme tolerances regarding magnetic permeability, surface roughness, oxide thickness layering and copper coating.
- Laser transport vacuum system (~40 m).
- Laser routing and stabilization system with micrometer precision.
- PLC control systems.
- Undulator magnet.
- Design of system.
- Installation of setup
- Commissioning
- Improvements and tests

Year

2007-2018

Total budget

EUR 1 million

Industry involvement

- KYMA
- TEM Messtechnik GmbH
- FMB Berlin
- Pfeiffer Vacuum
- VACOM
- Newport optics
- Thorlabs
- Altechna
- PLX
- Owis
- Smaract
- Beckhoff
- UMB
- Edstraco
- Sala Bly



UPPSALA
UNIVERSITET

Procurement code(s)

Civil engineering, building and technical services
Electrical engineering and magnets
Electronics and radio frequency
Information technology
Mechanical engineering and raw materials
Vacuum and low temperature
Particle and photon detectors
Optics and photons
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment

XFELCoordinating university: Uppsala University, www.uu.se**LASER HEATER SYSTEM FOR THE INJECTOR;
DESIGN, PRODUCTION, TEST, DELIVERY, AND
COMMISSIONING**UPPSALA
UNIVERSITET**Project description**

X-ray Free Electron Lasers are often driven by high-brilliance photo-cathode radio-frequency guns which generate electron beams. These electron beams are very cold, which can lead to micro-bunching instabilities. The purpose of the laser heater is to gently and in an easily adjustable way heat up the electron beam in order to avoid such instabilities. The laser heater is in constant use at the European XFEL as it alleviates the tuning process and increase the energy of the outgoing light pulses with about 40% (up to 500% demonstrated). Between 2018-2021 the uptime has been 99,8%.

Core deliverables

A laser heater

Year

2010-2019

Total budget

N/A

Team

Uppsala University

- Mathias Hamberg
- Niklas Johansson
- Masih Noor, Simon Fahlström
- Volker Ziemann

355

Procurement code(s)

Electronics and radio frequency

XFEL

Coordinating university: Uppsala University, www.uu.se

MASS SPECTROMETER AND CELL SORTER FOR BIOLOGY INFRASTRUCTURE



UPPSALA
UNIVERSITET

Project description

The stability of biological samples is limited, and optimal use of beam time at XFEL requires a biological sample infrastructure to provide: (i) support to the Swedish life-science community in generation and handling of challenging samples in the immediate proximity to XFEL instruments; (ii) appropriate selection, quality control and evaluation of samples, including correlative imaging, immediately prior to XFEL experiments; (iii) standardised technology for data interpretation, including computation and validation of structural models. We proposed to establish a collaborative infrastructure, integrated within XFEL, providing open-access facilities for preparation and sample handling. The Swedish contribution was essential for the realisation of the project at the European XFEL. The XBI facility that was built from this IKC is up and running at XFEL.

Core deliverables

Construction of the XBI infrastructure at XFEL
Successful user operation of the XBI infrastructure at XFEL

Year

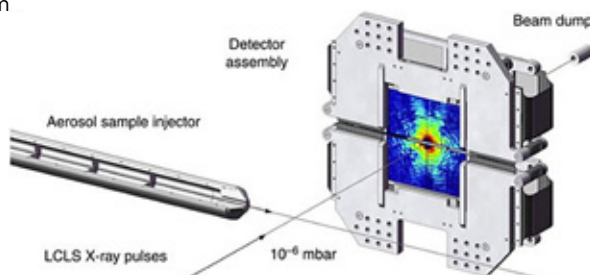
2013-

Total budget

EUR 1.6 million

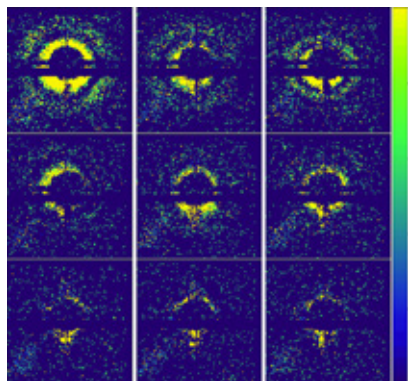
Hyperlink(s)

www.xfel.eu/users/experiment_support/user_labs/the_xfel_biology_infrastructure_xbi_user_consortium/index_eng.html



Team

Uppsala University, Laboratory of Molecular Biophysics:
Janos Hajdu, Professor molecular biophysics, specialist in extreme photon science, ultra-fast diffractive imaging, biophysics, structural sciences



Procurement code(s)

Optics and photonics



UPPSALA
UNIVERSITET

XFEL

Coordinating university: Uppsala University, www.uu.se

NIR SPECTROMETER FOR EUROPEAN XFEL

Project description

The European XFEL is the world's largest and most brilliant free electron laser. It is located at DESY, Hamburg, Germany and produces high intensity x-ray light pulses used for various state of the art synchrotron light investigations. It consist of a 3,4km long electron accelerator utilizing magnet structures for light creation. XFEL is used an enormous microscope. Potential problems with the electron bunches can arise in turn affecting the overall outcome of the performance.

In order to better understand the nature of the electron bunches it was decided to implement a continuous shot-to-shot NIR spectrometer who will be sensitive to radiation emitted by upstream pinhole screen. The spectral signature will be a key feature to understand electron bunch behavior and changes. To be able to read out with continuous shot-to-shot ratio of 4.5MHz the KALYPSO detector system is used which enables this to be the world's fastest NIR spectrometer of such type.

Core deliverables

- Optics setup
- Electronics setup for readout including the KALYPSO system

Year

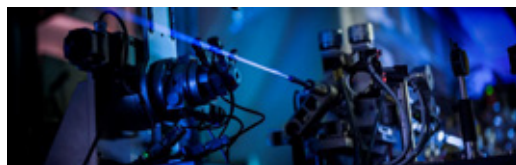
2018-2019

Total budget

EUR 50,000

Collaboration(s)

- Uppsala University
- DESY



Team

Uppsala University:

- Mathias Hamberg, Researcher, Department of Physics and Astronomy, FREIA
- Simon Fahlström, Department of Physics and Astronomy, The Svedberg Laboratory

DESY:

- Christopher Gerth
- Nils Lockmann

Procurement code(s)

Electronics and radio frequency
Information technology
Mechanical engineering and raw materials
Particle and photon detectors
Optics and photons
Gases, chemicals, waste collection and radiation equipment
Health, safety and environment

XFEL

Coordinating university: Uppsala University, www.uu.se

SAMPLE INJECTOR AND DIAGNOSTIC SYSTEM



Project description

The Laboratory of Molecular Biophysics at Uppsala University provided parts of the bio-imaging instrumentation as a Swedish in-kind contribution to the European XFEL. The instrumentation will permit ultra-fast coherent diffraction studies on non-crystalline objects, such as single virus particles or biomolecules. The project included tests of prototypes at FLASH in Hamburg and at the LCLS at Stanford.

Core deliverables

Uppsala developed a sample injector and diagnostic instrumentation for the European XFEL.

Year

2011–2015

Total budget

EUR 520,000

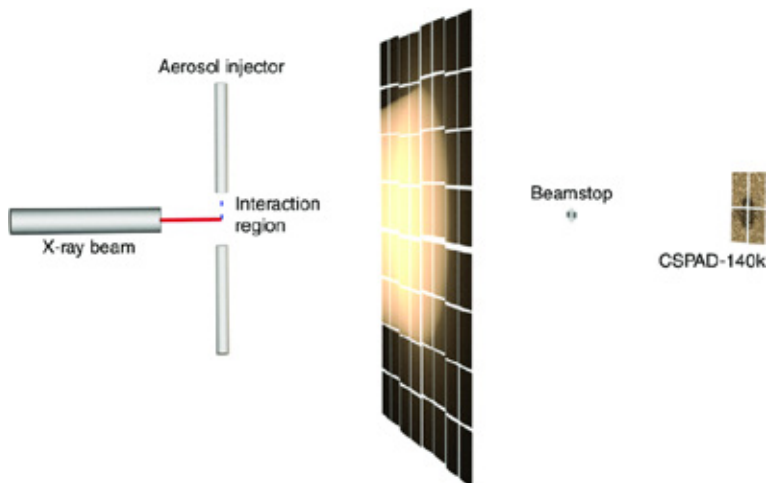
UPPSALA

UNIVERSITET

Team

Uppsala University

- Janos Hajdu, Professor, molecular biophysics, specialist in extreme photon science, ultra-fast diffractive imaging, biophysics, structural sciences
- Jakob Andreasson, Specialist in AMO and laser science



Procurement code(s)

Optics and photons

XFEL

Coordinating university: Stockholm University, www.su.se

TEMPERATURE MEASUREMENT SYSTEM FOR UNDULATORS



Project description

The second project concerns high precision measurements of the undulator temperature. The SASE radiation intensity depends strongly on the undulator period and the magnetic field strength, which are both sensitive to temperature. Instead of keeping the temperature within 0.1 degrees along the undulator tunnel, a temperature compensation scheme can be applied.

