

# The **Swedish** Guide

Big Science Suppliers and Partners • 2020



# JOIN US IN DRIVING BIG SCIENCE TECHNOLOGY

Sweden has major research facilities spread throughout the country, from particle accelerators, ESS and MAX IV in Lund in the south, to ground-based space research facilities such as the Onsala Space Observatory near Göteborg and EISCAT, based in Kiruna in the far north.



Watch our film: [www.bigsciencesweden.se](http://www.bigsciencesweden.se)



EISCAT

ESS  
MAX IV

XFEL  
DESY

FAIR

CERN

ESRF  
ILL

ITER

LOCATED IN CHILE  
ESO

AUSTRALIA/ SOUTH AFRICA  
UNDER CONSTRUCTION

SKA

ISIS

## EDITORIAL

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

**You're holding in your hand the third edition of the Swedish Guide, which we hope you will enjoy and find useful.** We're very proud to present 208 companies with the capacity and knowledge to supply solutions to the leading research facilities, thereby helping 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 areas you are particularly interested in. You will also find information about 70 Swedish academic contributions to various research facilities.

We welcome the collaboration and knowledge exchange between universities, institutes and industry, and identify where boundaries can be extended with high-tech content in larger national and international collaborations. Working closely with the research facilities, we also see potential for technology and knowledge transfer from the research facilities to industry and society. This really is a golden egg that we will have a special focus on.

A growing number of Swedish companies are receiving orders from both Swedish and international research facilities, such as ESS, MAX IV, CERN, ESO and EISCAT. For the first time in a very long time, the industrial return from CERN is increasing significantly.

Sweden is deepening collaboration with several research facilities. In 2019, we held a high-level meeting in Stockholm to explore the collaboration potential with ITER and Fusion for Energy. In 2020, we will continue to promote Swedish expertise in providing solutions for fusion research facilities.

Big Science Sweden provides arenas where research facilities, industry, universities and institutes can meet to discuss the short- and long-term needs for development in the Big Science ecosystem. We're especially proud of our popular event Big Science Sweden Conference, arranged for the first time in 2019. Read more about Big Science Sweden's activities at the end of this guide.

Big Science is, and will remain, an essential and important innovation arena in solving global challenges. The World Wide Web was created at CERN, and CERN has also played a key role in developing technology that can be used in MedTech, e.g. for treating cancer. Key components for quantum computing technology and hardware for providing Internet access in Africa with satellite solutions were developed in collaboration with land-based space research centres.

We look forward to continuing our work with cutting-edge 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





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## UNIQUE OPPORTUNITIES

Big Science Sweden strengthens Big Science with Swedish high-tech solutions. This involves enabling the supply of technology, services and engagement for the mutual benefit of research facilities and Swedish universities, institutes and industry. Big Science Sweden is a national and international arena for high-tech development. Two of the world's most powerful and renowned research facilities are located here.





## EUROPEAN SPALLATION SOURCE, ESS

The multi-disciplinary research facility 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.

Photo: Roger Eriksson/ESS





## MAX IV LABORATORY

MAX IV Laboratory is a Swedish national laboratory providing scientists with the most brilliant X-rays for research, making it possible to develop new materials and products that we cannot even imagine today. The MAX Laboratory has been in operation for more than 35 years, and construction of the new synchrotron facility was completed in 2016. It is hosted by Lund University, and is now the brightest source of x-rays in the world. MAX IV makes the invisible visible.



A woman with long brown hair, wearing a maroon top with a black geometric pattern, is shown in profile, engaged in a conversation with another person whose hands are visible in the foreground. They are seated at a dark wooden table. In the background, several other people are visible, some standing and some seated, in what appears to be a conference or networking event setting. A blue text box is overlaid on the upper right portion of the image.

## COLLABORATION

Big Science Sweden enables Swedish high-tech companies to supply equipment, materials and services to Big Science facilities in Sweden and around the world. We support the important collaboration between academia, industry, and research facilities. In the long term, we are helping to build up the knowledge, skills and expertise that drive technological development, innovation, internationalisation and growth in Swedish companies.

SIGNA  
PET/MR



A large, white, cylindrical PET/MR scanner with a patient bed extending from its center. The bed has a control panel at the foot end. The scanner's gantry is open, revealing the internal structure. A small digital display on the top of the gantry shows '2011 mm' and '00:00'. The scene is dimly lit with blue and white light.

2011 mm  
00:00

## TECHNOLOGY TRANSFER

Technology Transfer is one of the most important deliveries from Big Science facilities to society. 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.

PET/MR scanner, vital equipment with many uses, such as tomography of soft tissue in cancer treatment. Photo: GE Healthcare

## EUROPEAN RESEARCH FACILITIES

**Big Science Sweden is 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.**

### 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. The ESS User Programme is planned to begin in 2023, by which time the suite will comprise 22 instruments.

### 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 22 Member States and a number of Associate Member States. At CERN, 2,500 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

SKA, The Square Kilometre Array radio telescope, will have a total collecting area of over one square kilometre. The project is being funded by 11 countries, and the budget for Phase 1 of the construction is EUR 650 million. This initial phase will provide ten percent of the capacity of the finished facility. The telescope will be able to scan the sky ten thousand times faster than before, and will provide the highest-resolution astronomical images. The first observations are expected in the mid-2020s.

## BIG SCIENCE SWEDEN – A NATIONAL MISSION

### 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), The Swedish Research Council (Vetenskapsrådet) and The Swedish Agency for Economic and Regional Growth (Tillväxtverket).

Natasa Pahlm, Strategic Project Manager, International Cooperation, 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. 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.

Jonas Wallberg, representative from the Association of Swedish Engineering Industries:

"A company may feel that entering the Big Science market, and contacting research facilities, would be too big a step. But 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 Officer), 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. 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 and Craig Phillips.*





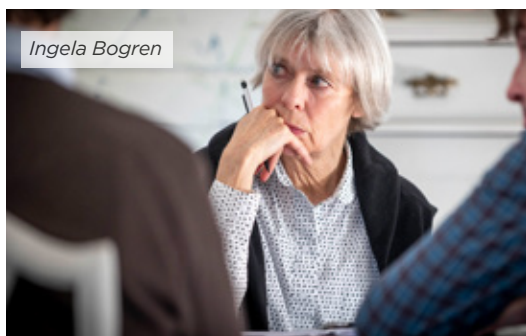
Sven-Christian Ebenhag



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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 Purchasing advisor: ESRF, ILL  
 Contact point: ISIS, DESY, XFEL

#### Fredrik Engemark

ILO: CERN

#### Patrik Carlsson

ILO: ITER, ESO, SKA

#### Craigh Phillips

Contact point: EISCAT

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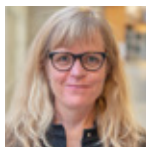
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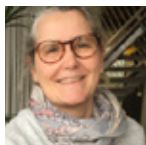
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Several of our part-time staff are shared with universities and institutes, which gives us a broad coverage.

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*The Big Science Sweden national team at the ESS site in Lund.*





## SWEDISH SUPPLIERS AND PARTNERS

# SWEDISH SUPPLIERS AND PARTNERS

## Quick guide: How to navigate

This is a quick guide to make it easier for you to find your next Swedish high-tech supplier and partner.

Feel free to browse around and learn about more than 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 codes 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](http://www.bigsciencesweden.se), where you can also search using free text.

### Company size definitions

Small >49 employees

Medium 50-249 employees

Large <250 employees

## PROCUREMENT CODES

1

Search by procurement codes when you are looking for suppliers within a specific area of interest.

## ALPHABETICALLY

2

Search alphabetically by company name.

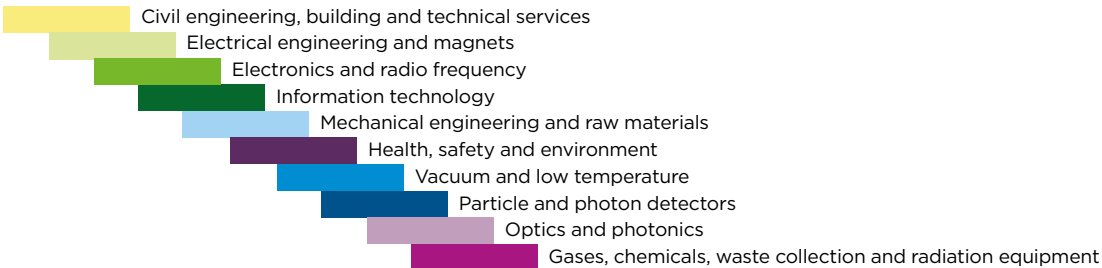
## ONLINE DATABASE

3

Search in our online database at [www.bigsciencesweden.se](http://www.bigsciencesweden.se), where you can also search using free text.

## INDEX PROCUREMENT CODES

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



## INDEX PROCUREMENT CODES

### Civil engineering, building and technical services

ACP Luftbehandlingsprodukter	39	Element Metech	103	NOTE	171
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CGit AB _____	80	HMS Industrial Networks _____	136	Stream Analyze Sweden _____	216
Combitech _____	82	INTAB , Interface-Teknik _____	138	Svep Design Center _____	221
Compliq IT _____	83	JOIN Business & Technology _	140	Tessella _____	227
CUAV _____	90	Micropol Fiberoptic AB _____	160	Univrses _____	231
Divisoft _____	93	Proact IT Group _____	181	Vibe IT _____	238
EC Konsult _____	96	Recab _____	189		
EcoDataCenter _____	97	RISE _____	194		

### Health, safety and environment

ABB _____	38	Combitech _____	82	INTAB, Interface-Teknik _____	138
ACP Luftbehandlingsprodukter	39	Conex Engineering _____	85	MCT Brattberg _____	156
Additive Composite Uppsala _	40	Coromatic _____	87	Nanovac _____	165
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Airwatergreen _____	46	FieldRobotiX _____	112	Pickering Interfaces _____	177
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## INDEX PROCUREMENT CODES

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Mechanical engineering and raw materials
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Mechanical engineering and raw materials



## 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 competences

- 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](http://www.2bab.se)

### 2B Best Business AB

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### Procurement codes

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 competences

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](http://www.new.abb.com/facts)

### Company size

Large



[www.abb.com](http://www.abb.com)

### ABB AB

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### Ingrid Sefastsson

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Power Grids Sweden AB  
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### Procurement codes

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 competences

- 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



[www.acp.se](http://www.acp.se)

## ACP AB

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## Axel Edman

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## Procurement codes

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 competences

- 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



[www.additivecomposite.com](http://www.additivecomposite.com)

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**Adam Engberg**  
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### Procurement codes

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 competences

- 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), MGV:s (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](http://www.aitumea.se)

## Advanced Integration Technology Umeå AB

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## Procurement codes

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 competences

- 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](http://www.advancedvacuum.se)

### Advanced Vacuum Distribution AB

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### Dan Ertsas

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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

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 competences

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



[www.afry.com](http://www.afry.com)

## AFRY

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## Jonas Larsson

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## Procurement codes

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 competences

Gas related products and services.

### Industry sectors

- Pharma
- Food
- Welding
- Laboratories

### References

- Nuclear
- Oil & Gas
- Laboratories
- Manufacturing sites

### Company size

Large



[www.airliquide.se](http://www.airliquide.se)

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### Procurement codes

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 competences

- 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](http://www.airson.se)

## AirSon Engineering AB

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## Dan Kristensson

Chief Executive Officer

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## Procurement code

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 competences

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](http://www.airwatergreen.com)

### Airwatergreen AB

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### Procurement codes

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 competences

- 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](http://www.aisle.se)

## Aisle Systems Sweden AB

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## Procurement codes

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 competences

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.

### 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 OEM'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



[www.alfalaval.com](http://www.alfalaval.com)

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#### Carina Resare

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### Procurement codes

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 competences

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

**Aliaxis**

[www.aliaxis-ui.se](http://www.aliaxis-ui.se)

### Aliaxis Utilities & Industry AB

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### Procurement codes

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 competences

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

**AluFlex**  
YOUR PARTNER IN AUTOMATION SOLUTIONS

[www.aluflex.se](http://www.aluflex.se)

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### Procurement codes

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 competences

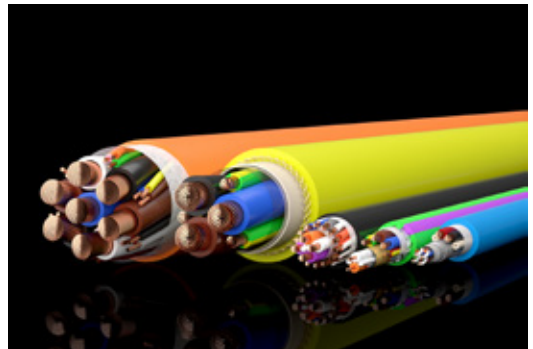
- Sustainable development
- High level of quality
- Flexibility in production and delivery
- Innovation
- High customer focus
- Corporate social responsibility

## 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](http://www.amokabel.com)

### amokabel AB

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### Dan Johansson

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### Procurement code

Electrical engineering and magnets

## ANGLAND ELECTRONICS

### Company profile

Angland Electronics AB offers sophisticated services suitable for short/medium series manufacturing and rapid prototyping of assembled circuit boards. Aiming at supporting clients in the whole production process, we provide services in the areas of product development and electronics manufacturing. Full control over the development and production processes, as well as deep domain expertise and the professionalism of our engineers, facilitate the delivery of the highest quality products and services in compliance with your demands.

### Core competences

Development of industrial electronics pre-compliance testing of industrial electronics Fast prototyping of PCBA Manufacturing of small series of industrial electronics

### Industry sectors

- Energy distribution and management
- Energy generation (Hydro and nuclear)
- Process industry (paper and pulp)

### References

- Voith Hydro AB, Västerås Sweden
- Hugo Tillquist AB, Kista Sweden
- Siemens Industrial Turbomachinery, Finspång Sweden

### Company size

Small



[www.angland.se](http://www.angland.se)

### Angland Electronics AB

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### Pontus Angland

CEO

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### Procurement codes

Electrical engineering and magnets

Electronics and radio frequency

## 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 competences

- 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](http://www.aprttec.com)

### APR Technologies AB

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### Procurement codes

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 competences

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](http://www.aqg.se)

### AQ Elautomatik AB

Kalkstensvägen 25, SE-224 78 Lund, Sweden

### Patrik Olsson

Marketing Coordinator

+46 46-16 25 11

[patrik.olsson@aqg.se](mailto:patrik.olsson@aqg.se)



### Procurement codes

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 competences

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

## Industry sectors

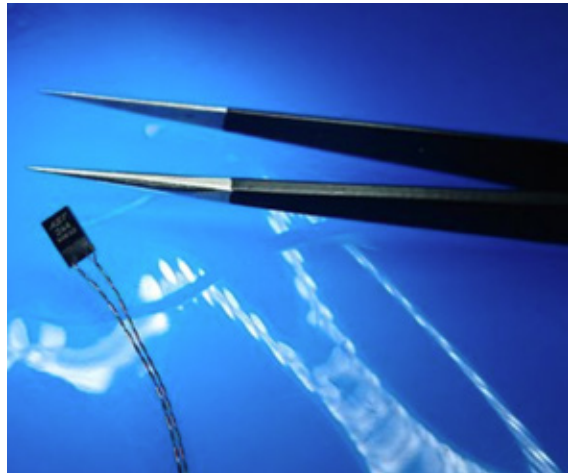
- Space
- Avionics
- Military
- High end industrial

## References

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

## Company size

Small



[www.asensor.eu](http://www.asensor.eu)

## Asensor Technology AB

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+46 8 590 755 10

## Monika Fällman

CFO

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[monika.fallman@asensor.eu](mailto:monika.fallman@asensor.eu)

## Procurement codes

Electrical engineering and magnets  
Vacuum and low temperature

## ASSO PRODUKTER

### Company profile

We are professionals in the cabling harness industry with 40 years of experience and with guiding principles such as flexibility and quality. We manufacture all cabling harness management, like battery cables, wire harnesses, cables, switchboards, control panels, box building, soldering etc.

We are located in Malmö with up-to-date modern equipment and we also have an assembly plant in Poland, which makes us very flexible and can maintain high quality at low cost with short lead times.

We are ISO9001:2008 certified and our suppliers are in turn certified in a variety of areas and follows the RoHS and REACH directives.

### Core competences

Customized cabling for manufacturing industry.

### Industry sectors

Electronics, construction machinery, vehicle, solar panels, energy, PCB, boxbuilding applications, cable harnesses

### References

ABB, Atlas Copco, Axis, Dynapac, Enics, Foss Analytical, Inission, Orbit One, Rottne Industri, Scanfil, Swegon, Tetra Pak, Wayne Fueling System.

### Company size

Small



[www.asso.se](http://www.asso.se)

### ASSO Produkter AB

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### Roberth Andersson

Manager  
[ra@asso.se](mailto:ra@asso.se)  
+46 40 14 35 54

### Procurement code

Electrical engineering and magnets

# 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 competences

Rough vacuum pumps  
Energy-efficient solutions for vacuum

## Industry sectors

All Industry sectors using rough vacuum.