Core deliverables

Temperature compensation scheme and delivery of temperature sensors.

Year

2010

Total budget

N/A

Team

Stockholm University, Manne Siegbahn Laboratory

- Anders Hedqvist, Researcher
- Fredrik Hellberg, Researcher

ESS

- Håkan Danared, Researcher

Procurement code(s)

Electrical engineering and magnets

360

SKA

SKACoordinating university: Chalmers University of Technology, www.chalmers.se**BAND 1 RECEIVER FOR THE SQUARE KILOMETRE ARRAY****Project description**

The Square Kilometre Array (s)KA) will be the world's largest and most sensitive radio telescope, capable of transforming our understanding of the universe and our place in it. The dish antennas to be built at the SKA site in South Africa need to be sensitive to a broad range of radio frequencies. The Band 1 receiver developed at Onsala Space Observatory, Chalmers, for 350-1050 MHz (wavelengths 30-85 cm) is composed of a specially-designed quad-ridge flared horn (QRFH) and room-temperature low noise amplifiers from Low Noise Factory to minimise noise and maximise sensitivity over the required range. Each of the initial 133 dishes of the SKA will be equipped with one Band 1 receiver.

Team

Chalmers University of Technology:

- John Conway, Director, Onsala Space Observatory, Department of Space, Earth and Environment
- Jonas Flygare, feed design and testing,
- Magnus Dahlgren, microwave instrument design and testing
- Leif Helldner, mechanical design and testing
- Ulf Kylenfall, microwave instrument layout and circuitry

Core deliverables

- Pre-study and design of individual RF components for high performance receiver design
- Development and test of demonstration receiver model for proof of concept
- Development and test of receiver design
- Successful qualification tests of the final receiver design on the SKA precursor telescope MeerKAT in South Africa

Industry involvement

Leax Arkivator, Ventana Group, MegaMeta, Low Noise Factory, Omnisys.

Year

2013-2018

Total budget

EUR 6 million

Collaboration(s)

- Chalmers University of Technology
- EMSS, South Africa
- EMSS Antennas, South Africa
- South African Radio Astronomy Observatory (s) ARAO)
- Chalmers Nanofabrication Laboratory

The project is part of the SKA DISH consortium.

Hyperlink(s)

<https://research.chalmers.se/person/flygarej>



One of the 64 antennas in the telescope MeerKAT in the Karoo Desert in South Africa, with a Band 1 receiver installed. Photo: SARAO

Procurement code(s)

Electronics and radio frequency
Mechanical engineering and raw materials

SKA

Coordinating institute: RISE Research Institutes of Sweden, www.ri.se

SQUARE KILOMETRE ARRAY**Project description**

The Square Kilometre Array (s)KA project is an international effort to build the world's largest radio telescope, with eventually over a square kilometre (one million square metres) of collecting area. The scale of the SKA represents a huge leap forward in both engineering and research and development towards building and delivering a unique instrument, with the detailed design and preparation now well under way.

The SKA will eventually use thousands of dishes and up to a million low-frequency antennas that will enable astronomers to monitor the sky in unprecedented detail and survey the entire sky much faster than any system currently in existence. Its unique configuration will give the SKA unrivalled scope in observations, largely exceeding the image resolution quality of the Hubble Space Telescope. South Africa's Karoo region and Western Australia's Murchison Shire have been chosen as co-hosting locations. South Africa's Karoo will host the core of the high and mid frequency dishes, ultimately extending over the African continent. Australia's Murchison Shire will host the low-frequency antennas.

The SKA Signal and Data Transport (s)ADT Consortium, was led by the University of Manchester, and incorporates the Synchronization and Timing (s)AT SADT sub-element. SAT aims, inter alia, to provide a highly accurate reference frequency distribution system to both the SKA-Mid and SKA-Low telescopes.

Team

RISE, Research Institutes of Sweden

- Sven-Christian Ebenhag, PhD, Senior Scientist, Unit Time and Optics
- Per Olof Hedekvist, PhD, Senior Scientist, Unit Time and Optics

Core deliverables

SAT had two candidates for frequency distribution designs. In order to select a single candidate to go forward to Critical Design Review by the SKA Organization, the Consortium management performed a down selection process. The process involved assessment by an expert panel in which

RISE was one of the partners. Using a pre-defined formal process and methodology, the Consortium asked the appointed expert panel to reach a consensual agreement regarding which, if any, of the candidate designs best met the requirements of the SKA-Mid and SKA-Low telescopes.

Year

2017

Total budget

In kind

Collaboration(s)

The project was a part of the SKA SADT consortium.

Hyperlink(s)

<https://skatelescope.org>
www.ri.se/en/what-we-do/expertises/position-navigation-and-time

**Procurement code(s)**

Electronics and radio frequency
 Optics and photonics

OTHER

363



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Brookhaven National Laboratory

Coordinating university: Lund University, Faculty of Engineering, www.lth.se

PIXEL-PAD DETECTORS

Project description

By the start of the Relativistic Heavy Ion Collider (RHIC) in year 2000 at Brookhaven National Laboratory in New York the energy for collision of heavy nuclei increased by a factor 10. The Lund group participates in the PHENIX experiment at RHIC which is designed to study the Quark Gluon Plasma, a very hot (100000 times hotter than the sun) and dense state of matter prevailing in the first microseconds of the Big Bang. This state can be produced by nuclear collisions at high energy and it was found for the first time by PHENIX (and others) at RHIC. The studies continue now at LHC at CERN. The Lund group, invented a new type of detector (named pixel-pad detector) for the tracking of charged particles and, thanks to close cooperation with Swedish industry, provided a unique solution for electronics construction in extremely thin format. Together with Swedish industrial partners 2 integrated circuits (ASICs) were designed and produced. The circuit board consisting of 4 bare silicon die bonded by CHIP ON BOARD technique on 100 micron thin KAPTON. In total 80 square meters of detector was constructed. One part is shown in the picture. Development and construction took place 1995-2000. The system was running until 2016. The techniques used are still unique and competitive.

Team

Lund University, Faculty of Engineering:

- Anders Oskarsson, Professor, physicist, project leader, detector expert, integration of equipment in PHENIX
- Hans Åke Gustafsson, Professor, physicist, deputy project leader, detector expert, integration of equipment in PHENIX
- Lennart Österman, Research engineer, electronics, specification, circuit board design and board layout, CAD, R&D, quality control

Core deliverables

- System design
- Design and construction of Digital ASIC for TEC detector
- Design and construction of Digital ASIC for pixel-pad detector

- Design and assembly of 5000 readout cards with Chip on Board on KAPTON
- Test and burn-in of front end electronics
- Assembly and integration in PHENIX at BNL

Industry involvement

- SiCon
- XiCON

Year

1995-2000

Total budget

EUR 900,000

Collaboration

- Lund University
- Vanderbilt University,
- Stony Brook University
- Oak ridge National Laboratory
- Brookhaven National Laboratory
- Weizman Institute

Hyperlink(s)

www.phenix.bnl.gov



Procurement code(s)

Electronics and radio frequency
Particle and photon detectors

Other

Coordinating university: Uppsala University, www.uu.se

ICECUBE EXTENSION

Project description

IceCube is the largest neutrino detector ever built. It is located at the South Pole where 1 km³ of the deep glacier ice has been instrumented with over 5000 optical sensors. The sensors are attached to cables that have been deployed into vertical holes drilled using jets of hot water. The digital optical modules are read out with a timing precision of a few ns.

For a future expansion of IceCube we are now looking for companies that can develop hybrid, fiber-optical cables to exigent specifications, help develop radio technology for neutrino detection or provide wind turbines and batteries for polar conditions. We are also interested in small cameras for deployment into the ice together with optical modules.

Team

Uppsala University:

- Olga Botner, Team leader, professor, specialist in high-energy physics
- Allan Hallgren, professor, specialist in high-energy physics

Core deliverables

- Cables with excellent transmission properties over 3 km length
- Radio antennas and electronics
- Wind turbines
- Batteries
- Cameras

Industry involvement

Hexatronic AB, Hudiksvall

Year

2020-2025

Total budget

EUR 300 million

Collaboration(s)

- Stockholm University
- Michigan State University
- 50 collaborating institutions worldwide

Hyperlink(s)

icecube.wisc.edu



UPPSALA
UNIVERSITET



Procurement code(s)

Electronics and radio frequency
Particle and photon detectors





SUCCESS STORIES

Go Virtual Nordic.....	369
HUURRE	371
MCT Brattberg	373
Omnisys.....	375
Scanditronix Magnet.....	377
Studsvik Nuclear.....	379
Teledyne SP Devices.....	381

More success stories on our homepage.



GO VIRTUAL NORDIC

Specialist expertise, experience, and flexibility

The IT company Go Virtual Nordic, with head office in Göteborg, customises cost-effective data solutions with a focus in HPC (High Performance Computing).

With comprehensive expertise in the fields of HPC and AI, the company has forged ahead in the market. The cutting-edge company holds a unique position in areas such as HPC and supercomputers.

Big order to supply experiment stations at CERN

Research facilities handle vast quantities of data, making them an interesting market for Go Virtual Nordic. In 2020, Big Science Sweden contacted the company and drew their attention to a large upcoming procurement from CERN. They submitted a tender and won the order, which involves extensive deliveries linked to CERN's upgrades of the experiment stations ALICE, LHCb and CMS at CERN's Large Hadron Collider.

"We are HPC architects who build efficient solutions in accordance with customer needs," explains Peter Hjörn, HPC Sales at Go Virtual Nordic. "CERN wanted an upgrade of its network, which is the communication link between the servers that comprise its cluster technology. The network consists of communication components from Mellanox Technologies that are adapted to CERN's needs. Our solution meets the crucial requirement for rapid communication between computers, servers and storage units."

Experience of complex system solutions

As a small company, Go Virtual Nordic can be flexible and agile, and make quick decisions. The company can stand up against European HPC companies, shown not least by the big order from CERN, which led to increased sales in 2020.

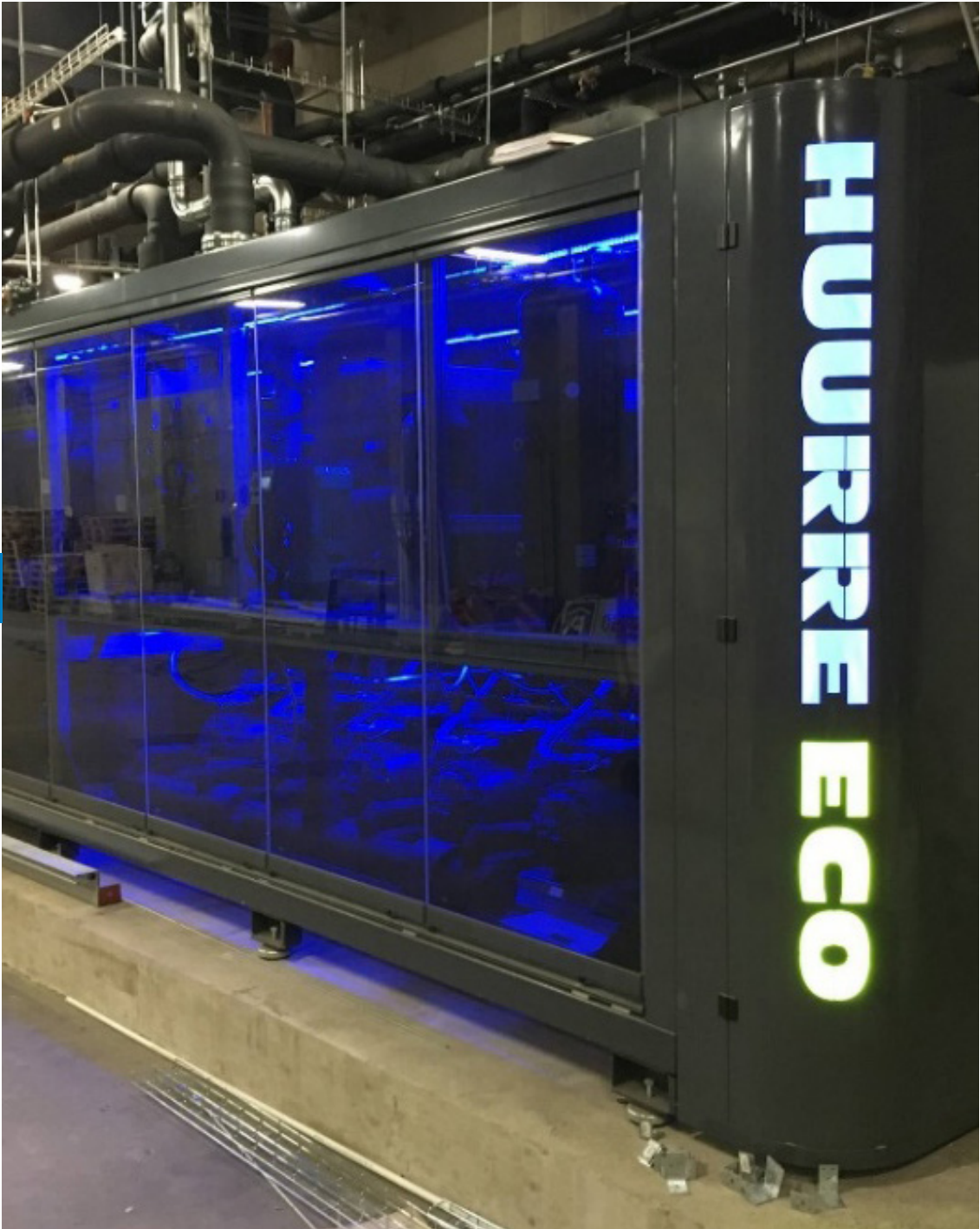
"Go Virtual Nordic is a relatively small company, but we're efficient and understand the customer's needs, and we also have experience of building complex system solutions," continues Peter Hjörn. "Our employees' aggregated experience means we can offer attractive specialist expertise in the HPC field."

Good opportunities for new business

Go Virtual Nordic is a well established HPC supplier in Europe, not least to the automotive industry, which is facing many new IT challenges. Self-driving cars and smart products are examples of areas that will require both AI technology and HPC solutions for storage capacity and for handling large data quantities. The research facilities are facing similar challenges.

"We monitor procurements from the facilities in Europe, and see good opportunities for new business in the future," concludes Peter Hjörn.

"Research facilities handle vast quantities of data, making them an interesting market for Go Virtual Nordic."



HUUREE

Designs, manufactures and supplies refrigeration units

Huurre is part of the Caverion Group – a leading European group in the refrigeration sector, with a focus on energy-efficient and environmentally friendly refrigeration. Huurre Sweden, with 150 employees, is owned by Caverion Sverige.

Huurre designs, manufactures and supplies refrigeration units, and for many years has driven the technology away from fluorinated greenhouse gases to natural coolants, such as carbon dioxide. Sweden and the Nordic region are at the forefront of this technological development, and Huurre is now a world leader in these types of refrigeration units.

Huurre has regular contracts with universities, hospitals, schools, and ice halls, but also supplies commercial customers like shops, properties, process industry, and restaurants. Research facilities offer a promising new market.

Big order from CERN

CERN is currently undergoing an extensive upgrade, which includes replacing refrigeration systems. In 2020, representatives from CERN participated in a seminar on CO₂-cooling arranged by Big Science Sweden at the Ångström Laboratory at Uppsala University. This was where CERN heard about Huurre. Ahead of the procurement of new refrigeration units for the CMS and ATLAS experiments at LHC, CERN contacted Huurre and recommended that the company submit a tender.

“We did so and won the order, and see it as recognition that we have the necessary specialist expertise,” explains Fredrik Strengbohm, Technical Manager at Huurre. “We’ll be supplying refrigeration units designed and built with extremely stringent requirements in terms of safety, refrigeration, and redundancy. CERN

employees visited us digitally during the procurement process. After interviews and a guided tour using cameras in our production environment, they were convinced we had the necessary resources.”

-53 degrees and 100 percent redundancy

In the project Huurre may be supplying a total of 20 units by 2024, assuming practical tests in situ at CERN in the autumn are a success. Huurre is currently working with final project planning, design and construction. The unit will refrigerate down to -53 degrees with 100 percent redundancy.

“The technical demands are extremely high,” continues Fredrik Strengbohm. “The accelerators must be able to run at full capacity even when outdoor temperatures are high. Nothing must go wrong and cause disruption while the expensive experiments at CERN are being conducted.”

In spring 2021, the unit will be planned and designed at the head office in Västerås. Later, the unit will be built at the Huurre factory in Finland, and then assembled in situ at CERN.

Technology for the future

Greater requirements for energy-efficient and environmentally friendly refrigeration make Huurre an attractive supplier that works with future-proof technology.

“It’s not so common that Swedish companies supply products to southern Europe, but news of our expertise and competencies has spread, and we’ve put ourselves on the map without marketing. Working in an environmentally friendly way is important today, and will be even more important tomorrow, so our products and services are ideal for the future.”

“Research facilities offer a promising new market.”



MCT BRATTBERG

World leader in development of cable and pipe transits

MCT Brattberg develops and manufactures high-performance cable and pipe transits, used to protect people and property in various application areas in exposed environments.

Within a short period, the company has won two orders, one from ESS and the other from the Jules Horowitz Reactor, a test reactor for water-cooled nuclear power, built in connection with ITER.

The ESS order concerns cable and pipe transits for the target area, a radiation environment requiring specialised cable transits. If all goes according to plan, the order should be completed during 2021.

At the Jules Horowitz Reactor, MCT Brattberg's products will be tested against future requirements. MCT Brattberg is now working on design ahead of an approved quality audit, and will start to supply the equipment during 2021.

Known products, high quality, and strategic contacts

"We've worked a lot with ITER, and supplied fire protection equipment to the buildings," explains

Mats Åfeldt, Sales Manager at MCT Brattberg. "Eventually, we hope to become involved in the fusion part.