## Company size

Large



## Atlas Copco AB

Sickla Industriväg 19 , SE-105 23 Stockholm,  
Sweden  
+46 8 743 80 00

## Magnus Olsson

Product and Sales Manager, Vacuum Solutions  
magnus.olsson@atlascopco.com

## Procurement code

Vacuum and low temperature

## 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 competences

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](http://www.axis.com)

### Axis Communications AB

Emdalavägen 14, SE-223 69 Lund, Sweden  
+46 46 272 18 00

### Johan Åkesson

Global Business Development Director Industry  
& Critical Infrastructure  
[johan.akesson@axis.com](mailto:johan.akesson@axis.com)

### Procurement codes

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 competences

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](http://www.azpect-photonics.com)

## Azpect Photonics AB

Aminogatan 34, SE-431 53 Mölndal, Sweden  
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[info@azpect.com](mailto:info@azpect.com)

## Joakim de la Motte

Sales Manager, Research & Scientific  
[joakim.delamotte@azpect.com](mailto:joakim.delamotte@azpect.com)

## Industry sectors

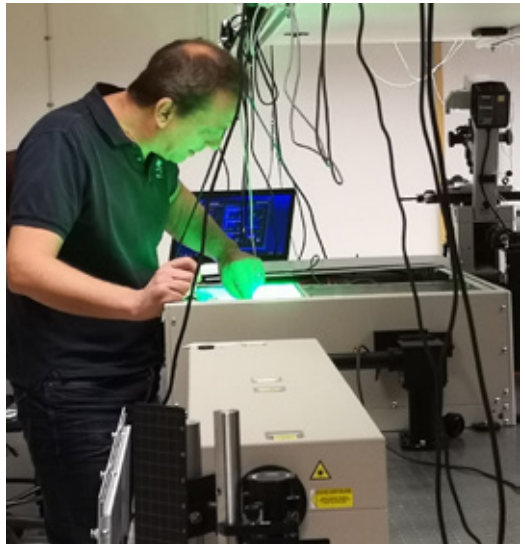
Academic research facilities and a variety of high-tech markets, including renewable energies, medical, defence & aerospace etc.

## 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 codes

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 competences

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](http://www.pc-control.net/pdf/032015/solutions/pcc_0315_xfel_e.pdf)

### Company size

Large



# BECKHOFF

[www.beckhoff.com](http://www.beckhoff.com)

### Beckhoff Automation AB

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 +46 40 680 81 60

### Krister Danielsson

Key Account Manager  
 +46 40 680 81 70

[k.danielsson@beckhoff.com](mailto:k.danielsson@beckhoff.com)

### Procurement code

Electrical engineering and magnets

# BERGDAHLS

## Company profile

- Emergency Lighting – developer and manufacturer.
- Industrial and office Lighting – developer and manufacturer.

## Core competences

- Emergency Lighting
- Office Lighting
- Industrial Lighting
- Tunnel Lighting
- Light planning
- Regulatory consulting

## Industry sectors

Lighting

## References

- Gothenburg Opera
- Vattenfall Ringhals
- Norra Länken

## Company size

Small



LOKE Design: Fredrik Öhlin



LYRA Design: Ronnie Bergdahl

**BERGDAHLS AB**  
BELYSNING & NÖDBELYSNING

[www.bergdahls.com](http://www.bergdahls.com)

## Bergdahls AB

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## Ronnie Bergdahl

Managing Director

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[ronnie.bergdahl@bergdahls.com](mailto:ronnie.bergdahl@bergdahls.com)

## Procurement code

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 competences

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](http://www.bergmanlabora.se)

### BergmanLabora AB

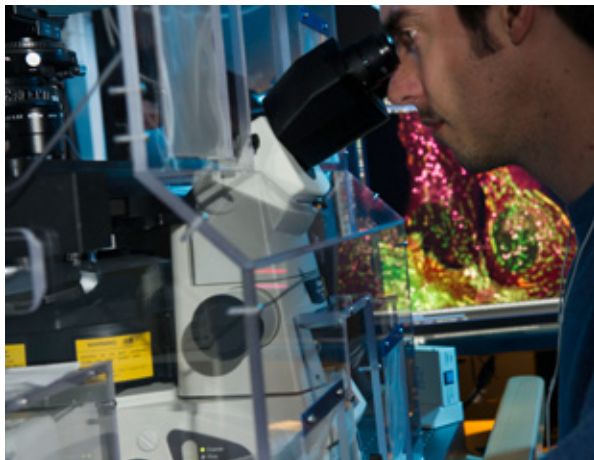
Box 705, SE-182 17 Danderyd, Sweden  
+46 8 625 18 50

### Oliver Garner

Sales Manager  
[oliver.garner@bergmanlabora.se](mailto:oliver.garner@bergmanlabora.se)

### Procurement code

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 competences

- 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](http://www.bergvik.com)

### Bergvik Sweden AB

P.o Box 46, 826 11 Bergvik, Sweden  
+46 270 728 00

### Peter Ljunggren

Area Sales Manager  
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### Procurement codes

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 competences

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

### 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



**BitSim**

[www.bitsim.com](http://www.bitsim.com)

### BitSim AB

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### Anders Sivard

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+46 701 80 85 00  
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### Procurement code

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 competences

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

## Industry sectors

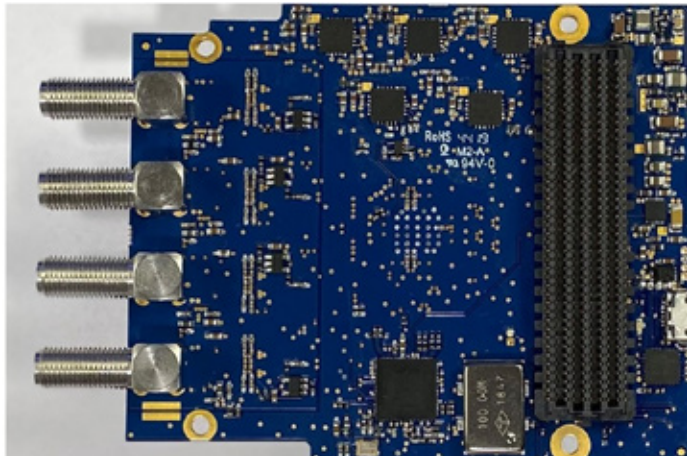
- Academic Research facilities
- Telecom Industry

## 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](http://www.bluewave.se)

## Bluewave Microsystems AB

Kista Science Tower, SE- 164 51 Kista, Sweden

## Afshin Fardi

CFO

+46 70 770 42 79

[afshin.fardi@bluewave.se](mailto:afshin.fardi@bluewave.se)

## Procurement codes

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 competences

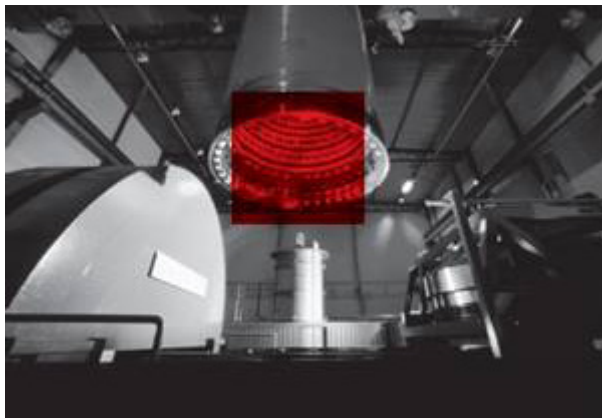
- Hot Isostatic Pressing
- Powder metallurgy
- Material knowledge
- Design capabilities

### Industry sectors

- Oil & Gas
- Nuclear
- Aerospace

### Company size

Medium



[www.bodycote.com](http://www.bodycote.com)

### Bodycote HIP AB

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### Oscar Karlsson

Sales Project Manager  
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### Procurement codes

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 competences

- 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



[www.bolidenelectro.se](http://www.bolidenelectro.se)

## Boliden Electro AB

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## Jens Holmqvist

CEO/CTO

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[jens.holmqvist@bolidenelectro.se](mailto:jens.holmqvist@bolidenelectro.se)

## 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



## Procurement codes

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 competences

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](http://www.boman.se)

### Bomans Lackering AB

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### Peter Älander

Sales, Quality and Environment manager  
[peter.alander@boman.se](mailto:peter.alander@boman.se)

### Procurement codes

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 competences

- 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](http://www.brogrenindustries.com)

## Brogren Industries

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## Daniel Corneliussen

Key Account Manager  
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[daniel.corneliussen@brogrenindustries.com](mailto:daniel.corneliussen@brogrenindustries.com)

## Procurement codes

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 competences

- 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](http://www.brodernacarlssonab.se)

### Bröderna Carlsson AB

Box 5021, SE-591 05 Motala, Sweden

### Victor Carlsson

MD

[victor.carlsson@brodernacarlssonab.se](mailto:victor.carlsson@brodernacarlssonab.se)

### Procurement codes

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 competences

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](http://www.bumax-fasteners.com)

## BUMAX AB

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## Anders Söderman

Technical Director  
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[anders.soderman@bufab.com](mailto:anders.soderman@bufab.com)

## Procurement codes

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 competences

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](http://www.busch.se)

**Busch Vakuumenteknik AB**

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**Irene Jepsen**

Marketing & Quality  
[irene.jepsen@busch.se](mailto:irene.jepsen@busch.se)

**Procurement code**

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 competences

- 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, MoS<sub>2</sub>, bronz, glass, carbon

## Industry dectors

- 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](http://www.c-m.se)

### AB Carlsson & Möller

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### Leif Gjerlöv

Technical Sales Engineer  
 +45 23 70 78 42  
[lg@c-m.se](mailto:lg@c-m.se)

## Procurement codes

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 competences

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*



**CARPENTER**  
Powder Products

[www.cartech.com](http://www.cartech.com)

### Carpenter Powder Products AB

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### Per Ingo

Managing Director  
+46 16 15 01 04  
[pingo@cartech.com](mailto: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

Mechanical engineering and raw materials

# CIM CONSULT SOLUTION SWEDEN

## Company profile

Delivering IT-solutions for electromechanical industry since 1988.

## Core competences

E<sup>3</sup>-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](http://www.ccsgroup.se)

## CIM Consult Solution Sweden AB

Kopparbergsvägen 10, SE-722 13 Västerås, Sweden  
+46 21 448 08 40

## Fredrik Carlsson

Country Manager  
+46 21 448 08 42  
[fredrik.carlsson@ccsgroup.se](mailto:fredrik.carlsson@ccsgroup.se)

## Procurement code

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 competences

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](http://www.cejn.com)

### CEJN AB

Rattvägen 1, SE-541 34 Skövde, Sweden  
+46 500 47 75 00

### Kenneth Kjellberg

Manager Engineering Division  
+46 500 47 75 36  
[kenneth.kjellberg@cejn.com](mailto: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 codes

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

# CELLTECH ABATEL

## Company profile

Celltech is the leading battery supplier in the Nordic region. We supply the Nordic industry with batteries through our sales channels, which are exclusively geared to manufacturing customers and dealers. We work with our customers and partners to develop current and future power solutions – from idea to production, from off-the-shelf products to customized battery solutions. Together, we will always find the optimal solution for your project. Customized battery and charging solutions are at the core of Celltechs business concept.

## Core competences

- Batteries and battery solutions
- Customized battery and charging solutions
- Energy storage
- Product development and design
- Production and manufacturing
- Industry sectors
- Industry applications
- Med tech
- Marine
- On road/Non road Vehicles
- Energy storage

## References

- ABB
- ASSO Produkter
- Cervitrol
- Flir Systems
- Note

## Company size

Medium



[www.celltech.se](http://www.celltech.se)

## Celltech Abatel AB

Kista Science Tower, Färögatan 33  
SE-164 51 Kista, Sweden  
+46 8 445 78 70

## Andreas Örtenblad

Sales Manager  
[andreas.ortenblad@celltech.se](mailto:andreas.ortenblad@celltech.se)

## Procurement codes

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

## 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 competences

- 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](http://www.cervitrol.se)

### Cervitrol AB

Skiffervägen 48, SE-224 78 Lund, Sweden  
+46 4 631 16 00

### Magnus Bredberg

CEO  
+46 46 31 16 02  
[mbg@cervitrol.se](mailto:mbg@cervitrol.se)

### Procurement codes

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 competences

- 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](http://www.cesium.se)

## Cesium AB

Sågmogatan 21, SE- 641 34 Katrineholm, Sweden  
+46 150 163 10

## Peter Adolfsson

Head of Sales  
[peter.adolfsson@cesium.se](mailto:peter.adolfsson@cesium.se)

## Procurement code

Civil engineering, building and technical services

## CGIT

### Company profile

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

### Core competences

- 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](http://www.cgit.se)

### CGit AB

Taljegårdsgatan 11C, SE-431 53 Mölndal, Sweden

### Mattias Bergkvist

CEO

[mattias.bergkvist@cgit.se](mailto:mattias.bergkvist@cgit.se)

### Procurement code

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 competences

- 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](http://www.combinova.se)

## Combinova AB

Domkraftsvägen 1, SE-197 40 Bro, Sweden  
+46-8-627 93 10

## Åke Amundin

CEO

[ake.amundin@combinova.se](mailto:ake.amundin@combinova.se)

## Procurement codes

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 competences

- 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](http://www.combitech.se)

### Combitech AB

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### Peter Ljungkvist

Business Developer  
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### Procurement codes

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 is a Swedish company with over 30 years of experience which offers highly specialized services and products.

- We facilitate customized, specialized server, workstation and computer solutions
- We provide IT-support and IT-services
- We supply IT-products and configurable computers through our webshop.

We are experts in special requests and build to order computer equipment for instance; military requirements and/or different temperatures, advanced technology in hospitals and research areas, computers/servers that handle large amounts of data or large amounts of simulations and calculations, and odd configurations. We also take care of backups, user problems and other issues. Our customers range from different industries in several countries.

## Core competences

- 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



[www.compliq.se](http://www.compliq.se)

## Compliq IT AB

Magistratsvägen 10, S-226 43 Lund , Sweden  
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## Anders Malm

CEO

[am@compliq.se](mailto:am@compliq.se)

## Camilla Edborg

Marketing & sales

[ce@compliq.se](mailto: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

## Company size

Small



**Need a tailored solution?**  
We are contracted by the high-tech industry and the research sector, where projects need our technical expertise and experience, to meet specific requirements.

**Experts in custom-made builds**

**Let's build it!**  
Need help to build a more advanced computer or server?  
We are experts in odd configurations and systems.

## Procurement codes

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 SWECIC, Swedish Composite Innovation Cluster.

### Core competences

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

### Industry sectors

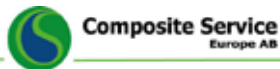
- Automotive
- Aerospace
- Power Industry

### References

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

### Company size

Small



[www.compositeservice.com](http://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 codes

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 competences

- 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



[www.conex.se](http://www.conex.se)

## Conex Engineering

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## Jan Larsson

CEO  
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## Procurement codes

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 competences

- 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



**COORSTEK**

[coorstek.com](http://coorstek.com)

### CoorsTek Sweden AB

Box 501, SE-91 523 Robertsfors, Sweden

### Tomas Holmström

Managing Director

[tholmstrom@coorstek.com](mailto:tholmstrom@coorstek.com)

### Procurement code

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 competences

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

## Industry sectors

- IT Healthcare
- Finance
- Telecom
- National defence

## References

[www.coromatic.com/download/case-studies/](http://www.coromatic.com/download/case-studies/)

## Company size

Large



[www.cormatic.com](http://www.cormatic.com)

## Coromatic AB

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## Charlotte Geeber

Marketing Manager

+46 732 75 38 00

[charlotte.geeber@coromatic.se](mailto:charlotte.geeber@coromatic.se)

## Procurement codes

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 competences

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](http://www.corona-control.se)

### Corona Control AB

Vallenvägen 5, SE-444 60 Stora Höga, Sweden

### Svante Karlsson

Technical Manager

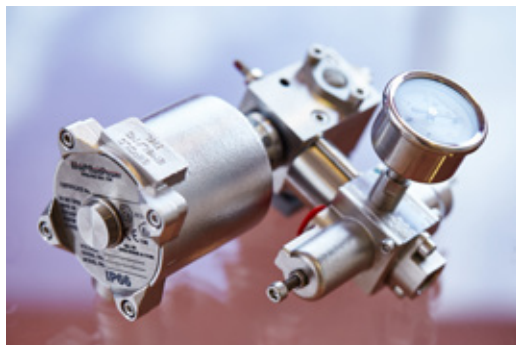
[svante.karlsson@corona-control.se](mailto:svante.karlsson@corona-control.se)

### 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 codes

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 competences

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](http://www.crystopt-x.se)

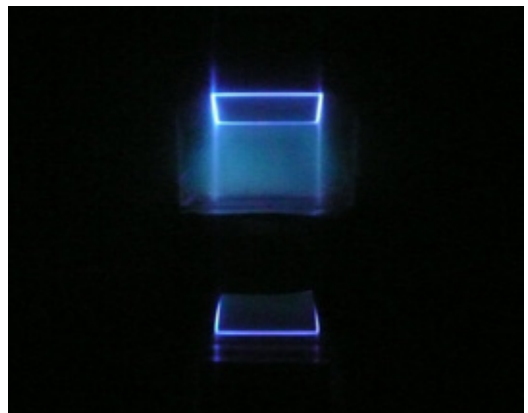
## CrystOpt-X AB

Verkstadsgatan 15, SE-26135, Landskrona, Sweden

## Iulian Preda

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iulian.preda@crystopt-x.se



## Procurement code

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 competences

- 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](http://www.cuav.se)

### CUAV AB

Östergårdsgatan 7, SE-431 53 Mölndal, Sweden

### Thomas Fransson

CTO

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[thomas.fransson@cuav.se](mailto:thomas.fransson@cuav.se)

### 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 competences

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](http://www.daikin.se)

## Daikin Sweden

Svärdvägen 19 , SE-182 19 Danderyd , Sweden  
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## Jimmy Svedin

Product Manager  
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## Procurement codes

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 competences

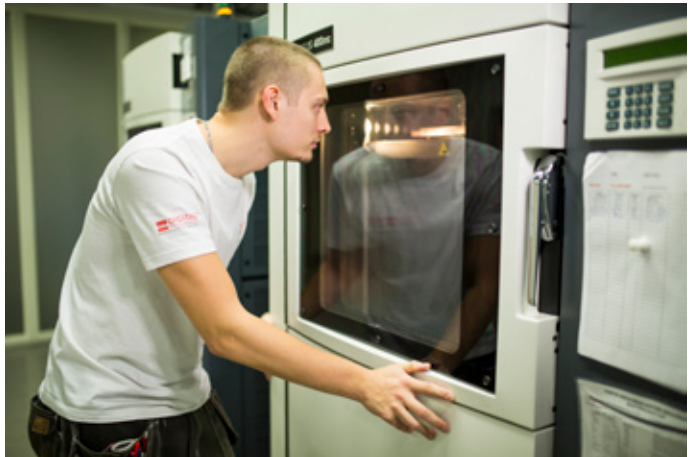
- 3D printing in plastic
- 3D printing in metal
- Silicon tools
- Prototype tools
- Rotary casting
- Lost wax casting
- Sand casting
- Precision casting
- Machining