"We started to establish contacts at ESS through Skanska already during the design stage of the facility, and we've been making continual deliveries since then. Our products are well known, and are known to be of high quality. For a long time, we've been supplying equipment to nuclear power plants, which also have very exposed environments with very strict requirements."

Already in the 1950s, MCT Brattberg developed a product, the MCT Brattberg system, a modular multi-cable and pipe transit, which over the years has given the company a global reputation.

"Big Science Sweden has given us an effective and rapid way in to new contact networks. This frees up valuable time that we can instead devote to talking with the right people at the right time – that's the sort of thing that can be crucial in future business."

"We've always worked with customers that demand high quality. We've gradually made the right contacts."



OMNISYS

Key supplier to the space industry

Omnisys develops and manufactures customised scientific instruments for advanced science applications, and specialises in development and production of high performance electronics hardware for the space industry.

In 2007, Omnisys was awarded the contract as main supplier for detailed design and production of the Water Vapour Radiometers for the ALMA telescope that ESO was constructing in Chile. Omnisys designed the systems almost from scratch, to make them suitable for serial production and to ensure the systems could endure the harsh desert environment at high altitude.

Corrective maintenance and replacement of obsolete components

The contacts with ESO have continued, and in 2017 Omnisys signed a five-year agreement on corrective maintenance and development of spare parts that had become obsolete. Maintenance agreements are vital for end users when they concern very specialised technology intended for long-term operation.

“Due to the rapid technological development, components to certain subsystems are no longer available, so new replacement systems must be developed after approximately ten years,” explains Martin Kores, Managing Director Omnisys.

New receiver components and spare parts for harsh environments

“Here, we’re talking about systems installed in an extremely harsh environment, in a desert in

Chile at a height of 5000 metres, with limited opportunities for maintenance and repair on-site,” continues Martin Kores. “We don’t just carry out traditional maintenance work like troubleshooting and repair – we also identify subsystems that need updating, and we develop and supply new receiver components and spare parts.”

Martin Kores is very optimistic about an extension to the five-year contract. Few other companies in Europe have the capacity for this type of contract, and ESO are very satisfied with the equipment that Omnisys has supplied so far. The agreement with ESO also gives the company valuable contacts in the radioastronomy market.

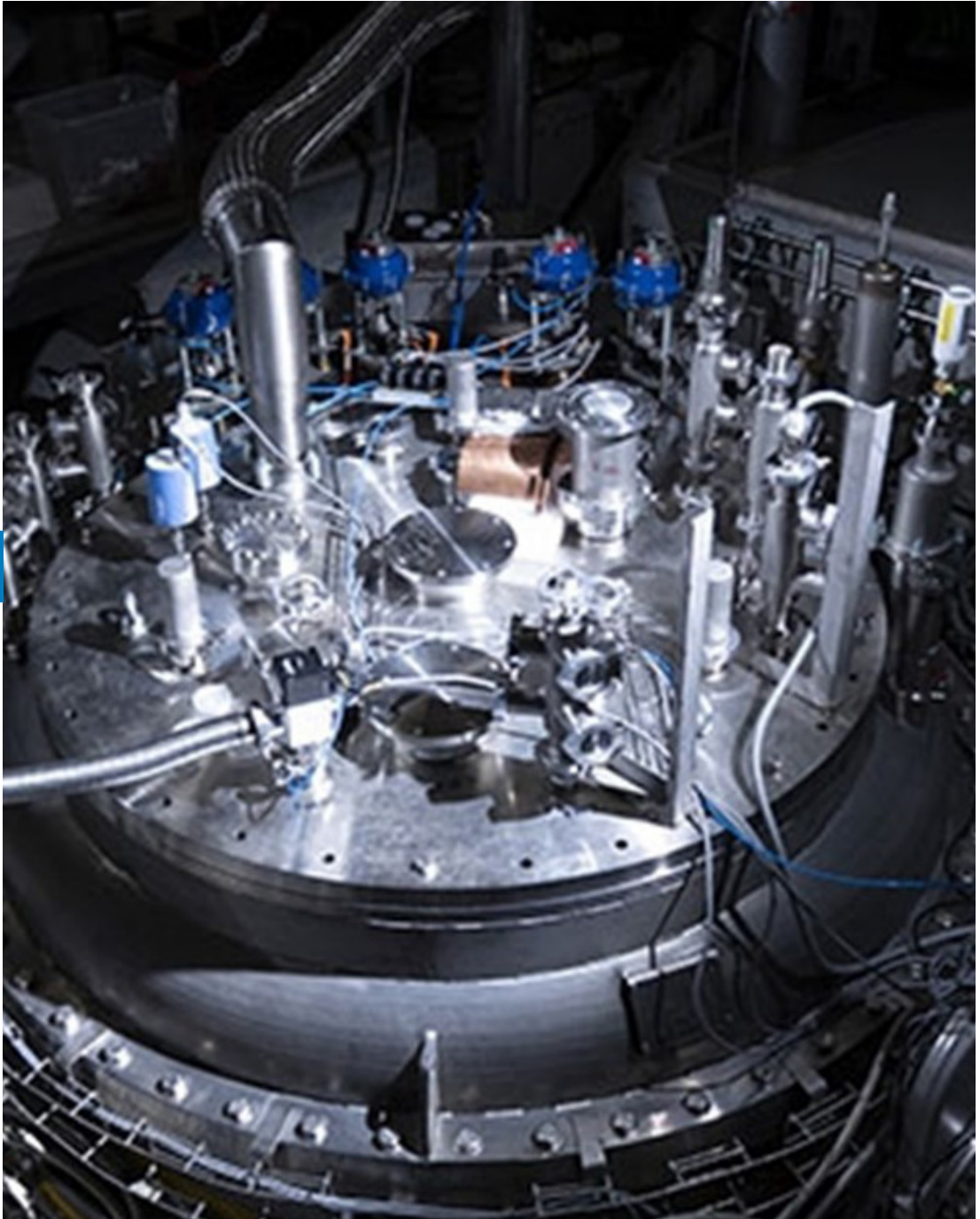
Omnisys wins big order through consortium

Omnisys is part of the industrial consortium that won an extensive order to develop an Arctic Weather Satellite for ESA (The European Space Agency).

A prototype for a new weather satellite will be developed. The prototype will demonstrate the opportunities afforded by a constellation of smaller weather satellites with a dedicated payload of microwave instruments. These will provide an almost continual flow of data for measurement of temperature and precipitation, with global coverage.

The industrial consortium is led by OHB Sweden, and Omnisys Instruments is the prime contractor of the microwave radiometer. The agreement runs over three years, and is worth over SEK 100 million for Omnisys.

“Few other companies in Europe have the capacity for this type of contract.”



Top of the five-metre-deep thermos (vertical cryostat), which will be used to cool down the magnet prototype to -270 degrees Celsius during the tests at the FREIA laboratory.

SCANDITRONIX MAGNET

Constructing new superconducting magnet

Scanditronix in Vislanda is a leading manufacturer of magnets for particle accelerators, supplying products to research facilities, major medical companies in the field of cancer treatment, and other industries. The company's experience, engineering know-how and long-term relationships with demanding customers, such as research facilities, has won the company an excellent reputation on the market.

Scanditronix is now entering a new phase of innovative technology, developing 'cold' superconducting magnets in an exciting collaboration project involving both academia and industry. The project aims to develop environmental-friendly and energy-efficient superconducting magnets, combining research and technical development to boost global competitiveness for Swedish companies.

Mikael Vieweg, CEO, Scanditronix, describes how the current project is breaking new ground. "Working with superconducting magnets is nothing new in our industry, but the type of magnet we're currently developing has a design that has never been used before in accelerators. It will be less complicated and thereby easier to manufacture than existing superconducting magnets. The CCT concept, Canted Cosine Theta, is unique."

Academia and industry working side-by-side

A lot of the preliminary work and research has been done, for example at the FREIA Laboratory at Uppsala University. Industry and academia

gathered at a Big Science Sweden AIMday in 2019, where the foundation was laid for the current project*, which involves an intensive exchange of research and industrial expertise. Scanditronix is one of three companies participating, together with Uppsala University and Linnaeus University.

Uppsala University has a leading role, and is designing the magnet in collaboration with experts from CERN. Linnaeus University is producing drawings and performing calculations, and Scanditronix and the two other companies will produce the magnet.