### Industry sectors

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

### Company size

Small



[www.digitalmechanics.se](http://www.digitalmechanics.se)

**Digital Mechanics Sweden AB**

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**Andreas Södergren**

Sales

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[andreas.sodergren@digitalmechanics.se](mailto:andreas.sodergren@digitalmechanics.se)

**Procurement code**

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 competences

- 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](http://www.divisoft.se)

## Divisoft AB

Sturevägen 3, SE-177 56 Järfälla, Sweden

## Michel Gonzalez

Key Account Manager

[michel.gonzalez@divisoft.se](mailto:michel.gonzalez@divisoft.se)

## Procurement code

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 competences

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



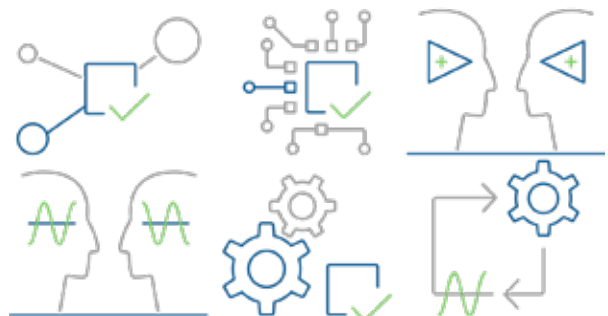
[www.dvel.se](http://www.dvel.se)

### DVél AB

Scheelevägen 32, SE-223 63 Lund, Sweden  
+46 733 85 69 10

### Riki Virc

CEO  
+46 733 85 69 10  
[riki.virc@dvel.se](mailto:riki.virc@dvel.se)



### Procurement codes

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 competences

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](http://www.eon.se)

### E.ON Energilösningar AB

Carl Gustafs väg 1, SE-205 09 Malmö, Sweden

### Martin Sagnert

Business Manager Energy solutions  
martin.sagnert@eon.se

### Michaela Ahlberg

Key Account Manager Industry  
michaela.ahlberg@eon.se



### Procurement codes

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 competences

- 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](http://www.ec.se)

### EC Konsult AB

Erik Dahlbergsvägen 31, SE-374 37 Karlshamn,  
Sweden  
+46 454 370 00

### Camilia Qvist

CEO  
+46 454 370 06  
[camilia.qvist@ec.se](mailto:camilia.qvist@ec.se)

### Procurement codes

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

# ECODATACENTER

## Company profile

EcoDataCenter offers the world's first climate-positive solution for data center services. This combined with high physical security. Interest from international companies regarding our sustainability solution is large, and we will specialize in calculation clusters. Our vision is to be Europe's leading supplier of sustainable high-density solutions.

## Core competences

- Sustainability
- High density solutions
- High Performance Computing
- Datacenter services
- Industry sectors
- Datacenters

## References

We do not disclose customers.

## Company size

Small

[www.ecodatacenter.se](http://www.ecodatacenter.se)

## EcoDataCenter AB

Box 45063, SE-104 30 Stockholm, Sweden

## Lars Schedin

+46 706 96 56 04

[lars.schedin@ecodatacenter.se](mailto:lars.schedin@ecodatacenter.se)

## Procurement codes

Civil engineering, building and technical services  
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 competences

- 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](http://www.eitech.se)

### Eitech Electro AB

Mariehemsvägen 6 , SE-903 04 Umeå, Sweden  
+46 90 15 46 00

### Jonas Bergqvist

+46 70 682 40 80  
[jonas.bergqvist@eitech.se](mailto:jonas.bergqvist@eitech.se)

### Procurement codes

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 competences

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

## Industry sectors

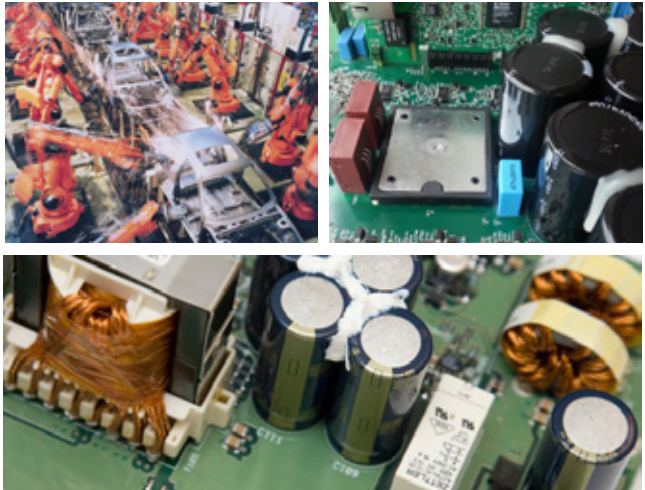
EK Power Solutions have customers in all kind of Industry sectors where the requirements are demanding. Our clients include some of the world's most technology-intensive companies in automation, power generation, telecommunications, railway, automotive, marin and defense.

## References

- Atlas Copco
- ABB
- Scania
- Husqvarna

## Company size

Small



[www.ekpower.se](http://www.ekpower.se)

## EK Power Solutions AB

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

## Vidar Wernöe

CEO

+46 8 446 56 15

[vidar.wernoe@ekpower.se](mailto:vidar.wernoe@ekpower.se)

## Procurement codes

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 competences

- 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](http://www.elajo.se)

### Elajo Mekanik AB

Box 904, SE-572 29 Oskarshamn, Sweden  
+46 491 76 76 00

### Kristofer Bard Ahlström

Sales & Business Development Manager  
kba@elajo.se

### Procurement code

Mechanical engineering and raw materials

# ELASTISYS

## Company profile

Extending on decades of leading cloud research, Elastisys delivers open source software, professional services and managed services focused on allowing organizations to deliver scalable software faster, better and more cost-efficient in modern cloud native environments. Elastisys are active open source contributors and Cloud Native Computing Foundation (CNCF) members.

## Core competences

- Kubernetes
- Container platforms
- Container security
- Compliance
- Cloud
- DevOps
- OpenStack

## Industry sectors

Regulated industries with high security and compliance requirements

## References

- Swedish BankID
- Statistics Sweden
- Ericsson
- Saab
- Klarna
- Paradox
- Nasdaq

## Company size

Small



[www.elastisys.com](http://www.elastisys.com)

## Elastisys AB

Kuratorvägen 2A, SE-907 36 Umeå, Sweden  
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## Robert Winter

CEO

+46 72 353 23 23

[www.elastisys.com](http://www.elastisys.com)

## Procurement code

Information technology



## 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 competences

- 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](http://www.electroheat.com)

### Electro Heat Sweden AB

Box 8065, SE-402 78 Gothenburg, Sweden  
+46 31 764 36 30

### Joel Lagerqvist

Sales  
joel@electroheat.se

### Procurement codes

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 competences

- 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

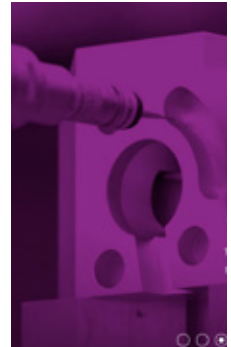
- Processing Industry
- Mechanical Industry
- Aerospace
- Fire and Building products
- Infrastructure and Environmental
- Oil & Gas
- Transportation and Industrials.

## References

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

## Company size

Medium



[www.elementmetech.com](http://www.elementmetech.com)

## Element Metech

Box 73, SE-241 21 Eslöv, Sweden  
Åkermansväg 10, SE-241 38 Eslöv, Sweden

## Jens Bergendorff

Regional Manager  
+46 72 391 62 18  
[jens.bergendorff@element.com](mailto:jens.bergendorff@element.com)

## Procurement codes

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 competences

- 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](http://www.elitkomposit.se)

### Elitkomposit AB

Kärrandsvägen 9, SE-451 76 Uddevalla, Sweden  
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### Erik Kullgren

Process developer  
+46 706 05 77 76  
[erik.kullgren@elitkomposit.se](mailto:erik.kullgren@elitkomposit.se)

### Procurement codes

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 competences

- 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



**EMV**HOLDING<sup>AB</sup>

[www.emvholding.se](http://www.emvholding.se)

### EMV Holding AB

Everlöfsvägen 136-40, SE-275 63 Blentarp, Sweden  
+46 416 77 22 00

### Patrik Malmström

Managing Director  
+46 708 85 64 94  
[patrik@emvstainless.se](mailto:patrik@emvstainless.se)

### Procurement codes

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

## 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 competences

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](http://www.enocsystem.com)

### Enoc System AB

Box 159 SE-334 23 Anderstorp, Sweden +46 371 588 160

### Patrik Berggren

Key Account Management Datacenter  
patrik.berggren@enocsystem.com

### Procurement codes

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

# 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 competences

- 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](http://www.entech.se)

## Entech Energiteknik AB

Metallgatan 27, SE-262 72 Ängelholm, Sweden

## Janne Jyrinki

Sales Manager & CEO

janne@entech.se

## Procurement codes

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 competences

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

### Industry sectors

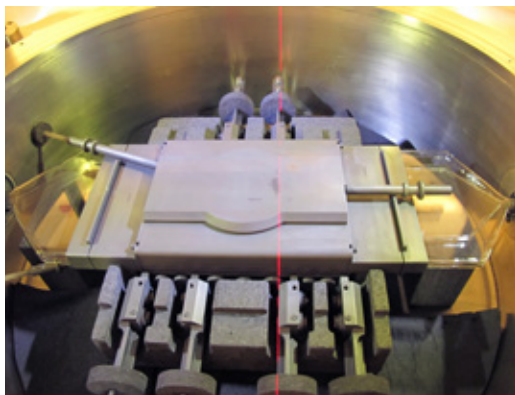
- Material research
- Semiconductor
- High temperature processes

### 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](http://www.epiluvac.com)

### Epiluvac AB

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+46 46 288 02 20

### Roger Nilsson

CTO  
+46 708 63 08 46  
[info@epiluvac.com](mailto:info@epiluvac.com)

### Procurement codes

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 competences

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](http://www.examec.com)

## Examec Group AB

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## Mats Ohlsson

CEO

+46 417 788 81

[mats.ohlsson@examec.com](mailto:mats.ohlsson@examec.com)

## Procurement code

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 competences

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

### Industry sectors

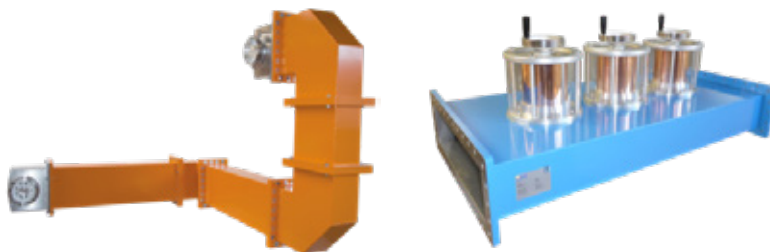
- Transmission lines and wave guides
- Customized Solutions
- Research and Development

### 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](http://www.exirbroadcasting.com)

### Exir Broadcasting AB

Industrigatan 17, SE-242 31 Hörby, Sweden  
+46 415 30 14 00

### Magnus Wiberg

Technical Area Sales Manager  
+46 415 30 14 05  
[magnus.wiberg@exirbroadcasting.com](mailto:magnus.wiberg@exirbroadcasting.com)

### Procurement code

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 competences

- 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](http://www.fagerstrom.se)

## Fagerström Industri Konsult AB

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## Per Fagerström

CEO

+46 705 94 86 16

[per.fagerstrom@fagerstrom.se](mailto:per.fagerstrom@fagerstrom.se)

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

## Industry sectors

- Nuclear
- Research facilities
- Spallation source

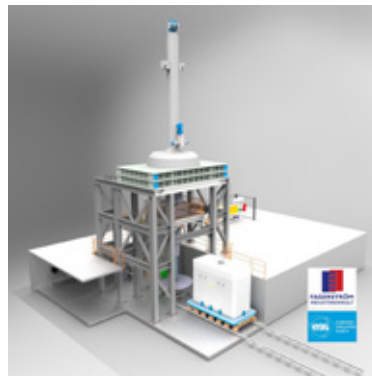
## References

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 codes

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 harsh environments, such as underground mines, construction tunnels and other related ones. The developed autonomous UAV solutions can provide access to unreachable, complex, dark and dangerous locations for the monitoring personnel, exploring the area and minimizing service and inspection procedures, while minimizing down-times. 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 competences

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

### Company size

Small

[www.fieldrobotix.com](http://www.fieldrobotix.com)

### FieldRobotiX AB

Aurorum 1C, SE-977 75 Luleå, Sweden  
+46 725 09 08 78

### Dariusz Kominiak

CEO  
dariusz@fieldrobotix.com

### Procurement code

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.

### Core competences

- 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
- Food industry
- Medical device
- Watch industry / luxury
- References
- SKF Aerospace
- Google
- Hublot
- Dohner AG

### Company size

Small

[www.finepart.com](http://www.finepart.com)

### Finepart Sweden AB

Rinnavägen 6, SE-51733 Bollebygd, Sweden  
+46 33 28 41 45

### Christian Ojmertz

CTO

+46 70 676 33 55

[christian.ojmertz@finepart.com](mailto:christian.ojmertz@finepart.com)

### Procurement code

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 competences

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

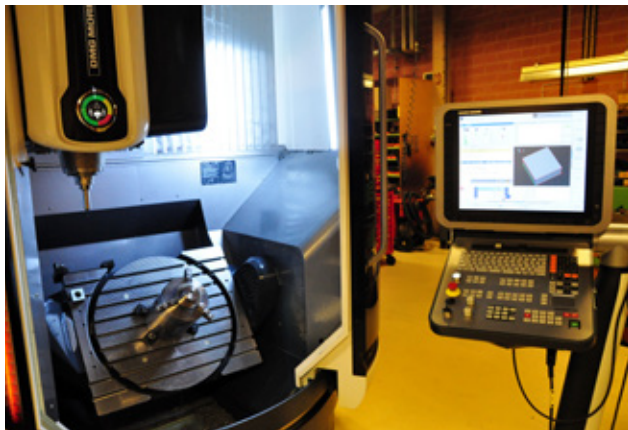
- Development company
- Manufacturing company
- Medical company
- Injection molding company
- Punch and die company

### 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](http://www.finverko.se)

### Finverko AB

Mogatan 1, SE 254 64 Helsingborg, Sweden  
+46 42 16 11 00 or +46 733 16 11 00

### Håkan Persson

Managing director  
+46 733 16 11 00  
[hakan@finverko.se](mailto:hakan@finverko.se)

### Procurement code

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 competences

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

## Industry sectors

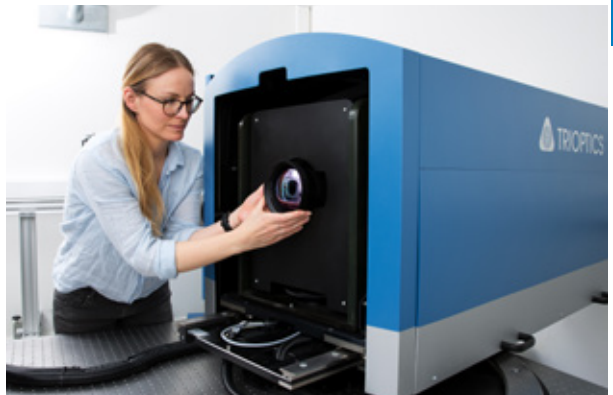
- Electrical industry
- Manufacturing industry
- Building industry
- Research & Development

## References

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

## Company size

Large



[www.flir.se](http://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](mailto:erika.goransson@flir.se)

## Procurement codes

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 competences

- 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](http://www.fredriksons.se)

### Fredriksons Verkstads AB

Kronängsgatan 4, SE-592 30 Vadstena, Sweden  
+46 143 296 00

### Reine Eriksson

Key Account Manager  
+46 143 296 68  
[reine.eriksson@fredriksons.se](mailto:reine.eriksson@fredriksons.se)

### Procurement code

Mechanical engineering and raw materials

# FURHOFFS ROSTFRIA

## Company profile

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

## Core competences

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

## Company size

Medium



[www.furhoffs.com](http://www.furhoffs.com)

### Furhoffs Rostfria

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

### Lars Ryefalk

Marketing Manager  
+46 500 44 45 32  
[lars.ryefalk@furhoffs.se](mailto:lars.ryefalk@furhoffs.se)

### Procurement code

Mechanical engineering and raw materials

## FÅRBO MEKANISKA

### Company profile

Fårbo Mekaniska is a subcontractor that can deliver everything from the simplest parts to advanced precision engineering, whether you need large runs or one-off parts. Our production process is characterised by short lead times, flexibility and commitment. Our machines turn, mill, cut and rotate around the clock, and our highly skilled staff are always ready to deliver world-class products!