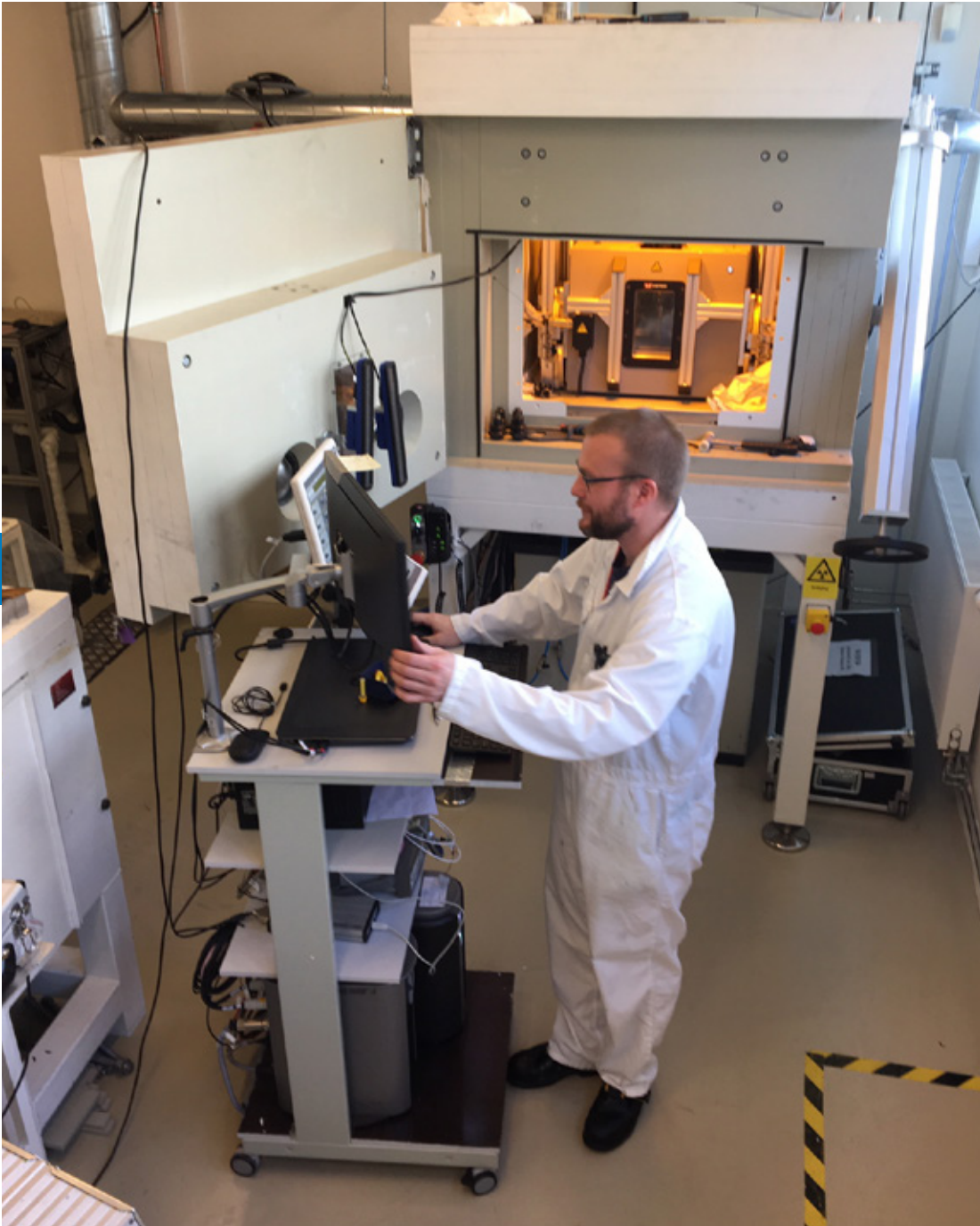
"The process involves a continuous and rewarding exchange of knowledge and expertise," says Mikael Vieweg. "We will make the coil and assemble the magnet. A lot of the technology will be new to us, but still within our field, so it's a suitable project. We're acquiring the equipment and testing new technologies in developing a functional prototype that will be delivered to CERN."

Further interest expected from CERN and medical research

If everything goes well, and the prototype satisfies CERN's expectations, Mikael Vieweg is optimistic that CERN will be interested in a number of similar magnets within a couple of years. He also believes that the medical market, with ion therapy systems for cancer patients, will see great advantages in a compact magnet at a lower cost.

* The project is funded by the European Regional Development Fund, Kronoberg Region and Uppsala University.

"The type of magnet we're currently developing has a design that has never been used before in accelerators."



STUDSVIK NUCLEAR

Working to implement fusion technology

Studsvik Nuclear is a leading supplier of services to the international nuclear power industry. The company's unique specialist expertise built up over the years also includes research and development in the fusion field.

Studsvik has long experience of working with challenging issues in corrosion and materials relating to light water reactors based on the fission principle. The company has been able to adapt its expertise and experimental equipment to solve similar challenges in fusion research. For instance, with a unique testing capacity in flow-accelerated corrosion, Studsvik has successfully established itself in a narrow technological niche. Their experience in materials testing has also helped validate new construction materials for use in future fusion reactors.

The company also has special capacity in its hot cells, where neutron-irradiated, i.e. strongly radioactive material, can be handled remotely. In a hot cell, the material can be tested mechanically and chemically, using various methods. Samples of these materials can be produced for further analysis down to atom level using state-of-the-art microscopy techniques.

Understanding of quality requirements and scientific challenges

At an early stage, Studsvik contacted ITER, F4E and the research organisation EUROfusion (European Consortium for the Development of

Fusion Energy). In the past ten years, Studsvik has been involved in several projects for all three organisations. Studsvik's expertise in nuclear technology has been crucial for the successes.

"Operating within the Big Science arena is on a much larger scale from both a technical and administrative perspective," explains Lotta Nystrand, Key Account Manager in Fusion. "We understand the scientific challenges and the special quality requirements regarding fusion, and we've built up the collaborations needed to work in large international networks like EUROfusion and ITER."

Specialist knowledge in nuclear technology, materials, and corrosion

Lotta Nystrand emphasises the importance of Studsvik being able to use their existing facilities, and their in-depth knowledge in nuclear technology, materials, and corrosion when entering the high-tech Big Science market. She is also aware of the importance of making the right contacts.

"Studsvik are an SME with a strong reputation within nuclear, built up over many decades of working internationally. We started to build relations at an early stage and participated in technology-oriented conferences and featured in scientific journals. Even with a strong base, it takes a lot of work to become established as a supplier and occupy a natural place in the networks aimed at implementing fusion technology."

"We've built up the collaborations needed to work in large international networks."



TELEDYNE SP DEVICES

Cutting-edge instruments for modular data acquisition and signal generation

Teledyne SP Devices designs and manufactures cutting-edge instruments for modular data acquisition and signal generation. Products, employed across a wide variety of industries, include analytical and scientific instruments, and equipment for remote sensing and medical imaging.

The company is a world leader in its field, providing technical solutions that are much in demand for large collaborative projects, including procurements for research facilities such as CERN and ITER.

Innovative technology and solutions

“As a supplier to a major development project, a high degree of flexibility is required” explains Kacper Matuszyński, Sales Engineer Europe at Teledyne SP Devices. “We contribute expertise for developing technical infrastructure. It’s not about mass production but about developing and making single units that must be tested and continuously evaluated and adapted. We work with technology and solutions that no one has done before, so this is genuine research and innovation.”

Teledyne SP Devices has worked its way into the Big Science market, for example by gradually

building up a network of contacts at universities and research facilities. Kacper has identified key people by searching subject areas in databases at various universities.

“You have to be persistent and work systematically, but it’s easy to find information about researchers and their publications,” continues Kacper. “I’m interested in research in our field – it gives me an idea of who are the influencers and decision-makers.

“The Big Science world is a community with an extremely high degree of collaboration. Once you’ve established a good contact, it often leads to further contacts. And if you’ve done a good job – delivered a high-quality product with support – the word spreads quickly, creating a springboard for new business.”

Recent and forthcoming orders

In addition to completed orders to particle accelerator facilities such as CERN and XFEL/ DESY, Teledyne SP Devices has supplied technology for plasma devices like Wendelstein W7-X and JET. Recent projects include a new detector for the DELTA electron storage ring in Dortmund, Germany.

“Teledyne SP Devices delivers highly customised solutions and products requiring intensive R&D.”



Networking continues despite the pandemic

Our digital events have enabled us to continue activities that bring people together and spread knowledge, but we are looking forward to physical meetings and exciting study trips.



PARTNERSHIP, BUSINESS, AND KNOWLEDGE TRANSFER

Big Science Sweden is Sweden's official Industrial Liaison Office (ILO), serving as the link between Swedish industry, institutes, academia, and Big Science research facilities.

We promote the build-up of knowledge, skills, and expertise that drive technological development in Swedish companies. We also help research facilities find qualified Swedish suppliers.

Activities arranged by Big Science Sweden offer opportunities for partnerships and collaboration initiatives. Industry, academia, and research facilities regularly participate in our various events, where personal meetings can be the starting point for business and long-term, constructive relationships.

Big Science Business Trips

Big Science Sweden arranges Business Trips, where Swedish companies visit research facilities around Europe. The companies get valuable information about the facilities' upcoming projects and procurements, make contacts with key personnel, and get the opportunity to present what they can offer in terms of unique expertise, skills, and resources.

Knowledge is also exchanged, and contacts made, when representatives of research facilities come to Sweden and take part in road trips, visiting Swedish companies with the specialist expertise and skills that their facilities are looking for.