### Core competences

- Turning and milling in multi-axis-machines
- EDM-machining
- Toolmaking

### Industry sectors

Manufacturing industry

### References

- Epiroc/Atlas Copco AB (mining products)
- Seco-Tools AB (cutting tools)
- Sandvik AB (tools)

### Company size

Small



**FÅRBO MEKANISKA AB**

[www.farbomek.se](http://www.farbomek.se)

### Fårbo Mekaniska AB

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+46 223 109 11

### Mats Sandberg

Quotes, environment  
+46 223 105 52  
[mats.sandberg@farbomek.se](mailto:mats.sandberg@farbomek.se)

### Procurement code

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 competences

- 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](http://www.gammadata.se)

## Gammadata Instrument AB

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Stefan Isaksson  
Business Unit Manager  
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[stefan.isaksson@gammadata.se](mailto:stefan.isaksson@gammadata.se)

## Procurement codes

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 competences

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](http://www.gefyrcoolenergy.se)

### Gefyr Cool & Energy AB

Företagsvägen 5, SE-953 33 Haparanda, Sweden

### Anders Lind

CEO

[anders.lind@coolenergy.se](mailto:anders.lind@coolenergy.se)

### Procurement codes

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 competences

- 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](http://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](mailto:henrik.runnemalm@gknaerospace.com)

## Procurement code

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 competences

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
- AAC

### Company size

Small (large globally)



[www.glenair.com](http://www.glenair.com)

### Glenair Nordic AB

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

### Mats Nielsen

CEO  
+46 708 30 55 80  
[mats@glenair.se](mailto:mats@glenair.se)

### Procurement codes

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 competences

- 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](http://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](mailto:jan.wallenberg@govirtual.se)

## Procurement code

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 competences

- 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](http://www.goalart.com)

### GoalArt

Scheelevägen 17  
SE-223 70 Lund, Sweden  
+46 46 286 4880

### Jan Eric Larsson

President and CEO  
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[janeric@goalart.com](mailto:janeric@goalart.com)

### Procurement codes

Health, safety and environment  
Information technology

# 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 competences

- 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](http://www.grepit.se)

## Grepit AB

Aurorum 1C, 977 75 Luleå, Sweden  
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## Johan Eriksson

Embedded System Specialist, PhD  
+46 705 89 79 11  
[johan.eriksson@grepit.se](mailto:johan.eriksson@grepit.se)

## Procurement codes

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. The company's geographical markets are Europe, Asia and the Americas. Its production facilities are located in Sweden, China and the United States, and have a combined annual capacity of 420,000 metric tonnes. Gränges has some 1,600 employees and net sales of more than SEK 11 billion. The share is listed on Nasdaq Stockholm.

### Core competences

- The spray forming process of metal matrix composites
- The casting, rolling and slitting processes of aluminium clad material
- 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)

### References

Automotive heat exchanger manufacturers

### Company size

Large



[www.granges.com](http://www.granges.com)

### Gränges AB

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Box 5505, SE-114 85, Stockholm, Sweden  
+46 122 838 00

### Torbjörn Sternsjö

Senior Vice President Technology & Business  
Development  
+46 732 01 49 21  
[torbjorn.sternsjö@granges.com](mailto:torbjorn.sternsjö@granges.com)

### Procurement code

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 competences

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

## Industry sectors

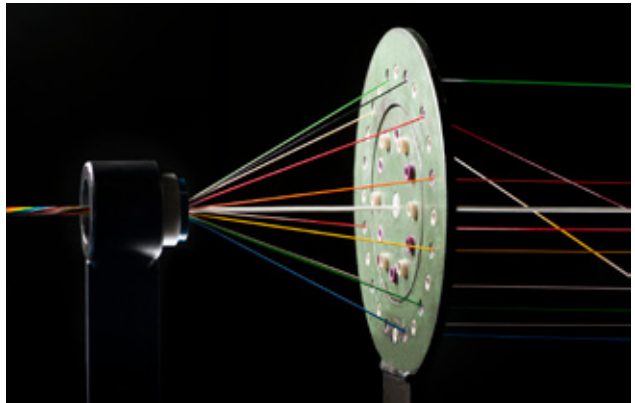
- Defence
- Nuclear power
- Industrial
- Offshore
- Telecom

## References

- CERN
- Defense Industry
- Nuclear Industry

## Company size

Large



## Habia Cable

[www.habia.com](http://www.habia.com)

### Habia Cable AB

Kanalvägen 18, SE-194 05 Upplands Väsby, Sweden  
+46 8 630 74 40

### Thorbjörn Gustafsson

VP Sales & Marketing  
[thorbjorn.gustafsson@habia.com](mailto:thorbjorn.gustafsson@habia.com)

### Procurement codes

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 competences

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:

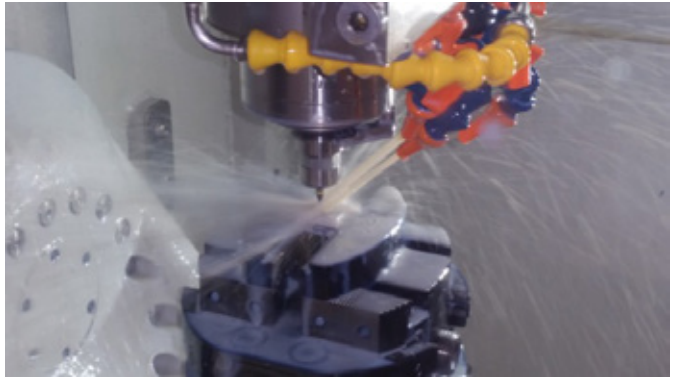
- High-Tech Industries
- Space Industry
- Telecom Industry
- Medical Industry
- Research and Development Labs
- Technical Universities

### 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](http://www.hagama.se)

### Hagama AB

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

### Fredrik Thorlin

Production/Sales  
+46 729 76 97 64  
[fredrik@hagama.se](mailto:fredrik@hagama.se)

### Procurement code

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 competences

- 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](http://www.hgf.se)

## AB Halmstads Gummifabrik

Knäredsgatan 27, SE-30250 Halmstad, Sweden  
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## Christian Kiks

CEO

+46 765 250646

[christian.kiks@hgf.se](mailto:christian.kiks@hgf.se)

## References

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

## Company size

Medium



## Procurement code

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 competences

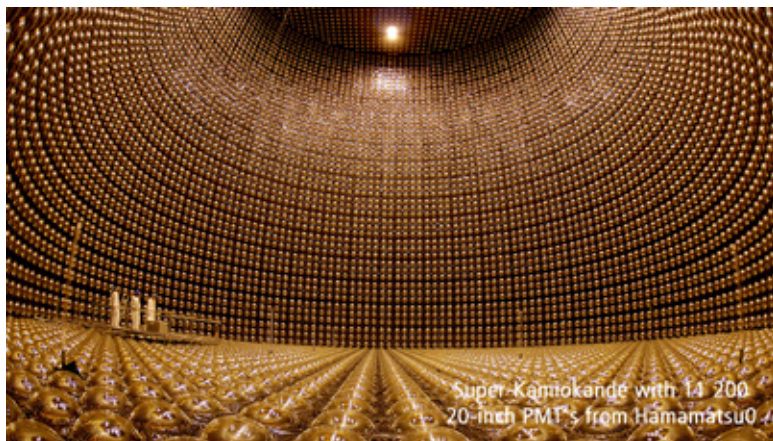
- Optoelectronics
- Photoics

### Industry sectors

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

### Company size

Small company



Super-Kamiokande with 14 200  
20-inch PMT's from Hamamatsu

**HAMAMATSU**  
PHOTON IS OUR BUSINESS

[www.hamamatsu.com](http://www.hamamatsu.com)

### Hamamatsu Photonics Norden AB

Torshamnsgatan 35, SE-16440 Kista, Sweden  
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### Anna Mårtensson

Marketing Coordinator

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[anna.martensson@hamamatsu.se](mailto:anna.martensson@hamamatsu.se)

### Procurement codes

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 competences

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](http://www.hamek.se)

## Hamek AB

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+46 8 58 41 06 70

## Adam Dahlberg

President  
+46 8 58 41 06 71  
[adam.dahlberg@hamek.se](mailto:adam.dahlberg@hamek.se)

## Procurement code

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 competences

- 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

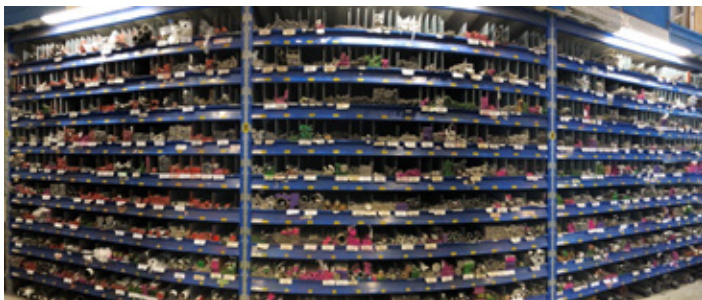
- Aerospace
- Space
- Oil and Gas
- Medical
- Turbines
- Nuclear
- Defence
- Motorsport

### 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](http://www.haraldpihl.com)

### Harald Pihl

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### Jonas Pihl

Managing Director  
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[jonas.pihl@haraldpihl.com](mailto:jonas.pihl@haraldpihl.com)

### Procurement code

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 competences

- 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



[www.hemiheating.se](http://www.hemiheating.se)

## Hemi Heating AB

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

## Bengt Ericsson

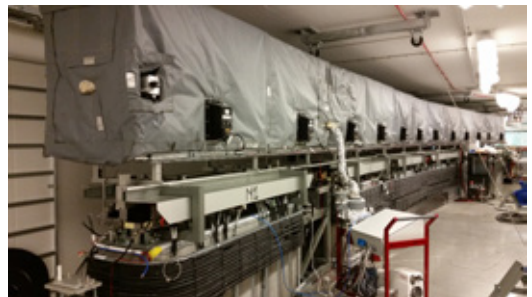
Sales representative  
[bengt.ericsson@hemiheating.se](mailto:bengt.ericsson@hemiheating.se)

## References

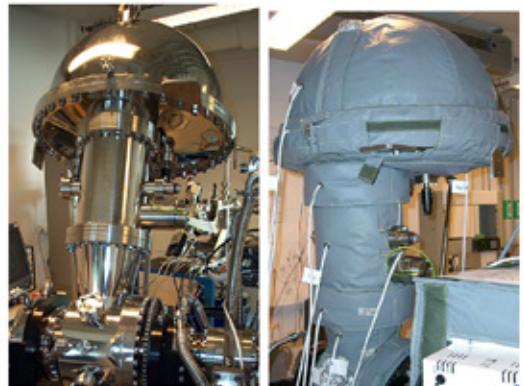
CERN, MAX IV, ITER, ESRF, DESY, ESS, NXP, ST Microelectronics, AMD, IMEC, 3SUN, Picosun, HSR, ABB, NIST, Oxford Instruments, DCA Instruments, Silex, Excillum, Microsoft Quantum Materials, Astra Zeneca, Oerlikon, VOLVO.

## Company size

Small



Bakeout tent, 23m long at MAX IV



Heater jackets, photoelectron analyser

## Procurement code

- 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 competences

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](http://www.herrstroms.se)

### Herrströms Mekaniska Verkstads AB

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### Christer Herrström

Managing Director  
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[chh@herrstroms.se](mailto:chh@herrstroms.se)

### Procurement codes

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 competences

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



[www.hexatronic.com](http://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](mailto:karl-ove.andersson@hexatronic.com)

## Procurement codes

Civil engineering, building and technical services

Electronics and radio frequency

Optics and photonics

## HMS INDUSTRIAL NETWORKS

### Company profile

HMS Industrial Networks is a leading independent supplier of products for industrial communication and the industrial Internet of Things. Our products enable industrial devices to get connected and communicate in different ways.

Head quartered in Halmstad, Sweden, HMS has Technology centers in Germany, Belgium and Spain. Local sales and support are handled by branch offices in 14 countries, plus distributors in more than 50.

HMS employs 500 people and is listed on the OMX Nasdaq Nordic Stock Exchange.

### Core competences

- Industrial communication
- Industrial Internet of Things

### Industry sectors

- Industrial automation
- Building automation
- Power and energy
- Life sciences
- Transport

### References

Our customers range from large automation vendors, to manufacturers of devices and machines as well as system integrators and end users, research centers and universities. Most major automation companies such as ABB, Rockwell Automation, Schneider Electric, Siemens and many more use HMS technology to get connected.

### Company size

Large



[www.hms-networks.com](http://www.hms-networks.com)

### HMS Industrial Networks AB

Stationsgatan 37, SE-300 04 Halmstad, Sweden  
+46 35 17 29 00

### Michela Nalin

Marketing Coordinator  
+46 35 17 29 93  
[min@hms.se](mailto:min@hms.se)

### Procurement codes

Electronics and radio frequency  
Information technology

# 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 competences

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](http://www.hoganas.com)

## Höganäs AB

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+46 42 33 80 00

## Hilmar Vidarsson

Specialist Chemistry  
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[hilmar.vidarsson@hoganas.com](mailto:hilmar.vidarsson@hoganas.com)

## Procurement code

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 competences

- 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**<sup>o</sup>  
Mät, analysera och förstå

[www.intab.se](http://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 codes

Health, safety and environment  
Information technology  
Electronics and radio frequency

# 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 competences

- 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



[www.jobsab.se](http://www.jobsab.se)

## JOBSAB Interpiping System AB

Järvgatan 8, SE-261 44 Landskrona, Sweden  
+46 418 289 30  
[www.jobsab.se](http://www.jobsab.se)

## Magnus Jönsson

Manager Director  
+46 73 7751279  
[magnus.jonsson@jobsab.se](mailto:magnus.jonsson@jobsab.se)

## 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



## Procurement codes

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 competences

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

### Company size

Small



[www.join.se](http://www.join.se)

### JOIN Business & Technology AB

IDEON Science Park, Alfahuset  
Scheelevägen 15, SE-223 70 Lund, Sweden  
+46 46 286 34 00

### Göran Nybom

CEO  
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[goran.nybom@join.se](mailto:goran.nybom@join.se)

### Procurement codes

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 competences

- 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](http://www.cncquality.se)

## Karlskoga CNC Quality AB

Svetsarevägen 11, SE-691 37 Karlskoga, Sweden  
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## Gustaf Ekström

CEO

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[gustaf.ekstrom@cncquality.se](mailto:gustaf.ekstrom@cncquality.se)

## Procurement code

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 tolerated 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 competences

- Tightly tolerated 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

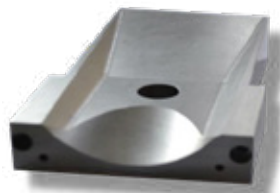
- Defense
- Medical
- Metrology
- Big-science

### References

- CERN
- GE Healthcare
- SAAB
- Hexagon

### Company size

Small



Graphite-molybdenum for use in collimators



Copper-Diamond material for heat-sinks



[www.fridman.com](http://www.fridman.com)

### KG Fridman AB

Box 496, SE-651 11 Karlstad, Sweden  
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### Alain Lennquist

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[alain@fridman.com](mailto:alain@fridman.com)

### Procurement codes

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 competences

- 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](http://www.kisab.se)

## KISAB

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## Claes Andersson

CEO

+46 44 590 11 09

[claes@kisab.se](mailto:claes@kisab.se)

## Procurement code

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 competences

- 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



[www.kmv.se](http://www.kmv.se)

**Kungsörs Mekaniska Verktad AB**  
Malmbergavägen 21, SE-73632 Kungsör

**Anders Karlsson**  
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+46 227 61 65 03  
[anders.karlsson@kmv.se](mailto:anders.karlsson@kmv.se)

### Procurement codes

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

# 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 competences

- 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](http://www.larssonkjellberg.se)

## AB Larsson & Kjellberg

Verkstadsgatan 9, SE-613 41 Oxelösund, Sweden  
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## Lars Erlandsson

CEO and Sales manager  
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[lars@larssonkjellberg.se](mailto:lars@larssonkjellberg.se)

## Procurement codes

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  $\mu\text{m}$   $\leq$  3mm.

Precise welding 20  $\mu\text{m}$  foils, up to 3 mm in thickness. Stainless, titanium, copper, covar, inconel. Basic material analysis, internal Zeiss SEM.

### Core competences

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

### Industry sectors

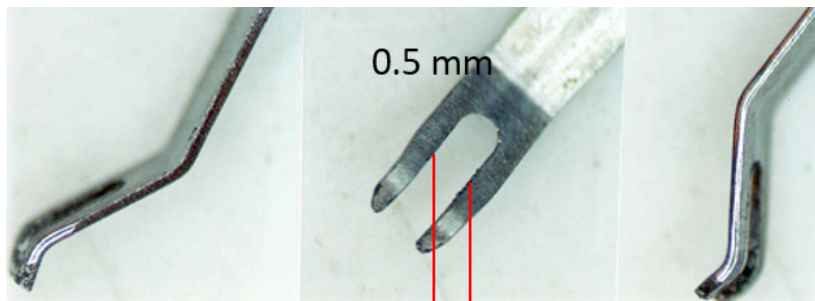
Space, micro machining, surgical and medical devices, dental devices, R&D organizations, off shore and subsea applications e.g. encapsulating of sensors for deep sea applications.

### References

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

### Company size

Small



[www.lasernova.se](http://www.lasernova.se)

**Laser Nova AB**  
Odenskogsvägen 1A  
SE-831 48 Östersund, Sweden

**Rickard Olsson**  
CTO  
+46 63 18 08 80  
[rickard.olsson@lasernova.se](mailto:rickard.olsson@lasernova.se)

**Procurement code**  
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 competences

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

## Industry sectors

- Energy
- Big Science
- Marine

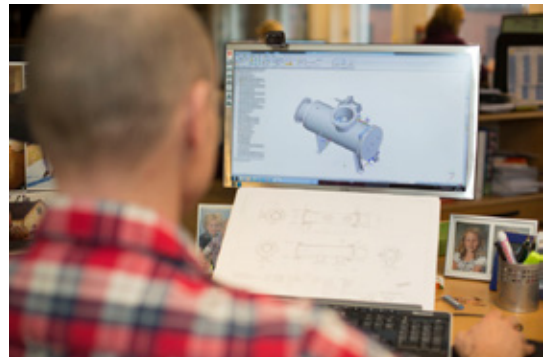
- Nuclear
- Food & Beverage
- Oil & Gas
- Submarine

## 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](http://www.liedholms.se)

## Liedholms Maskinteknik AB

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## Joakim Svensson

Key account manager  
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[joakim.svensson@liedholms.se](mailto:joakim.svensson@liedholms.se)

## Procurement codes

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

## 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 for radio astronomy, physics research and telecom applications.

### Core competences

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 1000 cryogenic Low Noise Amplifiers annually. The big markets are quantum computer related research and radio astronomy.