Conferences and other networking events

Large, international trade fairs and conferences within Big Science are important meeting places for research facilities and Swedish companies. The conference programmes usually include seminars in various areas of advanced technology and reports from some of the large-scale facilities. In workshops and personal meetings, representatives from the facilities can form an overall impression of Swedish high-tech capacity, and make important contacts for future cooperation, projects, and business.



Business Corner

Once a week, every Wednesday morning, we open our Business Corner. This is an effective 30-minute virtual meeting where we go methodically through the new procurements announced by the research facilities, and talk about procurement procedures, contact channels, technical specifications, deadlines, etc.

We regularly invite representatives from the research facilities or other experts to give current information on procurements or other issues relevant for our participants. Suppliers and research facilities can then make important contacts for further discussions.



Big Science@

Big Science@ is a series of workshops focusing on academic institutions' past, present, and future involvement in delivery to Big Science facilities. When academia delivers technology to Big Science facilities, this generates multiple scientific, technological, and societal benefits.

We arrange the workshops together with leading universities and research institutes in Sweden. A Big Science@ event is characterised by inspiration, networking, and ecosystem building.



Big Science Morning

At a Big Science Morning, companies that are already, or are interested in becoming, suppliers to research facilities hear about the latest developments and new technologies within the Big Science field and can discuss opportunities for collaboration. Representatives from the research facilities are invited, and we arrange 1-to-1 meetings.

"A morning meeting is a good way for us to communicate business opportunities focusing on, for example, current procurements or different technical challenges. The informal atmosphere is much appreciated and stimulates networking," explains Frida Tibblin Citron, Business Development and Project Management, at Big Science Sweden in Lund.

Big Science Technology Workshop

Big Science Technology Workshop is a combination of seminar and workshop, where the focus is on a specific field of technology, such as AI, advanced 3D printing, or other areas. The aim is to strengthen the expertise and skills of supplier companies and their abilities to deliver advanced technology. World-class speakers and experts participate in these workshops.

Anna Hall, Programme Director for Big Science Sweden, explains why these events are important. "Technology Workshops have a tremendously important function in driving the development of new advanced technology in the companies. The workshops enable suppliers, researchers from academia, and representatives of research facilities to sit down at the same table and discuss current issues directly, face-to-face."

Big Science Academy

Suppliers to research facilities need to continually raise their level of expertise, to ensure they remain at the cutting edge in the technological fields where suppliers are needed. Big Science Academy offers continual training in the areas that reflect the facilities' requirements and needs, such as accelerator technology, future AI, ultra-high vacuums and procurement handling.

Big Science Sweden Conference

The Big Science Sweden Conference is a meeting place for networking and knowledge sharing – a two-day conference for research facilities, companies, academia, and institutes. Participants meet to discuss challenging issues within Big Science and the opportunities in different fields of technology.

At the digital conference in November 2020, 250 delegates from ten different countries met up over two intensive days that offered nine parallel sessions, 300 unique 1-to-1 meetings, roundtable discussions, and some 50 exhibitors. Examples of comments in the concluding evaluation:

"This is definitively an important hub regarding the connection between industry, researchers and research facilities."

"Best conference so far of any Big Science conference I have ever attended."

AIMday Big Science Technology

AIMday Big Science Technology is a workshop where research facilities get the chance to discuss their challenges with scientists at Swedish universities and institutes and with representatives from high-tech companies that deliver to Big Science.

Ahead of the workshop, the research facilities identify the challenges they are facing in several categories and submit them to Big Science Sweden. Workshop teams with the relevant expertise for each category are then put together to discuss the challenges at AIMday Big Science Technology.



BIG SCIENCE SWEDEN CONFERENCE 2020

JOIN US IN BUILDING THE BIG SCIENCE ECOSYSTEM

VIRTUAL CONFERENCE
NOVEMBER 24, 2020

NOVEMBER 24

Swedish high-tech industry and academia meets with European Big Science facilities

REGISTER TODAY

STATUS AND BUSINESS

08:30 Join us in building the Big Science Ecosystem

Anna Hall, Director Big Science Sweden

08:45 Introducing Sweden as a Big Science player,

Pia Kihlult, Head of Host States Relations at ESS and Anna Hall

09:00 Creating collaboration and business in the Big Science ecosystem, Research facilities giving an update on current status and business plans

09:30

Coffee Break and Interaction

09:45 Creating collaboration and business in the Big Science ecosystem

A number of research facilities giving an update on current status and business plans

10:45 Coffee Break and Interaction

11:00 Creating collaboration and business in the Big Science ecosystem

A number of research facilities giving an update on current status and business plans

11:30 CERN Knowledge transfer ecosystem, developing the innovation culture in a Big Science ecosystem

Why, how and success factors

11:45 Conclusions

Anna Hall Director Big Science Sweden

12:00 Lunch Break

BREAKOUT SESSIONS

13:00 Breakout session

Learn more about challenges and needs of research facilities in different technology fields.

13:45 Break

14:00 Breakout session

Learn more about challenges and needs of research

AI, Control Systems & Data Acquisition, Big Data

Consortium Agreements, why and how

Diagnostics Part One

Material and advanced manufacturing

Remote handling & robotics

Diagnostics Part two

Drones applications

Opportunities for Swedish industry with Tech transfer from Big Science

Vacuum, Cryogenics & Magnets

Electronics and RF systems

1-1-MATCHMAKING

15:15 1-1 matchmaking meetings

A matchmaking event is a quick and easy way to meet potential cooperation partners in face-to-face talks. 15 minutes pass quickly but this is usually enough to make an initial connection, then the bell rings and the meeting starts.

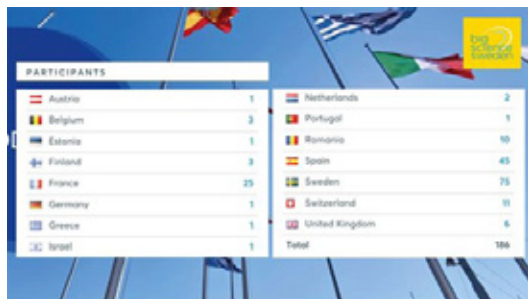


www.bigsciencesweden.se

Big Science Sweden is led and operated by a consortium of leading universities, institutes and industrial network organisations:



THE OFFICIAL SWEDISH ILO



PARTICIPANTS	
Austria	1
Belgium	3
Estonia	1
Finland	1
France	25
Germany	1
Greece	1
Israel	1
Netherlands	2
Portugal	1
Romania	10
Spain	45
Sweden	75
Switzerland	11
United Kingdom	6
Total	186

Industry event

Big Science Virtual Workshop

186 participants from 15 European countries connected to the Big Science Virtual Workshop co-hosted with Eureka/Eurostars. High-tech suppliers from all over Europe listened to representatives from CERN, ESS, and Fusion for Energy/ITER.



Knowledge

Focused Technical Workshop

We gathered industry, academia, and research facilities in virtual technical workshops on remote handling, materials and CO₂-cooling systems. The workshops included presentations, 1-to-1 meetings, and updates on the facilities' current challenges and needs.



International networking

Interactive webinars

BSBF International Organising Committee decided to postpone the BSBF2020 conference. In order to keep the momentum, we engaged in BSBF interactive webinars with the following themes: COVID-19 Pandemic: Impact and Measures on the Big Science and Big Science Organisations: Strategic Plans, 2020-21 Procurements, and Flagship Projects.

The ENRIITC 1st Networking Meeting offered a great chance for participants to get to know one another.



Partner events

Big Science@events

During 2020, we hosted two different Big Science@events - one together with Lund University and one with RISE. These were strategy days filled with inspiration, networking, and ecosystem building, involving the research community, with the aim to define areas of strength in Big Science.

Industrial development

Access Day

Big Science Sweden and the ÅMA Ångström Materials Academy held a seminar where representatives from selected research infrastructures at Uppsala University and industrial companies were invited to share information.



Workshop

Collaboration ESS and DESY

A new pilot study is strengthening collaboration between the research facilities ESS in Lund and DESY outside Hamburg. Greater collaboration is driving development in exciting areas of technology, such as open data, AI, and machine learning. ESS is already involved in a pilot study, ESS Data Lab, together with industry and academia, focusing on alarm management. ESS is now entering a new collaboration with the DESY research facility.



Training

Automation Control

Member companies got the chance to listen to presentations from the EPICS community, with developers and managers from various research facilities that use EPICS tools. One of Big Science Sweden's key areas is knowledge transfer, making scientific and technological development accessible to a wider range of users. EPICS is an innovation, one in which we see great potential for developing tomorrow's industry.

387

Innovate with CERN Discovery Day

Big Science Sweden is developing a Knowledge Transfer Office within Big Science, and has set up a collaboration programme with the CERN Knowledge Transfer Group.

CERN and Big Science Sweden hosted their first joint event.

No fewer than 25 experts from CERN and representatives from 13 Swedish companies, e.g. GKN Aerospace, Volvo Cars, ABB, and Alfa Laval, met to discuss future collaboration.

The collaboration programme applies a challenge-driven approach, to identify strategic innovation challenges in Swedish companies and to match them with unique CERN know-how and technology.



25 experts from CERN and representatives from 13 Swedish companies took part.