### Company size

Small



[www.lownoisefactory.com](http://www.lownoisefactory.com)

### Low Noise Factory AB

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### Niklas Wadefalk

CEO  
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[wadefalk@lownoisefactory.com](mailto:wadefalk@lownoisefactory.com)

### Procurement codes

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 competences

- 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](http://www.low2high.se)

### Low2High Vacuum AB

Datavägen 57B, SE-436 32 Askim, Sweden

### Mickael Sörensson

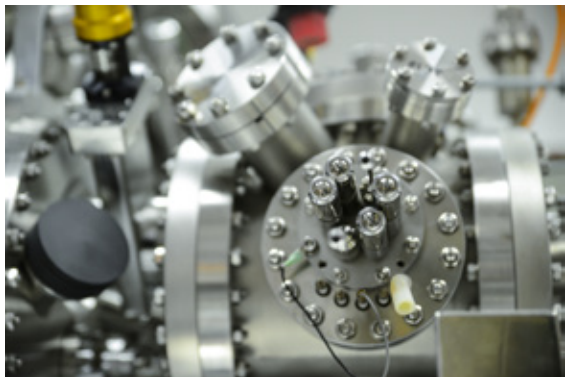
Regional Sales Manager

+46 31 68 82 86

mickael.sorensson@low2high.se

### Procurement code

Vacuum and low temperature



## LUMA METALL AB

### 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 competences

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



[www.luma-metall.com](http://www.luma-metall.com)

### Luma Metall AB

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### Ulrich Stöhr

Sales Manager  
+46 480 42 90 46  
[ulrich.stohr@luma-metall.se](mailto:ulrich.stohr@luma-metall.se)

### 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 codes

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 competences

- 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](http://www.lowener.se)

## Löwener Vacuumservice AB

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## Anders Holm

Managing Director  
+46 8 505 980 02  
[anders.holm@lowener.se](mailto:anders.holm@lowener.se)

## Procurement code

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 competences

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

### Industry sectors

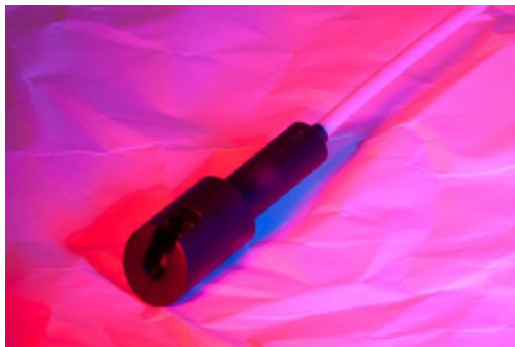
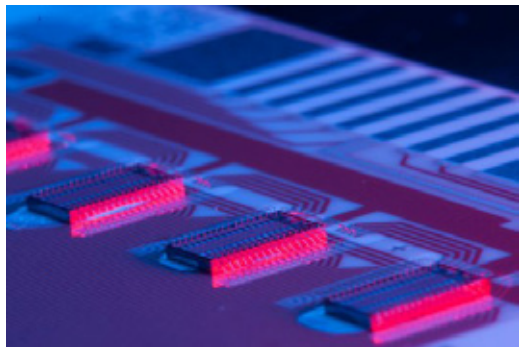
- Avionics
- Space
- Military
- High end Industrial

### References

- SAAB
- Thales
- ASML
- Bosch
- Airbus Safran launchers (Carrier rocket Ariane 6)

### Company size

Small



[www.mak.se](http://www.mak.se)

### M A Kapslingsteknik AB

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### Magnus Alsered

CEO  
+46 8 590 755 11  
[alsered@mak.se](mailto:alsered@mak.se)

### Procurement codes

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 competences

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

## Industry sectors

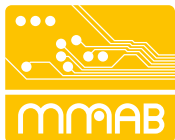
- Industrial
- Science
- Medical
- Defense
- Automotive
- Wireless
- Power

## 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](http://www.mmabgroup.com)

## Malmö Mönsterkort AB

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+46 40 642 46 00

## Esbjörn Johansson

Technical Manager  
[esbjorn.johansson@mmabgroup.com](mailto:esbjorn.johansson@mmabgroup.com)

## Procurement codes

Electrical engineering and magnets  
Electronics and radio frequency



## 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 competences

- 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

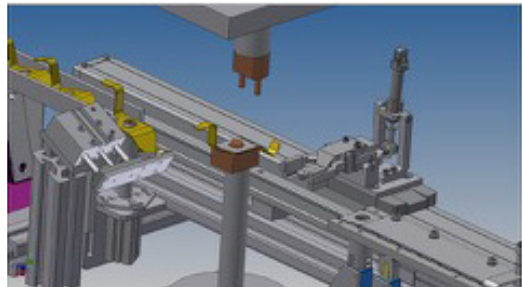
- Nuclear fuel and waste management
- Nuclear industry
- Manufacturing industry
- Energy
- Automotive
- Wood processing, paper and pulp
- Marine
- Water
- Research facilities
- Machine building

### References

- Swedish Nuclear Fuel and Waste Management Company

### Company size

Small



[www.maskinteknikab.se](http://www.maskinteknikab.se)

### Maskinteknik i Oskarshamn AB

Bilgatan 9, SE-572 51 Oskarshamn, Sweden  
+46 491 382 820

### Linda Sharp

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[linda@maskinteknikab.se](mailto:linda@maskinteknikab.se)

### Procurement code

Mechanical engineering and raw materials

# MB SCIENTIFIC

## Company profile

MB Scientific AB is a company that produces photoelectron spectroscopy instruments & systems. Our state of the art ARPES system MBS A1SYS gives scientists an opportunity for world leading research. Also, our experience of electron optics and electronics design provides effective consultation.

## Core competences

Ultra-high energy resolution photoelectron detection, Electron optics simulation, Ultra-high precision electronics (DAC, PWM), Ultra-Hight Vacuum system design, and so on.

## References

We have delivered our instruments to ALBA synchrotron in Spain, Synchrotron SOLEIL in France, Diamond light source in UK, MPI Dresden and Halle, Forschungszentrum also Univ. of Cologne in Germany, University of Amsterdam in Netherland, Various university and national laboratories in Japan, and few in China.

## Company size

Small



[www.mbscientific.se](http://www.mbscientific.se)

## MB Scientific AB

Fålhagsleden 61, SE-753 23 Uppsala, Sweden  
+46 18 29 0960

## Mitsuse Matsuki

CEO  
+46 18 29 0960  
[mitsuse.matsuki@mbscientific.se](mailto:mitsuse.matsuki@mbscientific.se)

## Procurement codes

Particle and photon detectors  
Vacuum and low temperature

## MCT BRATTBERG

### Company profile

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

### Core competences

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](http://www.mctbrattberg.se)

### MCT Brattberg AB

Lyckeåborg SE-371 92 Karlskrona, Sweden  
+46 455 37 52 00

### Mats Åfeldt

Area Sales Manager  
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[mats.afeldt@mctbrattberg.se](mailto:mats.afeldt@mctbrattberg.se)

### Procurement codes

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 competences

- 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

- Sandvi
- Atlas Copco
- IMO
- Sesab
- Quintus
- Atlet

## Company size

Medium

[www.medicast.se](http://www.medicast.se)

## Medicast AB

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## Niklas du Hane Hansson

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nh@medicast.se

## Procurement codes

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 competences

- 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](http://www.merx.se)

### Merx Svenska AB

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### Thomas Smedberg

Sales Manager  
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thomas@merx.se

### Procurement code

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 competences

- 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](http://www.microbas.se)

## Microbas Precision AB

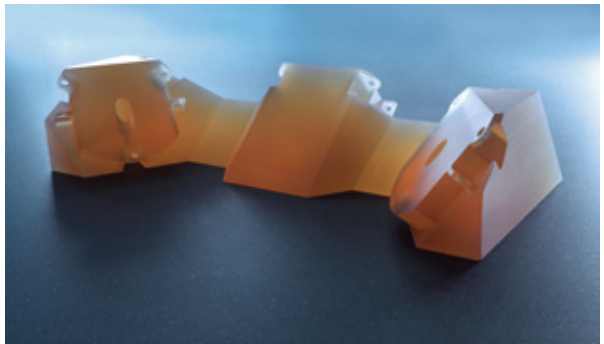
Tippvägen 4, SE-281 41 Hässleholm, Sweden  
+46 451 152 00

## Magnus Lindvall

Managing Director  
[magnus.lindvall@microbas.se](mailto:magnus.lindvall@microbas.se)  
+46 708 33 52 06

## Procurement codes

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 competences

- 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/](http://www.micropol.com/en/)

### Micropol Fiberoptic AB

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### Peter Ljungkvist

CEO  
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[p.l@micropol.com](mailto:p.l@micropol.com)

### Procurement codes

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 competences

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](http://www.mikroponent.se)

## Mikroponent AB

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## Örjan Dahlstedt

Sales Manager  
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[orjan.dahlstedt@mikroponent.se](mailto:orjan.dahlstedt@mikroponent.se)

- 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 codes

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 competences

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

### Industry sectors

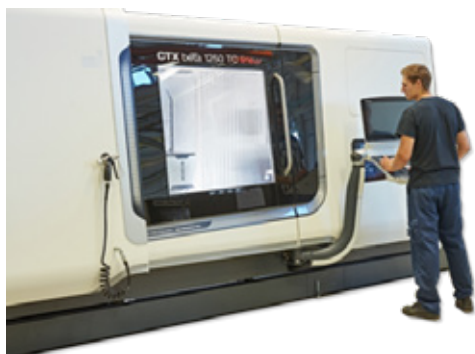
Technology company with manufacturing/development services for industrial products and automation equipment.

### 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](http://www.mikroverktyg.se)

### Mikroverktyg AB

Box 281, SE-151 23 Södertälje, Sweden  
Hantverkarsvägen 5, SE- 151 65 Södertälje, Sweden  
+46 8 550 268 00

### Lars Bohman

Sales manager  
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[lars.bohman@mikroverktyg.se](mailto:lars.bohman@mikroverktyg.se)

### Procurement codes

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 competences

- 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

**MODELLTEKNIK**

[www.modellteknik.se](http://www.modellteknik.se)

## Modellteknik AB

Fröslundavägen 5, SE- 632 32, Eskilstuna, Sweden

## Johan Tegnemo

Technical Sales Manager

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[johan@modellteknik.se](mailto:johan@modellteknik.se)

## References

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

## Company size

Small



## Procurement code

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 competences

- 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](http://www.mpbolagen.se)

**MP bolagen Industri AB**

Box 3, SE-574 36 Vetlanda, Sweden

**Ulf Birath**

Export manager

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[ulf.birath@mpbolagen.se](mailto:ulf.birath@mpbolagen.se)

### Procurement codes

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 competences

- 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](http://www.nanovac.se)

## Nanovac AB

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## Thomas Engstedt

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[thomas.engstedt@nanovac.se](mailto:thomas.engstedt@nanovac.se)

## Procurement codes

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 competences

- 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](http://www.naverviken.se)

### Naverviken Logistic AB

Box 85, SE-691 22 Karlskoga, Sweden  
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### Marie Hagman

CEO  
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### Procurement codes

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 competences

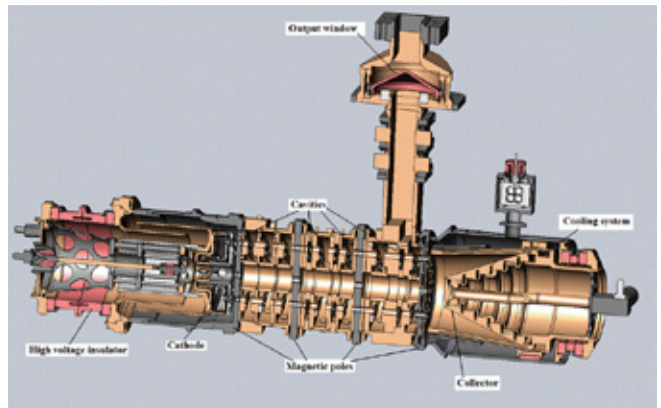
- Electrical
- Electronics
- Electromechanical
- RF systems

## References

- Microwave
- Magnetron
- Klystron
- RF systems

## Company size

Small



**NELSON**  
CREATED AB

[www.nelsoncreated.com](http://www.nelsoncreated.com)

## Nelson Created AB

Luthagsplanaden 9B  
SE-752 25 Uppsala, Sweden

## Daniel Lundberg

CEO

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[daniel.lundberg@nelsoncreated.com](mailto:daniel.lundberg@nelsoncreated.com)

## Procurement codes

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 competences

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.

**ISOTOPES**  
at [www.buyisotope.com](http://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](http://buyisotope.com) website or via e-mail: [info@buyisotope.com](mailto:info@buyisotope.com)



[www.buyisotope.com](http://www.buyisotope.com)

### Neonest AB

Storgatan 70C Solna, SE-10691, Sweden  
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### Petr Vasiliev

CEO  
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[info@buyisotope.com](mailto:info@buyisotope.com)

### Procurement codes

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 competences

- 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](http://www.nordbergstekniska.se)

## Nordbergs Tekniska AB

Skyttvägen 15, SE-186 91 Vallentuna, Sweden

## Oskar Nordberg

Material Specialist

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[oskar@nordbergstekniska.se](mailto:oskar@nordbergstekniska.se)

## Procurement code

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 competences

- 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](http://www.nordicfurnaces.com)

### Nordic Furnaces AB

Regattagatan 13 , SE-723 48 Västerås, Sweden

### Jani Martinsson

Sales Engineer / Project Manager

[jani.martinsson@nordicfurnaces.com](mailto:jani.martinsson@nordicfurnaces.com)

### Procurement codes

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 competences

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



**NOTE™**  
YOUR MANUFACTURING PARTNER

[www.note.eu](http://www.note.eu)

### NOTE AB

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### Jonas Alexander Söderlund

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### Procurement codes

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

## 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 competences

- 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](http://www.nuvia-nordic.com)

### Nuvia Nordic AB

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### Tobias Gustavsson

CEO

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### Procurement codes

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 competences

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](mailto:ulf.broomé@nvent.com)

## Procurement codes

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 competences

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](http://www.omnisys.se)

### Omnisys instruments AB

August Barks Gata 6B  
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### Martin Kores

CEO  
+46 732 30 55 60  
[martin.kores@omnisys.se](mailto:martin.kores@omnisys.se)

### References

- Microwave instruments to the Odin satellite (customer: Swedish Space Corporation)
- PCPU: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 codes

Electronics and radio frequency  
Vacuum and low temperature  
Optics and photonics

# OVAKO

## Company profile

Ovako produces high-strength low alloy bar steel in all executions. Round, square, flat or as hot-rolled profiles. We cut, machine, grind and heat treat our products into many types of delivery conditions – from basic forms to almost completed components. Ovako also produces tube, ring and wire, and supplies an industry leading range of hard-chromed, long products. Ovako products serve a broad array of industries and advanced applications. Our customers are generally leading premium manufacturers in their segments that place intense demands on the mechanical properties of the steel.

## Core competences

- Engineering steel
- Specialty steel
- Long products
- Bar
- Tube
- Ring

## Industry sectors

- Agricultural parts & attachments
- Forgings, bearings
- Hydraulics
- Chassis components
- Powertrain
- Fasteners
- Rock drilling tools
- Lifting devices

## References

- SKF
- Volvo
- Sandvik
- Scania
- Bosch
- Atlas-Copco
- Epiroc

## Company size

Large



[www.ovako.com](http://www.ovako.com)

## Ovako AB

SE-81382 Hofors, Sweden

## Göran Nyström

EVP Marketing and Technology

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## Procurement code

Mechanical engineering and raw materials



## 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 competences

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](http://www.pfeiffer-vacuum.com)

### Pfeiffer Vacuum Scandinavia AB

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Sweden  
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### Stefan Brun

Managing Director  
+46 8 590 748 10  
[sales@pfeiffer-vacuum.se](mailto:sales@pfeiffer-vacuum.se)

### Procurement code

Vacuum and low temperature

# 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 competences

- 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](http://www.pickering.se)

## Pickering Interfaces AB

Karl Nordströms väg 31, SE-432 53 Varberg,  
Sweden  
+46 70 320 36 66

## Bo Öhrwall

CEO

[bo.ohrwall@pickeringtest.com](mailto:bo.ohrwall@pickeringtest.com)

## Procurement codes

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 competences

- 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](http://www.pilz.se)

### Pilz Skandinavien K/S

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### Patrik Frivold

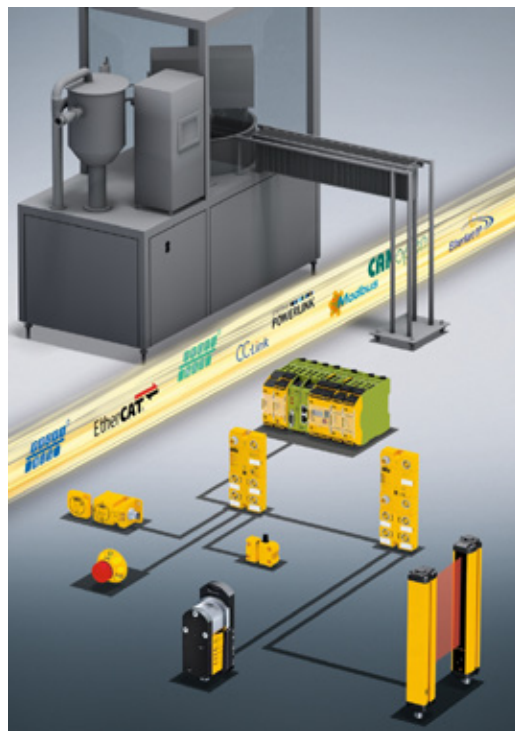
Country Manager  
+46 300 139 90  
[p.frivold@pilz.dk](mailto:p.frivold@pilz.dk)

### References

- MAX IV
- ESS
- ESO
- CERN

### Company size

Large



### Procurement code

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.

## Competences

- 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](http://www.polyamp.com)

### Polyamp AB

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+46 120 85 400

### Eric Östlund

CEO

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### Procurement codes

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 competences

- 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](http://www.powerheat.se)

### Power Heat Piping South AB

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+46 40 370 300

### Magnus Hammarstedt

General Manager  
[magnus.hammarstedt@powerheat.se](mailto:magnus.hammarstedt@powerheat.se)

### 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 codes

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 competences

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](http://www.proact.se)

## Proact IT Group AB

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## Mattias Keijsner

Technical Sales  
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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 codes

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 competences

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

### Industry sectors

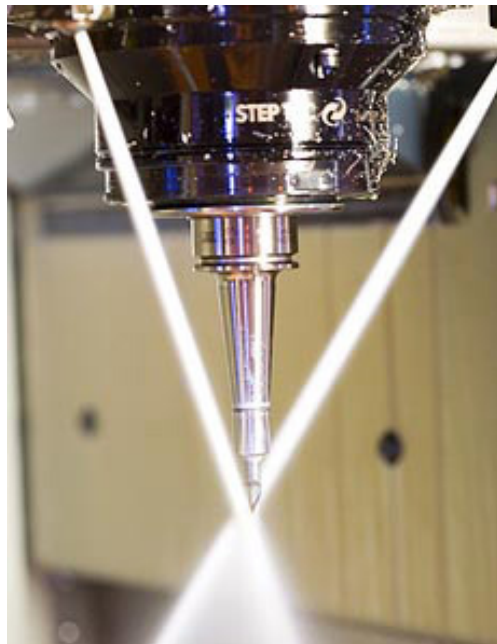
- Particle accelerators
- Vehicle
- Medical
- Packaging and processing-sector

### References

We have delivered diode stacks to CERN.

### Company size

Small



**PRODTEK**  
Produktionsteknik i Lund AB

[www.prodtek.se](http://www.prodtek.se)

### Produktionsteknik i Lund AB

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### Jakob Fornander

General Manager  
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+46 46 33 51 80

### Procurement codes

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 competences

To work in close collaboration with researchers to deliver a single detail, unit or scientific instrument. Our keywords are:

- Collaboration
- Optimization
- Robustness
- Quality

### 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](http://www.promech.se)

### Promech Lab AB

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### Jurgen Persson

CEO

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### Procurement codes

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 competences

- 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](http://www.protolabs.se)

### Protolabs

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### Tom Edstav

Area Sales Manager  
[tom.edstav@protolabs.se](mailto:tom.edstav@protolabs.se)

### Procurement code

Mechanical engineering and raw materials

# 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 competences

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/

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



[www.qamcom.se](http://www.qamcom.se)

## Qamcom Research and Technology AB

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## Omid Sotoudeh

Office manager  
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## Procurement codes

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 competences

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

### Industry sectors

- Manufacturing
- Process and medical

### References

Gambro/Baxter, Getinge, Metso, Alstom, Valutec, ABB, GasProducts, AstraZeneca, Hydroscand, Purac Puregas, E.on Biofor, Breatheus Regional, Max Lab, Swep International, Höganäs, Arcam

### Company size

Small



[www.qmtscience.se](http://www.qmtscience.se)

### QMT Science AB

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### Oscar Smide

Area Sales Executive  
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[oscar.smide@qmt3.com](mailto:oscar.smide@qmt3.com)

### Procurement codes

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 competences

- 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



# QTECH GROUP

[www.qtechgroup.se](http://www.qtechgroup.se)

## Qtech Group AB

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+46 370 51 10 00

## Glenn Wilander

CEO

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[glenn@qtechgroup.se](mailto:glenn@qtechgroup.se)

## Procurement code

Mechanical engineering and raw materials

## R.A.P.S

### Company profile

We are a supplier of machine and services within additive manufacturing.

We have various number of 3D-printers either to sell or to use in different projects both for plastics and metal.

We can offer 3D-scanning and 3D-modelling for additive manufacturing on a high level among product development with complex geometries.

We can offer topology optimization for a number of manufacturing methods. We also train people in 3D-CAD and 3D-printing.

### Core competences

- Additive Manufacturing
- 3D-modelling
- Topology Optimization
- Training



**r.a.p.s.** ■ ■

[www.raps.se](http://www.raps.se)

**r.a.p.s**

Spiegelgatan 1, SE-261 47 Landskrona, Sweden  
+46 70 814 74 00

**Pär Nobring**

CEO

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[pno@raps.se](mailto:pno@raps.se)

**Procurement code**

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 competences

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](http://www.recab.com)

## Recab AB (HQ)

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## Brian Ulskov Sørensen

Engineering Director  
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[brian.ulskov.sorensen@recab.com](mailto:brian.ulskov.sorensen@recab.com)

## Procurement codes

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 competences

- Building and property
- Energy
- Industry and technology
- Transport infrastructure
- ICT and telecom

### Company size

Large



# REJLERS

[www.rejlers.se](http://www.rejlers.se)

### Rejlers Sverige AB

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### Johan Linterius

Group Manager Energy

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### Procurement codes

Civil engineering, building and technical services

Electrical engineering and magnets

# REQUTECH

## Company profile

Satellite antenna specialist which develops both internal and customer requested antenna systems. The latest developed antenna systems are communication-on-the-move system which is used for satellite communication for moving platforms such as trains and airplanes.

## Core competences

- Microwave engineering
- Antenna engineering
- Satellite communications

## Industry sectors

- Satellite Communications
- Telecommunications

## References

ReQuTech with team of antenna, mechanical, software and electrical engineers has designed and delivered more than 20 antenna systems and components to various international customers and projects.

## Company size

Small



requtech 

[www.requtech.com](http://www.requtech.com)

## ReQuTech AB

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## Omid Sotoudeh

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## Procurement codes

Electrical engineering and magnets

Electronics and radio frequency

## RESINIT

### Company profile

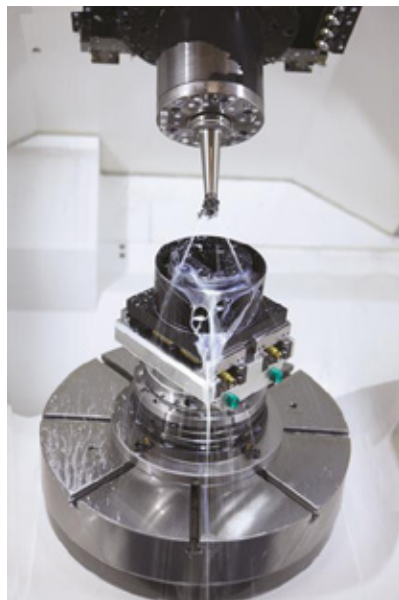
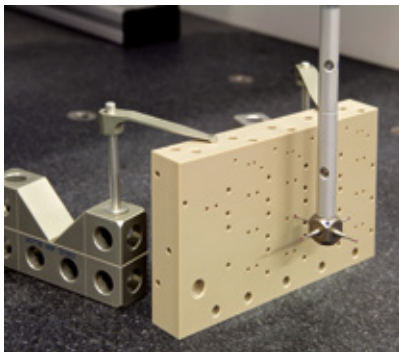
Resinit AB is a high-quality supplier of components machined in plastics and thermosettings. We specialise in plastic materials that are challenging to machine, with high demands on quality and delivery reliability. Our primary target is the manufacturing industry and we closely monitor the development of new materials and methods. The goal at Resinit is to achieve long-term, mutually satisfying cooperation with our customers.

### Core competences

- High quality
- On time deliveries
- High service grade
- High knowledge of machining plastics
- Plastic material knowledge

### Company size

Medium



[www.Resinit.se](http://www.Resinit.se)

### Resinit AB

Polymergatan 7, SE-593 50 Västervik, Sweden  
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### Andreas Hellman

Key Account Manager  
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### Procurement code

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 competences

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](http://www.rfrsolutions.se)

### RFR Solutions AB

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### Mats Orup

Managing Director  
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### Procurement codes

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 competences

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



**RISE**

[www.ri.se/en](http://www.ri.se/en)

**RISE, Research Institutes of Sweden, Division Safety and Transport**  
Lindholmospiren 7A, SE-417 56 Göteborg, Sweden

**Anne Norén**  
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### Procurement codes

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

# 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 competences

- Vacuum technology
- Gas analysis
- Surface analysis
- Cryogenics
- Microscopy
- Process Technology

## Industry sectors

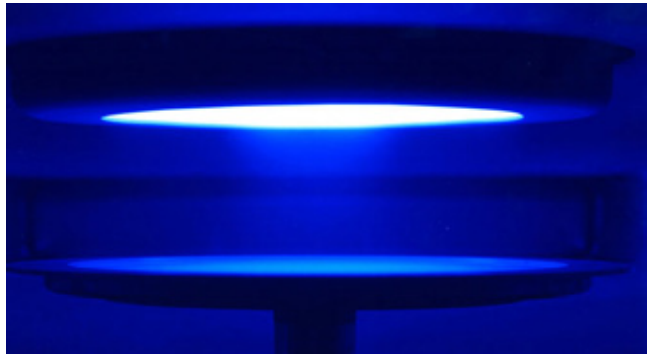
- Semiconductor
- Nuclear
- Space
- Cryogenic
- Automotive
- Turbine manufacturing

## 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](http://www.rowaco.se)

## Rowaco AB

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## Kristian Flodström

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## Procurement codes

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 competences

- 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](http://www.rydverken.se)

### Rydverken AB

Verkstadsvägen 2, SE-36256 Ryd, Sweden

### Tony Svensson

Sales manager

tony.svensson@rydverken.se

### Procurement codes

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 competences

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](http://www.rzg.se)

### RZ Gruppen

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### Johan Pettersson

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### Procurement codes

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 competences

- 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](http://www.kilsverkstads.se)

### RZ Kils Verkstad AB

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### Joakim Gylling

CEO

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### Procurement codes

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 competences

- 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](http://www.materials.sandvik/services)

## Sandvik Materials Technology AB

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## Marie Vennström

Manager Engineering Solutions, Stainless Service  
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[marie.vennstrom@sandvik.com](mailto:marie.vennstrom@sandvik.com)

## 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 codes

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 competences

- Pulsed power Systems
- Pulse modulators
- Pulse generators
- E-gun modulators
- RF-units

*ScandiNova*

[www.scandinovasystems.com](http://www.scandinovasystems.com)

### ScandiNova Systems AB

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### Mikael Lindholm

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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

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 competences

- 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](http://www.scanditronix-magnet.se)

## Scanditronix Magnet AB

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## Mikael Vieweg

CEO

+46 472 486 81

[mikael.vieweg@scxmagnet.se](mailto:mikael.vieweg@scxmagnet.se)

## Procurement code

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 competences

- Mast
- Tower
- CCTV
- Telecommunication
- Civil Works
- Floodlights
- Camera
- Air2Fiber
- Lattice Tower
- Camera mast



[www.scanmast.com](http://www.scanmast.com)

## Scanmast AB

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## Stefan Myhr

Business Manager Material  
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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 codes

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 competences

- Experts in environmental measurement systems
- Renewable energy Power solutions
- Dam instrumentation
- Wind Power Meteorology
- Hydrology and water



[www.scanmatic.com/sminsitu](http://www.scanmatic.com/sminsitu)

[www.value.com](http://www.value.com)

## Scanmatic In Situ AB

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## Johan Lindh

Managing Director  
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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 codes

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 competences

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](http://www.schneider-electric.se)

### Schneider Electric AB

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### Josef Christoffersson

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### Procurement codes

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

# 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 competences

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

**scienta**omicron

[www.scientaomicron.com](http://www.scientaomicron.com)

## Scienta Omicron AB

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## Susanna Eriksson

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## Procurement codes

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 competences

- 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](http://www.semcon.com)

### Semcon Sweden AB

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### Mats Fredrikson

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### Procurement codes

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 competences

- 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](http://www.sigma.se)

## Sigma

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## Karin Sjöö Åkeblom

Department Manager

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## Procurement codes

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 competences

- Electronics
- Schematics
- PCB layout (CAD)
- Firmware
- Software
- RTOS

### Industry sectors

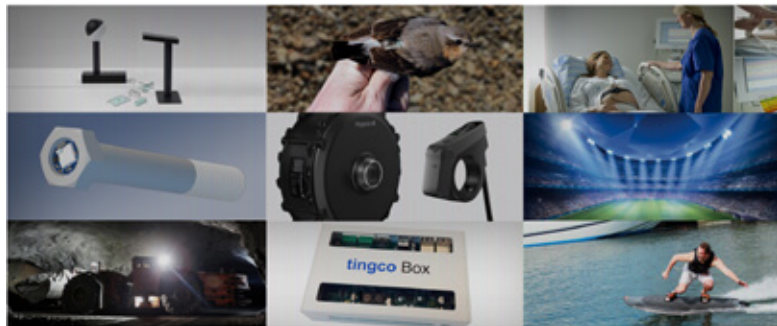
- Medical technology
- Environmental technology
- Electrical vehicles industrial
- Mobile telephony

### 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](http://www.lundinova.se)

### Sigma Lundinova AB

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### Marcus Weibull

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### Procurement codes

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 competences

Medium and heavy welding and machining

### Industry sectors

- Mining
- Food
- Manufacturing industry

### Company size

Small



[www.silver-weibull.se](http://www.silver-weibull.se)

### Silver Weibull Production AB

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### Jonas Rolandsson

Managing Director

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### Procurement code

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 competences

- 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

Hydrostatical 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](http://www.skf.com)

### SKF Sverige AB

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### Hans Norrman

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### Procurement code

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 competences

- 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](http://www.smoltek.com)

## Smoltek AB

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## Ola Tiverman

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## Procurement codes

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 competences

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 industry 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](http://www.solectro.se)

### Solectro AB

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### Karoline Ljung

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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 codes

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 competences

- 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\_**

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Mattias Skohg  
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**Procurement codes**  
Information technology

## SPECIALTEKNIK I SVERIGE

### Company profile

From concept to customized machines, modification of existing equipment, mechanical manufacturing, industrial maintenance and CE marking.

### Core competences

- Concepts
- Customized machines
- Modification
- Mechanical manufacturing

### Industry sectors

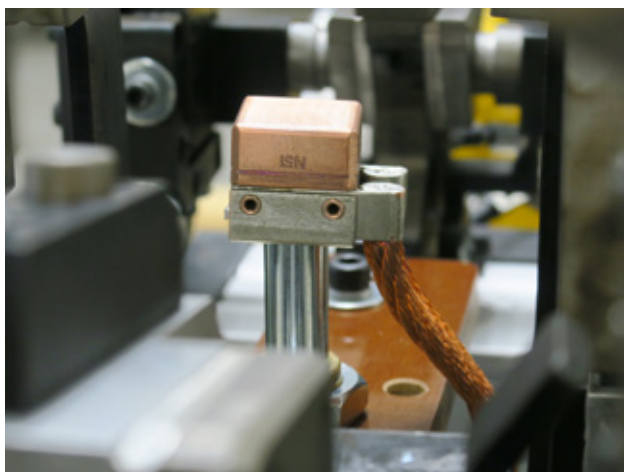
Mechanical manufacturing to the automotive, food, and pharmaceutical industry.

### References

- ESS
- Pågen
- Volvo
- Atlas Copco
- Recipharm
- Santa Maria

### Company size

Small



[www.specialteknik.se](http://www.specialteknik.se)

### Specialteknik i Sverige AB

Olof Asklunds gata 18, SE-421 30 Västra Frölunda, Sweden

### Per Lundgren

Project manager

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### Procurement code

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 competences

- 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](http://www.stavangersteel.se)

## Stavanger Steel AB

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## Andreas Korzonek

Head of Sales

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## Procurement code

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 competences

- 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

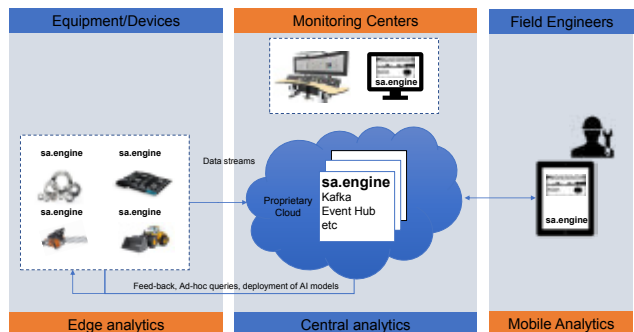
Stream Analyze is based on the scientific work performed at Uppsala Database Lab (UDBL). Over the years, UDBL has applied its software in Big Science, including:

- 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 eSENce, a research network for scalable data stream processing for e-science.

### Company size

Small

**sa.engine:**  
Platform for data stream analytics in real-time on edge devices



## STREAM ANALYZE

[www.streamanalyze.com](http://www.streamanalyze.com)

**Stream Analyze Sweden AB**

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CTO

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**Procurement code**

Information technology

# STUDSVIK NUCLEAR

## Company profile

Studsvik Nuclear has 70 years' experience of developing and constructing customized laboratory equipment to be used in demanding environment. We always strive to offer our customers the best solution to their problems by understanding their individual need before starting any design process. Besides designing and constructing complex equipment, Studsvik also can offer verification tests in dry or wet conditions and with external irradiation of varied dose rates. In our hot cell laboratories we perform advanced testing of highly radioactive materials such as reactor fuel, reactor core components and structural materials. Our customers come to us for e.g. tailored mechanical testing, chemical isotopic analysis and microstructural analysis. With our highly experienced staff and our flexible laboratories we have unique capability to serve the industry with novel technology and methods. To enable testing programs of radioactive materials, international class 7 transportation and final storage are often critical. Studsvik has a long experience of handling such tasks and can offer project management and efficient solutions for these crucial challenges. In addition, Studsvik has a large library of irradiated fuel rods, core components and structural materials from commercial nuclear reactors.

Studsvik also offers a wide range of consultancy and engineering services and solutions to help customers enhance their operations. Our position at the heart of some of the world's foremost radioactive waste projects means we have industry-

leading expertise in fields such as radioactive waste management, radiation safety and protection, safety analysis and licensing, radiological inventory, characterization and clearance. Our experience and leading methodology save customer's time and money and enhance their reputation for delivering world class operations.