Weekly meetings

Business Corner

Every Wednesday, member companies can join a short Zoom meeting and learn about current procurements.



Member meetings

Big Science Mornings

Big Science Morning is our forum where member companies meet with each other, share experiences, and learn more about how to generate business in the Big Science market.



Training event

Step by step

How can companies boost their chances of winning contracts from research facilities?







BIG SCIENCE SWEDEN CONFERENCE 2020

Great atmosphere, fast tempo, and a feeling of almost physical presence when Big Science Sweden Conference 2020 went digital.

Joining us in building the Big Science ecosystem were no fewer than 245 delegates from 14 countries. This year's conference proved to be an intensive day, with reports from eight research facilities, discussions in nine breakout sessions in various areas of technology, and no fewer than 34 speakers and 179 1-to-1 meetings. During the breaks, participants looked round the virtual exhibition, including video pitches from 18 member companies showing their offers to the research facilities.

1-to-1 meetings

An important part of the conference was the dedicated matchmaking session where participants could meet with each other in virtual 1-to-1 meetings.

Breakout sessions

The challenges and needs of research facilities in different technology fields.

- AI, Control Systems & Data Acquisition, Big Data
- Diagnostics - Upcoming opportunities and Swedish initiatives in diagnostics
- Material and advanced manufacturing
- Remote handling & robotics
- Diagnostics - The European ecosystem for diagnostics: How do we best work together?
- Drones applications
- Electronics and RF system
- Opportunities for Swedish industry with Tech transfer from Big Science
- Vacuum, Cryogenics & Magnets

BIG SCIENCE SWEDEN CONFERENCE 2020



Big Science Sweden Influencer: Industry
Carl Johan Fagerström
Fagerström Industrikonsult AB



Big Science Sweden Influencer: Newcomer
Sofia Davidsson
Qtech Group AB



Big Science Sweden Influencer: University
Anders J Johansson
Lund University



Big Science Sweden Influencer: Research Facility
Jérôme Pierlot
CERN

**BIG SCIENCE
SWEDEN 2020
CONFERENCE
AWARD**

The Big Science Sweden Award is given in four categories to individuals showing particular engagement in helping to build Sweden as a Big Science nation and in driving Big Science Technology. This year, the award-winners were:

- Influencer Research Facility: Jerome Pierlot, CERN
- Influencer University: Anders J Johansson, Lund University
- Influencer Industry: Carl Johan Fagerström, Fagerström Industrikonsult
- Influencer Newcomer Sofia Davidsson, Qtech Group

BIG SCIENCE SWEDEN CONFERENCE 2020



What was the most important part of the conference?



**Luis Ortega, Procurement Officer/Group Leader
Procurement Administration Group at ESS**

The 1-to-1 meetings were the most useful, as they provide the opportunity for a deeper and focused discussion with potential suppliers.



**Fabio Biancat Marchet, ELT Programme Engineer
at ESO**

In my view the most interesting subjects were the presentations on the technology transfer and associated discussion.



**Dr. Nicole Elleuche, Managing and Administrative
Director at XFEL**

For me the most valuable part was the exchange with my colleagues from the other international facilities and getting closer to them. This will make it easier in the future to network and get collegiate answers to some specialist questions.

BIG SCIENCE SWEDEN CONFERENCE 2020



Mehdi Daval, Market Intelligence Group at Fusion for Energy, Barcelona, Spain

For me it was the opportunity to present our forthcoming Calls For Tender, in the hope that Swedish companies can bid and win some of them. It means that our project could really involve the best of all European countries.



Ian McKinley, Fuel and Materials Technology – UK Business Development Manager Studsvik Nuclear AB

The 1-to-1 meetings were most important! I found my participation in the conference to be very worthwhile.



John Conway, Director at Onsala Space Observatory

It was good to have a chance to present, to a broad audience, the OSO perspective on how national research infrastructures can play a part in developing industrial return from major international science infrastructures.



Dr. Sonia Utermann, In-kind and Procurement at FAIR

Thank you and your team for the Big Science Sweden Conference. I already have three new potential suppliers for FAIR.

BIG SCIENCE SWEDEN CONFERENCE 2020

What was the most important part of the conference?



Han Dols, Head of Business Development Section at CERN

Great to witness how well the Swedish ecosystem is gearing up to get most out of Big Science. Good for industry, but also good for science!



Ingrid Milanese, Head of Procurement & Contracts, Administration Division at ESRF

For me, I believe the best part was when the institutions presented forthcoming opportunities. I also really liked the questions and the use of links when answering, and that you could present the responses live. I found the conference very collaborative.

What is your greatest challenge within your technology field?



Jean-Baptiste Haumonte, Sales Manager, Bertin Technologies

Our greatest challenge was probably the success in the alignment instrumentation design and manufacturing of the 240 lasers for the Laser Mégajoule (LMJ in France) at 7 microns in a 10-m vacuum chamber.



Anders Wallander, Head of Division, ITER Controls Division

The greatest challenge for me is not technical but administrative. How to organise Big Science projects with many different stakeholders from different backgrounds/cultures? How to control an in-kind project where stakeholders provide systems and not money? How to control a project without one central point of authority?

2020 FACTS & FIGURES

Virtual Seminars & Conferences

National and international

18+1000

**Seminars
& conferences**

Participants

Seminars, conferences, workshops, and training events in cooperation with universities and international partners.

AIMDay Big Science Technology

5

**Big Science
Pre-Study
Projects**

AIMDAY events enable long-term collaborations, by sharing knowledge, presenting expertise, and acquiring first-hand information about the needs of research facilities and their current and future challenges.

Big Science Sweden Conference 2020

Meeting place for industry, universities, institutes, and research facilities

245+179

**Delegates from
14 countries**

1-to-1 meetings

10

**Big Science
facilities**

Promoting collaboration and business in the Big Science ecosystem, ten research facilities gave an update on their current status and business plans.

**Did the event meet your
expectations?**

99%

Yes!

9

**Breakout
sessions**

- *AI, Control Systems & Data Acquisition, Big Data*
- *Diagnostics - Upcoming opportunities and Swedish initiatives in diagnostics*
- *Material and advanced manufacturing*
- *Remote handling & robotics*
- *Diagnostics - The European ecosystem for diagnostics: How do we best work together?*
- *Drones applications*
- *Electronics and RF system*
- *Opportunities for Swedish industry with Tech transfer from Big Science*
- *Vacuum, Cryogenics & Magnets*

2020 FACTS & FIGURES

International collaboration

50 meetings
with system
integrators

We held around 50 meetings with large system integrators in Europe, to build relationships between Swedish players and international companies such as Jacobs, Technetics, CNIM, Assystem and Cybernetics.

Business Corner

**BUSINESS CORNER EVERY
WEDNESDAY 10:00-10:30.**

14+226

**Business
Corners**

Participants

A short virtual meeting where our member companies hear the latest news on new procurements.

Swedish Big Science Orders

250 million
SEK

Value of orders over the first 3-year programme period. During 2020 Swedish companies won orders for around SEK 50 million. Examples of companies winning orders: ABB, AQ Elautomatik, Examec, Carlsson & Möller, GoVirtual, Luma Metall, Omnisys, Qamcom, Qtech Group, Sandvik, and Scanditronix.

Business matchings

572

Big Science Sweden matched procurements with suppliers.

2020 FACTS FIGURES

Value creation

The process from first contact to a final order is long, but more and more Swedish companies are starting to submit bids and win orders. We see a need for industry to collaborate with academia, and for Sweden to become involved at an earlier stage, as early as prototype development. This will enable our high-tech companies to compete in the Big Science market, estimated to be worth EUR 38.7 million* in the next few years.

* Source: www.bsb2020.org

During 2020, the year of the Covid pandemic, the industrial return at CERN decreased to 0.6. One explanation is that there was less networking with people at the facilities.

Our events were largely held in digital form, but we miss meeting people in real life. We are looking forward to visiting the research facilities, and meeting and connecting with people again during 2021.

INDUSTRIAL RETURN TO SWEDEN 2020 CERN



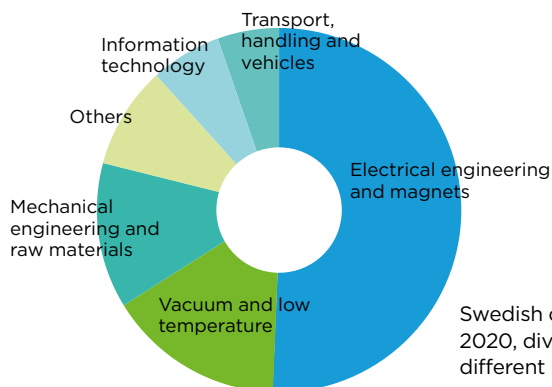
During 2020, the industrial return at CERN decreased to 0.6. One explanation is that there was less networking with people at the facilities.

INDUSTRIAL RETURN TO SWEDEN 2020 ESO



The Swedish Return Coefficient based on commitments has steadily increased at ESO. However, during the years of large investments around 2016, Sweden was not in a position to participate. The amount committed to Swedish companies 2020 was EUR 2701 thousand, and the return coefficient based on commitments was 1.82 (1 = return is equal to investment).