## Core competences

Mechanical design, construction, verification tests, irradiation, testing equipment, laboratory equipment, test rigs, materials testing, development, research, reactor components, high dose environment.

Class 7 transportation, radioactive waste management, radiation safety and protection, safety analysis and licensing, radiological inventory, characterization and clearance

## Industry sectors

Nuclear, Energy, Research, Engineering,

## References

For references visit [www.studsvik.com](http://www.studsvik.com)

## Company size

Medium

# Studsvik

[www.studsvik.com](http://www.studsvik.com)

## Studsvik Nuclear AB

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## Carolina Losin

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## Procurement codes

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 competences

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](http://www.sunmek.se)

### Sundbybergs mekaniska verkstads AB

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Sweden  
+46 8 58 03 11 40

### Håkan Ekstedt

CEO  
+46 708 58 03 16  
[hakan.ekstedt@sunmek.se](mailto:hakan.ekstedt@sunmek.se)

### Procurement code

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 competences

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-verktymmek.se](http://www.svennes-verktymmek.se)

## Svennes Verktymmekaniska AB

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## Elvis Nazdrajic

Site Manager

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[elvis@svennes-verktymmek.se](mailto:elvis@svennes-verktymmek.se)

## Procurement code

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 competences

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](http://www.svep.se)

### Svep Design Center AB

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### Mikael Hegardt

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[mikael.hegardt@svep.se](mailto:mikael.hegardt@svep.se)

### Procurement codes

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 competences

- Welding
- CNC milling
- CNC turning
- Pipebending

## Industry sectors

Manufacturing industry

## References

- Teracom
- MAX IV
- ArjoHuntleigh
- Granuldisk

## Company size

Small



[www.svetmekanoab.se](http://www.svetmekanoab.se)

## SvetsMekano AB

Grävmaskinsvägen 3A, SE-241 38 Eslöv, Sweden

## Ola Jönsson

Owner

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[info@svetsmekanoab.se](mailto:info@svetsmekanoab.se)

## Procurement code

Mechanical engineering and raw materials

## SÄVAR SNICKERI

### Company profile

Sävar Snickeri 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 competences

- 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.savarsnickeri.se](http://www.savarsnickeri.se)

### Sävar Snickeri

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### Fredrik Söderlund

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### Procurement categories

Civil engineering, building and technical services

# 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 competences

- 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](http://www.svetstjanst.com)

**Svetstjänst in Höganäs AB**

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**Ronny Nilsson**

Marketing and HR Director

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**Procurement code**

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 competences

- 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



**SMW**®  
SWEDISH MICROWAVE AB

[www.smw.se](http://www.smw.se)

### Swedish Microwave AB

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### Procurement codes

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. Our vision is a fossil-free and circular industry.

## Core competences

- Mechanical properties and testing
- Fatigue testing
- Creep testing
- Materials testing
- High temperature testing
- Testing in aggressive Environments

## Industry sectors

- Power generation
- Gas turbines
- Nuclear waste disposal
- Steelmakers
- Vehicle makers

## References

RISE

## Company size

Medium

[www.swerim.se](http://www.swerim.se)

## Swerim AB

Box 7047, SE-164 07 Kista, Sweden  
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## Henrik Östling

Doctor  
[henrik.ostling@swerim.se](mailto:henrik.ostling@swerim.se)

## Procurement code

Mechanical engineering and raw materials

## 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 competences

- Test and measurement
- Data acquisition and signal generation
- Hardware, firmware, and software design and implementation
- System-level design and implementation

### Industry sectors

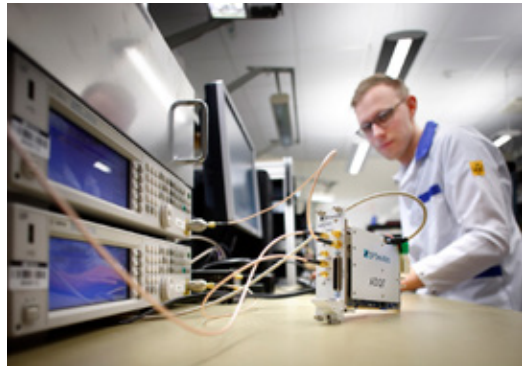
- Particle physics
- Radio astronomy
- Free-electron lasers
- Medical
- Fusion

### 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](http://www.spdevices.com)

### Teledyne Signal Processing Devices Sweden AB

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### Procurement code

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 competences

- AI + Data Science.
- Cloud + HPC
- Robust Systems + Software
- Industry sectors
- Big Science
- Life Science

- Aerospace
- Energy
- Automotive
- Oil&Gas
- Retail
- Finance
- Consumer

## References

- [www.tessella.com/case-studies/isis-and-tessella-boost-output-at-world-leading-neutron-source](http://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](http://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](http://www.tessella.com/news/data-analytics-consultancy-tessella-secures-software-agreements-support-global-scientific-breakthroughs)
- [www.tessella.com/case-studies/ceda-tessella-collaboration](http://www.tessella.com/case-studies/ceda-tessella-collaboration)

## Company size

Large



[www.tessella.com](http://www.tessella.com)

## Tessella

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## Dragan Nesic

Solution Manager  
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## Procurement code

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 competences

- 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](http://www.texor.se)

### Texor

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### Josef Alenius

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### Procurement code

Mechanical engineering and raw materials

## 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 competences

- 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](http://www.tremek.se)

### Tre-Mek i Trelleborg AB

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### Camilla Forsberg

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### Procurement code

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 competences

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](http://www.uniteam.com)

### Uniteam AB

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### Thomas Hansson

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### Procurement codes

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 competences

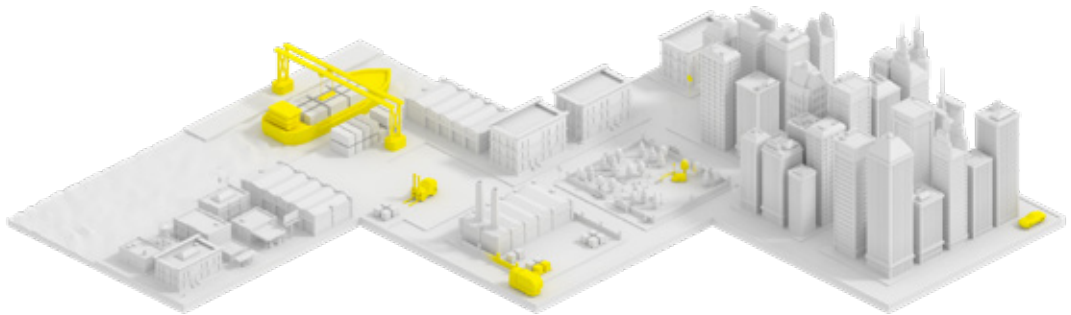
3DAI™ Engine components can be adapted and deployed in different applications where autonomy and automation is needed. Our technical focus is in areas like 3D Positioning, 3D Mapping, 3D Localization, Spatial Deep Learning and Sensor Fusion.

## Industry sectors

We focus on mobile robotics and autonomous driving but have also worked in various other industries.

## Company size

Small



[www.univrse.com](http://www.univrse.com)

## Univrse AB

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## Jonathan Selbie

CEO

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## Procurement code

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 competences

High precision and large mechanical components – manufacturing and assembly

### References

CERN

### Company size

Small



UNNARYD MODELL

[www.unnarydmodell.se](http://www.unnarydmodell.se)

### Unnaryd Modell AB

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### Stefan Larsson

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### Procurement code

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](http://www.uponor.se)

### Uponor

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### Suleyman Dag

Director, Innovation Management  
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### Procurement code

Civil engineering, building and technical services

## VBN COMPONENTS

### Company profile

VBN Components delivers patented, near net shape metal tools and components with unique properties, manufactured through a specific 3D-printing process developed in-house. The materials, branded Vibenite®, have exceptional wear resistance, high heat resistance and are pore free. Small and well-dispersed carbides contribute to the characteristics of the materials. 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 competences

- Patented alloys
- High speed steel
- Cemented carbide
- 3D-printing
- Additive manufacturing
- Cutting tools
- Wear resistant components
- High-temperature stable materials

### Industry sectors

- Aerospace
- Nuclear
- Automotive
- Mining
- Plastic processing
- Food



[www.vbncomponents.com](http://www.vbncomponents.com)

### VBN Components AB

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### Isabelle Bodén

Customer Relations

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isabelle.boden@vbncomponents.com

### References

Most clients are confidential. However, a very successful project with VOLVO Construction Equipment can be mentioned. Gear hobs from VBN Components have proved to run twice as fast and cut twice as deep as regular gear hobs in a top, traditional material.

### Company size

Small



### Procurement code

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 competences

- Casting
- Machining
- Welding
- Mounting

## Industry sectors

- Aerospace
- Energy
- Maritime
- Vehicles
- Communications
- Defence

## References

- SKA
- Chalmers Onsala: The "Space Funnel"



[www.hpgab.se](http://www.hpgab.se)

### Ventana Hackås AB

Industrivägen 6, SE-845 94 Hackås, Sweden  
+46 63 77 04 15

### Jörgen Eriksson

Key Account Manager

+46 70-366 16 60

[jorgen.eriksson@ventana-group.eu](mailto:jorgen.eriksson@ventana-group.eu)



### Procurement code

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 competences

- 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](http://www.verticalwind.se)

### Vertical Wind

Vertical Wind AB  
Skeppsgatan 19, SE-211 11 Malmö, Sweden

### Hans Bernhoff

CEO  
[hans.bernhoff@verticalwind.se](mailto:hans.bernhoff@verticalwind.se)

### Procurement code

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 competences

- 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](http://www.vibeit.se)

### Vibration IT AB

Firmagatan 8, SE-213 76 Malmö, Sweden

### Robert Putica

CEO

+46 722 00 77 21

[robert@vibeit.se](mailto:robert@vibeit.se)

### Procurement code

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 (Örnapl Unozon AB) and in Kristianstad (Ekström and Son AB). With around 100 employees and 10 000 m<sup>2</sup> manufacturing area we are staffed to take on almost any project.

### Core competences

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](http://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](mailto:peter.lindberg@viflow.se)

### Procurement codes

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 competences

- 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](http://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](mailto:ulf.kristoffersson@vtt.se)

## Procurement code

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 competences

- 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

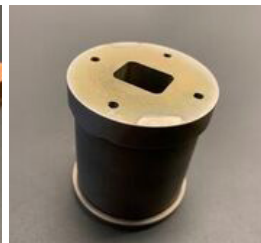
- ESS
- MAX IV
- Tetra Pak
- Metso
- Sandvik
- Koenigsegg
- A&R Carton

### Company size

Small



Component in pure copper for accelerators



Component in tungsten for accelerators



[www.wallinsmekaniska.se](http://www.wallinsmekaniska.se)

### Wallins Mekaniska

Grävmaskinvägen 3D, SE-24138 Eslöv, Sweden  
+46 413 143 56

### Stefan Persson

Managing Director  
stefan@wallinsmekaniska.se  
+46 708 55 44 07

### Procurement code

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 competences

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](http://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](mailto:christoffer.weber@wiretronic.com)

## Procurement codes

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 competences

- 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](http://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](mailto:anders.gleerup@wmpress.se)

### Procurement code

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 competences

- 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.xoificio.eu](http://www.xoificio.eu)

### X-officio

Klostergatan 8B, SE-226 49 Lund, Sweden  
+46 769 43 53 68

### Ohad Graber-Soudry

CEO  
+46 769 43 53 68  
[ohad.graber-soudry@xoificio.eu](mailto:ohad.graber-soudry@xoificio.eu)

### Procurement codes

Information technology  
Mechanical engineering and raw materials

## 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 competences

- Steel castings
- Stainless steel castings
- Machining
- Heat treatment
- 3D-scanning

### Industry sectors

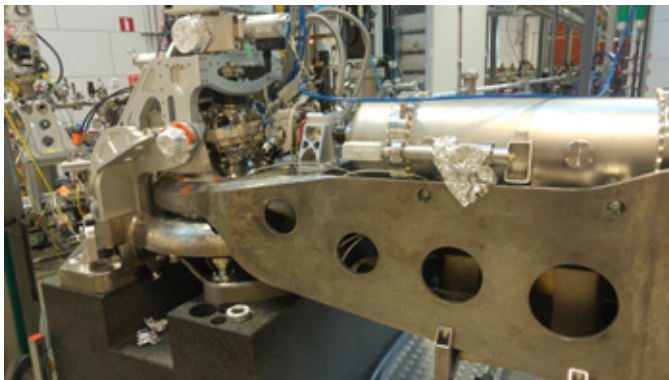
- Energy
- Maritime
- Pulp & Paper
- Offshore
- Mining
- Heavy industry
- Chemical industry

### References

- Wendelstein 7-X Max IV
- Valmet
- Marine Jet Power
- Vattenfall
- Alfa Laval
- Kemira

### Company size

Medium



**ÖSTERBY GJUTERI**

[www.ogab.se](http://www.ogab.se)

### Österby Gjuteri AB

Martinvägen 8, SE-748 32 Österbybruk, Sweden.

### Erik Stark

CEO and Sales Manager

+46 295 24 42 00

[sales@ogab.se](mailto:sales@ogab.se)

### Procurement code

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 than 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.

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Search for academic projects per Big Science facility.

### COORDINATING UNIVERSITY

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### AT HOMEPAGE

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Search at [www.bigsciencesweden.se](http://www.bigsciencesweden.se)

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Electronics and radio frequency
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Mechanical engineering and raw materials
Health, safety and environment
Vacuum and low temperature
Particle and photon detectors
Optics and photonics
Gases, chemicals, waste collection and radiation equipment

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CERN

## ADVANCED RESOURCE CONNECTOR SOFTWARE FOR ATLAS AND LHC COMPUTING



LUND UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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

- Lund University
- Uppsala University
- University of Oslo
- University of Copenhagen
- Jozef Stefan Institut
- University of Bern
- Taras Shevchenko National University of Kyiv

### Hyperlink

[www.nordugrid.org](http://www.nordugrid.org)



CERN

# AUTONOMOUS AIRSHIP FOR INDOOR INSPECTIONS



LUNDS UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

## 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.

## 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

Enhanced positioning systems  
Autonomous indoor navigation  
Efficient solutions for "Lighter-than-air"-applications  
Development of sensors

## Year

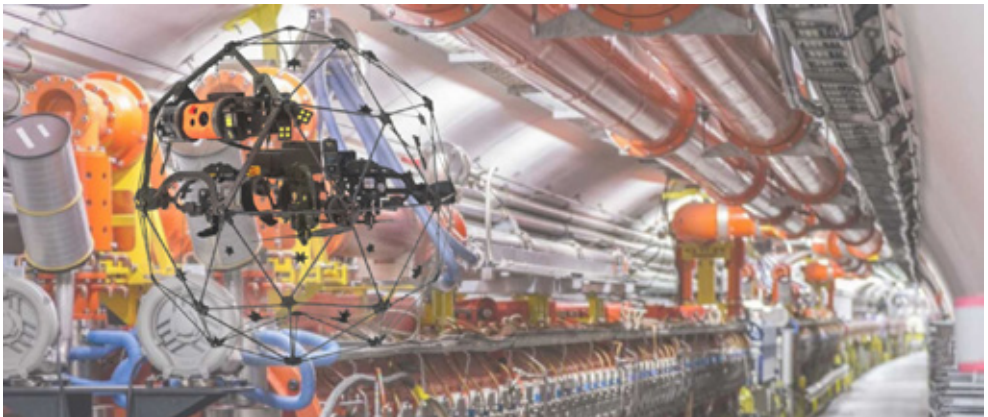
2020-

## Total budget

EUR 150,000

## Hyperlink

<http://uav.lu.se>



## Procurement codes

Electrical engineering and magnets  
Particle and photon detectors

CERN

## CERN SUPERCONDUCTING CABLES CONNECTION CRYOSTATS (COLD BOXES)

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)



UPPSALA  
UNIVERSITET

### 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 MgB<sub>2</sub> 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.