Orders by Activity / Procurement Area



Swedish orders at CERN 2020, divided into the different procurement areas.

AIMDAY BIG SCIENCE TECHNOLOGY 2019

Looking back

2019

Get inspiration from the interesting challenges identified by CERN and ESS at the AIMday 2019. Researchers and technical experts immersed themselves in around 30 challenges within categories as Advanced materials, Drones, Data handling and Electronics. As a result, five top-quality pre-studies were initiated.

Advanced materials and advanced production methods such as additive manufacturing

- Can we produce thicker sheets or bulk material of grain oriented steel, and steer the grain orientation? (CERN)
- How to produce, cut and polish radiation-hard garnet crystals more efficiently for large detector applications? (CERN)
- How to construct efficiently large and complex detector absorbers from tungsten alloys, whose composition is driven by the physics application? (CERN)
- Radiation hardness on greases: Is there a roller screw/lubricant (dry) system that can withstand the conditions in a radiation environment, and take up to 10MGy? (CERN)
- Is there a method to heavily bend 316L tubes (6mm or 18mm) with nearly no deformation? (CERN)
- Can we design a cooling solution in a vacuum chamber that does not include welded seams? (CERN)

Drones

- How can we make use of drones more efficient and more compatible in terms of flying time and autonomous operation (CERN)
- How can we use drones for monitoring in the accelerator tunnels and other hostile environments? (ESS)

Robotics/Remote handling

- How can we make industrial robots lighter, while maintaining their precision and dynamics? (CERN)
- How can we increase safety for humans in close human/robot collaborations? (CERN)
- How can we make robots for cryogenic and UHV

environments? (CERN)

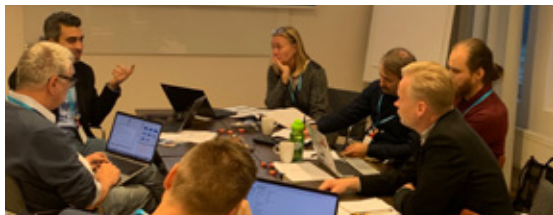
- How can we make hyper-redundant robots – think for example “snake-like” robots? (CERN)
- How can we use robots for continuous decontamination and cleaning of Big Science facilities? (CERN)
- How can we increase the “human touch” for robots working with humans in Big Science? (CERN)
- How can we increase proprioception in maintenance teleoperation in Big Science facilities? (CERN)

AI/Big Data/Data handling/Control systems

- How do we optimise the flow of data in machine learning projects? (ESS)
- How do we develop Intelligent Alarm Handling? (ESS)
- How to create a Software Development Ecosystem for Machine Learning (Agile machine learning)?
- How can we develop Artificial Monkey Tuning? (ESS)
- What do tomorrow's control rooms look like? (ESS)
- How do we together drive the development of future Control Systems for Complex Processes (EPICS/Tango)? (ESS)
- How much should we care about integrating all the data from all the legacy systems upfront - instead of starting with some data and developing a culture for continuous analysis involving cross-functional teams? (Lund University)

Electronics

- How do we meet the needs for Big Science when it comes to TCA development (Micro TCA – hardware) and how can we push for our needs to be part of standard TCAs. Energy-efficient processors? (ESS)
- Magnets and Cryo
- What can Sweden do to help CERN develop a canted-cos-theta dipole magnet for the LHC?
- How can we develop Superconducting Magnet Energy Storage (SMES) for the LHC at CERN?
- How can we fabricate -53 degrees CO2 cooling systems for the experimental setup at the ATLAS experiment?



RESULT

5 top-quality pre-studies

- Robotic arm in carbon fibre
- SMES – Energy storage
- CO₂-cooling down to -53°C
- Developing a Swedish cluster for super conducting magnets
- Drones in harsh environments.

One of the pre-studies has now advanced into a major project, with funding of SEK 19 million.

Big Science Sweden and AIMday Big Science Technology helped bring together key partners for an exciting collaboration project involving industry and academia.

A cluster of technology companies in Småland are collaborating with Uppsala University and Linnaeus University in an EU research and innovation project on superconducting magnets with uses in, for example, Big Science.

The project aims to develop environmentally friendly and energy-efficient superconducting magnets, where research and technical development can be combined to boost global competitiveness.

Magnets and cryotechnology were one of the areas of technology discussed at the Big Science Sweden Conference/AIMday 2019, under the title, “What can Sweden do to help CERN develop a canted-cos-theta dipole magnet for the LHC?”.

The discussion during the AIMday initiated a feasibility study on the formation of a Småland cluster to work on superconducting ‘cold’ magnets. The feasibility study concluded with a project application for which funding has recently been awarded. Three high-tech companies and two universities can now work together on an exciting research and development project. Collaboration partners in the project are Scanditronix Magnet, Ryd-Verken, Vattenskränningsteknik in Vislanda, Uppsala University and Linnaeus University. The project will run until April 2023, and will

combine expertise in research, business, technology, and innovation to compete on a global market.

Financial support

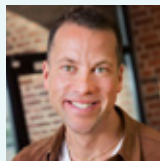
The project – Disseminating technology for cold magnets to provide access to a wider international market – will be carried out with financial support from the European Regional Development Fund (ERDF) and Region Kronoberg. Collaboration partners in the project are Uppsala University, Linnaeus University, Scanditronix Magnet, Ryd-Verken, and Vattenskränningsteknik i Vislanda.

Contacts at AIMday Big Science Technology



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COMMUNICATION

Communication plays a key role, enabling us to highlight the achievements of our member companies and partners, and spread news in different channels.



15 December 2020

Congratulations Load!



13 December 2020

Today's CERN Alumni Advent Calendar window takes us to Sweden



12 December 2020

Big Science Sweden Award



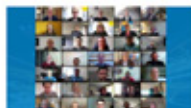
11 December 2020

Collaboration between ESS and DESY • Workshop on Intelligent Control Systems



3 December 2020

Focused Technical Workshop: Remote Handling



30 November 2020

Discovery Day – Innovate with CERN • Knowledge transfer event proves popular



26 November 2020

Big Science Sweden Conference 2020



11 November 2020

Positive tones at this year's Big Science@LU on Lund University's role in Big Science



4 November 2020

Big Science Morning – an effective meeting place in the Big Science community



3 November 2020

Information Day on Nuclear Doors (TB20) for ITER, 5 November, 2020



2 November 2020

Welcome to the Big Science Sweden Conference 2020



12 October 2020

2020 Nobel Prize in Physics awarded for research using ESO telescopes



8 October 2020

Qamcom wins order for major space project



1 October 2020

Call for proposals: Innovation projects in SMEs



14 September 2020

BigScience@LU • Academic input in Big Science facilities



7 September 2020

Qtech Group receives order from ESS



26 August 2020

Don't miss procurement opportunities!



25 August 2020

Big Science Sweden in partnership with the CERN Knowledge Transfer Group



23 June 2020

European Strategy for Particle Physics 2020



21 June 2020

Notes from the Big Science Business Forum - 1st Webinar



26 May 2020

New knowledge, networking, and constructive dialogue at training session on procurement



23 April 2020

Grattis Dwell! Ett av våra medlemsföretag har inlett ett samarbete med ESS i ett nytt Vinnova-projekt.



16 April 2020

Ny pilotstudie ger möjligheter för forskning, tekniköverföring och innovation inom AI, open data och framtidens fabriker



27 March 2020

Go Virtual vinner stororder till CERN på 15 miljoner SEK



12 March 2020

Malmö Mönsterkort gör runt 2000 unika prototyper per år



24 February 2020

The Swedish Guide 2020! Vi satsar på att presentera fler akademiska projekt.



4 February 2020

Big Science Morning med ITER/Fusion 4 Energy



22 January 2020

Vetenskapsradion - Söker svaren på universums mysterier på CERN



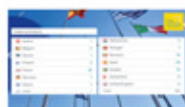
22 June 2020

Congratulations X-officio



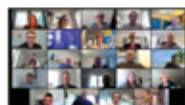
12 June 2020

The Swedish Guide 2020 now published - many thanks to everyone who contributed!



12 May 2020

Big Science Virtual Workshop - 15 European countries represented



22 April 2020

Från hela landet kopplade vi upp oss för att höra det senaste om ESS och aktuella upphandlingar



1 April 2020

Träffa forskningsanläggningar och europeiska leverantörer på Big Science Virtual Workshop den 11 maj 2020.



12 March 2020

Grattis till Fagerström som fått en mångmiljonorder vid ESO i Chile



26 February 2020

Uppsala universitet satsar 80 miljoner på teknikmiljö för avancerad forskningsutrustning



7 February 2020

Fagerström med på europeiska SME-spåret på BSBF2020



23 January 2020

Kickoff i Neapel - Big Science Sweden medverkar i ENTRITC



17 January 2020

Big Science Sweden 2019 In Brief



Big Science Sweden is led and operated by by a consortium of leading universities, institutes and industrial network organisations:



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