### 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

<http://hilumilhc.web.cern.ch>

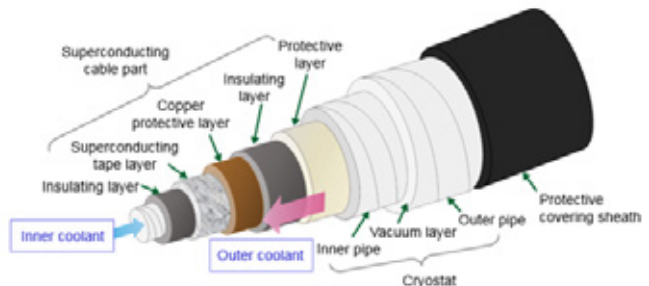
### Team

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



### Procurement codes

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

CERN

# COLD SPARK SYSTEM FOR CLIC

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)UPPSALA  
UNIVERSITET

## 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

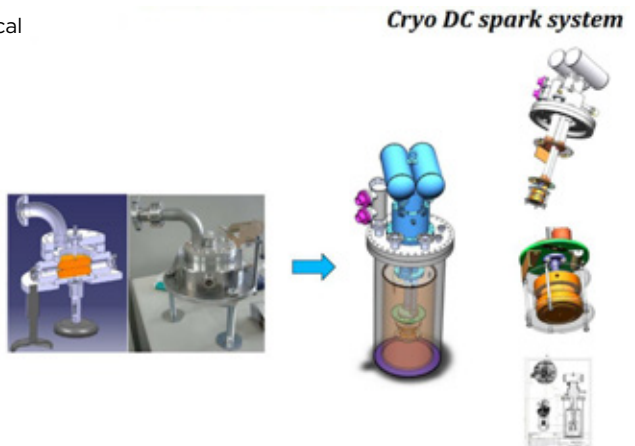
2018–

## Total budget

EUR 150,000

## Industry involvement

- Innovatec Ceramics
- VAQTEC
- Omega Engineering



## Procurement codes

Mechanical engineering and raw materials  
Vacuum and low temperature

CERN

# CONSTRUCTION OF THE TIME PROJECTION CHAMBER IN ALICE AT LHC



LUNDS UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

## 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 (ST 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

## Collaborations

- Lund University
- CERN
- GSI Darmstadt
- Frankfurt University
- University of Heidelberg

## Hyperlinks

- <http://alice-collaboration.web.cern.ch/>
- <http://alice-tpc.web.cern.ch/content/tpc-frond-end-electronics>
- <http://cdsweb.cern.ch/record/940643>



## Procurement codes

Electronics and radio frequency  
Particle and photon detectors

CERN

## CONTRIBUTION TO THE ISOLDE-EXPERIMENT AT CERN



LUNDS UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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

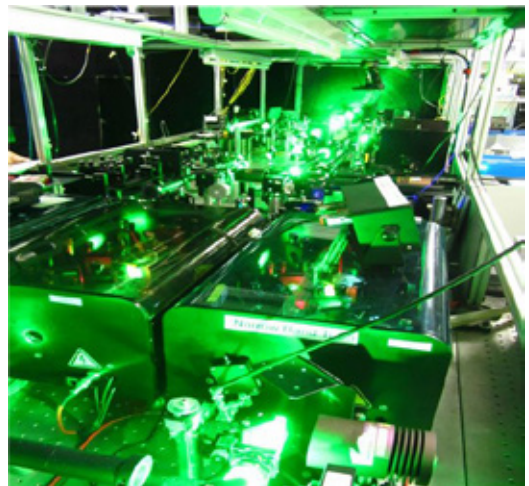
Lund University:  
Joakim Cederkäll, Professor, Nuclear Physics,  
Faculty of Science, Department of Physics

### Year

2018-2022

### Budget

EUR 270,000



255

### Procurement codes

Particle and photon detectors  
Optics and photons

CERN

## DARKJETS

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)



LUNDS UNIVERSITET

### 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

### 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

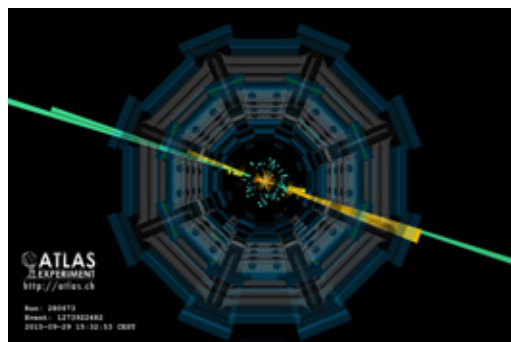
EUR 1.27 million

### Collaborations

- Lund University
- Ohio State University
- Heidelberg University
- University of Oregon
- University of Geneva
- CERN

### Hyperlink

[www.hep.lu.se/staff/doglioni/darkjets.html](http://www.hep.lu.se/staff/doglioni/darkjets.html)



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### Procurement code

Information technology



UPPSALA  
UNIVERSITET

CERN

# DEVELOPMENT OF CERN SUPERCONDUCTING CANTED COSINE THETA MAGNET PROTOTYPE

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

## 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

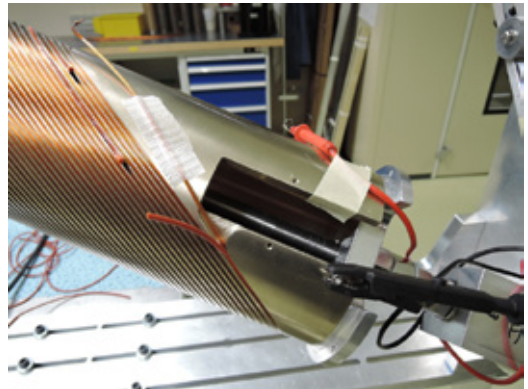
2017-2019

## Total budget

EUR 500,000

## Industry involvement

- Uppsala University
- Scanditronix



## Procurement codes

Electrical engineering and magnets

Mechanical engineering and raw materials

Vacuum and low temperature

## CERN

# DEVELOPMENT OF THE RILIS/LARIS-ISOLDE LABORATORIES AT CERN



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)

## 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

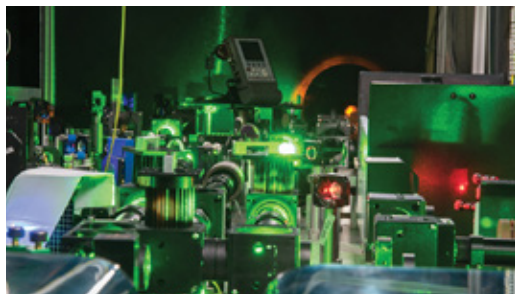
Electronic energy level "fingerprint"  
RILIS (Resonance Ionization Laser Ion Source)

## Year

2011-2015

## Budget

EUR 200,000



## Procurement codes

Particle and photon detectors  
Optics and photons

CERN

## HIGH VOLTAGE REFERENCE DIVIDER

Coordinating institute: RISE Research Institutes of Sweden, [www.ri.se](http://www.ri.se)

### 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  $\mu$ s, and pulse width is approximately 1700  $\mu$ 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

- RISE
- CERN

### Hyperlink

<https://ieeexplore.ieee.org/document/5682402>



### Procurement codes

Civil engineering, building and technical services  
Electrical engineering and magnets

CERN

# ON INTEGRITY ASSESSMENT OF IGBT-BASED POWER STACKS USED IN MAGNET POWER SUPPLIES FOR PARTICLE ACCELERATORS

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)



## 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

## Collaborations

Chalmers University of Technology



## Procurement code

Electrical engineering and magnets

CERN

# QUENCH STUDY AND RF CHARACTERIZATION OF CRAB CAVITIES



UPPSALA  
UNIVERSITET

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

## 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.

## Team

Uppsala University:

- Roger Ruber, Docent, accelerator systems
- Han Li, Doctor, superconducting cavities

## Core deliverables

- Test system integration and commissioning
- High and low power RF generator and LLRF control
- Electronic acquisition hardware
- Data analysis

## Year

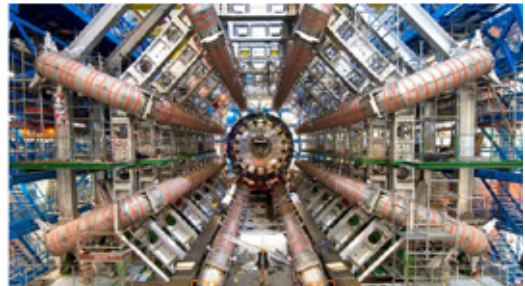
2016–2020

## Total budget

EUR 2 million

## Hyper links

<http://hilumilhc.web.cern.ch/>



## Procurement codes

Electronics and radio frequency  
Information technology  
Particle and photon detectors

CERN

## SILICON DETECTOR MODULES FOR ATLAS EXPERIMENT

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)



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

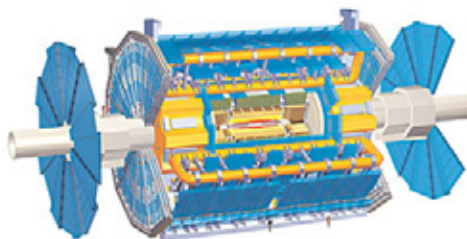
EUR 2 million

### Industry involvement

NOTE

### Collaborations

- Uppsala University
- Lund University
- Note



### Procurement code

Electronics and radio frequency



UPPSALA  
UNIVERSITET

CERN

# TESTING OF SUPERCONDUCTING ORBIT CORRECTOR DIPOLE MAGNETS

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

## 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:

- Kévin 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

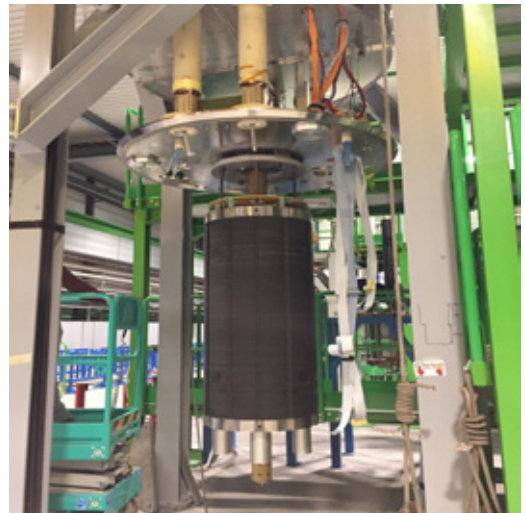
2018-

## Total budget

EUR 2 million

## Hyper links

<https://espace.cern.ch/HiLumi/wp3/>



## Procurement codes

Electrical engineering and magnets

Electronics and radio frequency

Mechanical engineering and raw materials

Vacuum and low temperature

CERN

## THE MEDIPIX COLLABORATION

Coordinating university: Mid Sweden University, [www.miun.se](http://www.miun.se)



### 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

[www.cern.ch/MEDIPIX](http://www.cern.ch/MEDIPIX)

### Procurement codes

Civil engineering, building and technical services  
 Information technology  
 Particle and photon detectors  
 Optics and photons  
 Health, safety and environment

CERN

## UPGRADE OF THE ALICE TPC, THE GEM UPGRADE, STEP 2

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)



LUNDS UNIVERSITET

### 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

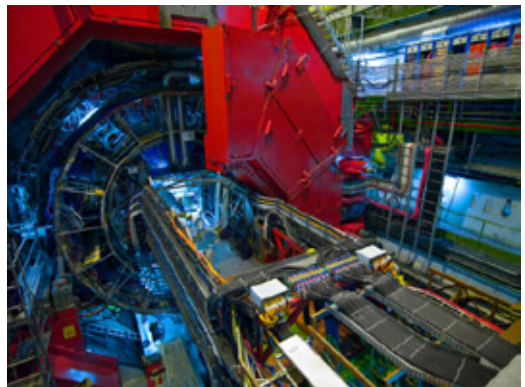
### Collaboration

- Lund University
- Bergen University
- Oslo University
- Sao Paulo University
- Knoxville University
- Houston University
- Orsay University
- CERN
- GSI
- Oak Ridge National Laboratory
- Saclay

### Hyperlink

<http://alice-collaboration.web.cern.ch/>

<https://youtu.be/3tnqPbMWzqQ>



### Procurement code

Electronics and radio frequency  
Particle and photon detectors

CERN

## UPGRADE OF THE ALICE TPC DETECTOR, RCU2 STEP



LUNDS UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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.

### Year

2013–2015

### Total budget

EUR 220,000

### Collaboration

- Lund University
- Bergen Technical High School
- KFI
- GSI
- CERN

### Hyperlink

<http://alice-collaboration.web.cern.ch/>

### Team

Lund University:

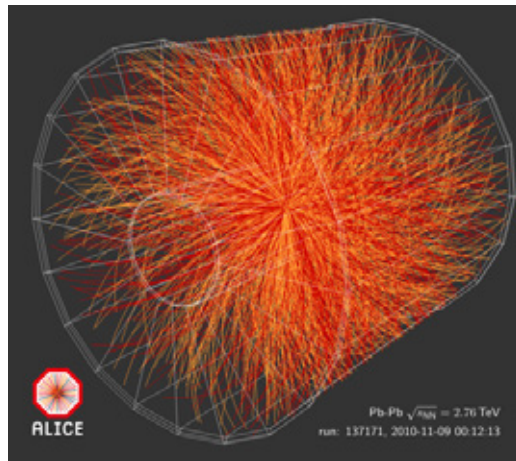
- Anders Oskarsson, Professor, physicist, project leader, detector expert
- Lennart Österman, Research engineer, electronics lead engineer, specification, quality control, electronics design
- Mohammad Khorramnejadi, CAD engineer. PCB layout

### Core deliverables

Halogen free circuit boards housing the 40 bit wide data bus for data readout.

### Industry involvement

- Cervitrol
- MEPCB



### Procurement codes

Electronics and radio frequency  
Particle and photon detectors



DESY

## CENTRE FOR X-RAYS IN SWEDISH MATERIAL SCIENCE

Coordinating university: KTH Royal Institute of Technology, [www.kth.se](http://www.kth.se)

### Project description

To extend the use of Big Science R&D experimental facilities amongst material science researchers at Swedish universities, research institutes and industry, The Swedish Research Council (VR) is taking two related initiatives. Investing in the P21 beamline of PETRA III at DESY, Hamburg - enabling Swedish researchers to gain privileged access. Financing the Center for X-rays in Swedish Materials Science (CeXS). CeXS activities are:

- Raising awareness about the research possibilities at PETRA III in DESY, especially amongst researchers who are new to high-energy x-ray tools.
- Providing training and support to Swedish researchers and industry about why, when and how to use high-energy x-rays.
- Disseminating the results of Swedish research at PETRA III, DESY.

### 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

### Collaborations

- 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

[www.cexs.kth.se](http://www.cexs.kth.se)



### Procurement code

Civil engineering, building and technical services

DESY

## MICRO ACCELERATOR STRUCTURE CENTER MAS IN UPPSALA

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)



UPPSALA  
UNIVERSITET

### 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.

### Year

2015-2025

### Total budget

EUR 1 million

### Collaborations

- Uppsala University
- FAU
- PECS
- DESY Research Centre

### 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



### Procurement codes

Electronics and radio frequency  
Information technology  
Mechanical engineering and raw materials  
Vacuum and low temperature  
Particle and photon detectors  
Optics and photons

EISCAT

## EISCAT 3D DESIGN OF ANTENNA ELEMENTS

Coordinating University: Luleå University of Technology, [www.ltu.se](http://www.ltu.se)



### 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 codes

Electrical engineering and magnets  
Electronics and radio frequency  
Information technology

ESO

## ALMA BAND5 RECEIVERS

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)



### 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

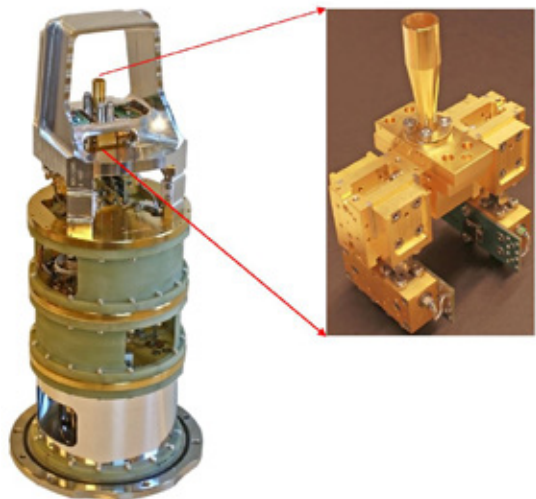
EUR 10.7 million

### Collaborations

- Chalmers University of Technology
- Netherlands Research School for Astronomy, (NOVA),
- National Radio Astronomy Observatory,
- European Southern Observatory (ESO)

### Hyperlink

<https://www.aanda.org/articles/aa/abs/2018/03/aa31883-17/aa31883-17.html>



### Procurement code

Electronics and radio frequency



UPPSALA  
UNIVERSITET

ESO

# EXTREMELY LARGE TELESCOPE INSTRUMENTATION: HIRES AND MOSAIC

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

## 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 CO<sub>2</sub> 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

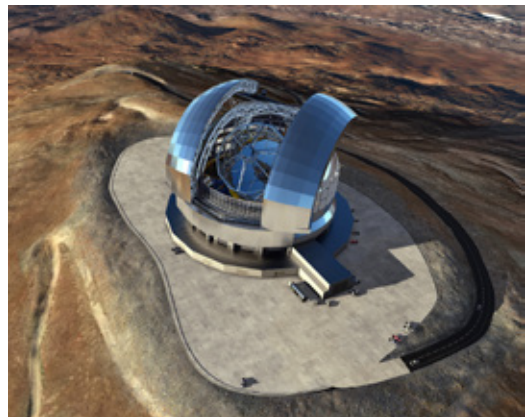
- Nyfors
- ELT instruments

## Collaborations

- Uppsala University
- Stockholm University
- Lund University

## Hyper links

<http://www.arcetri.astro.it/~hires>



## Procurement codes

Information technology

Mechanical engineering and raw materials

Optics and photons

ESS

## ACCEPTANCE TESTS OF CRYO-MODULES

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)



UPPSALA  
UNIVERSITET

### 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

<https://europeanspallationsource.se/accelerator>



### Procurement codes

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

# ANALYSIS TOOLS FOR ANALYSIS OF IN-SITU TIME-RESOLVED NEUTRON DIFFRACTION

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

## 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.

## 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

## Core deliverables

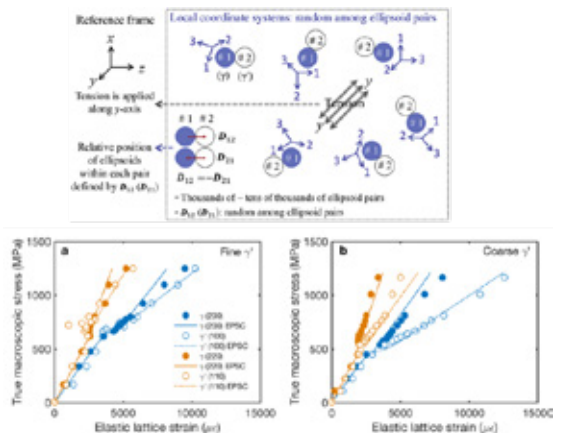
Development and implementation of a finite strain elastic-viscoplastic self-consistent crystal plasticity model for temperature dependent simulation of multiphase materials with or without crystallographic relationships and lattice coherency, including optimization engine for calibration against in-situ neutron scattering data.

## Year

2017–2019

## Total budget

EUR 200,000



273

## Procurement code

Information technology



LUNDS UNIVERSITET

ESS

## AUTONOMOUS RADIATION MAPPING

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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-

### Total budget

EUR 200,000

### Hyperlink

<http://uav.lu.se>

### Team

Lund University, Faculty of Engineering

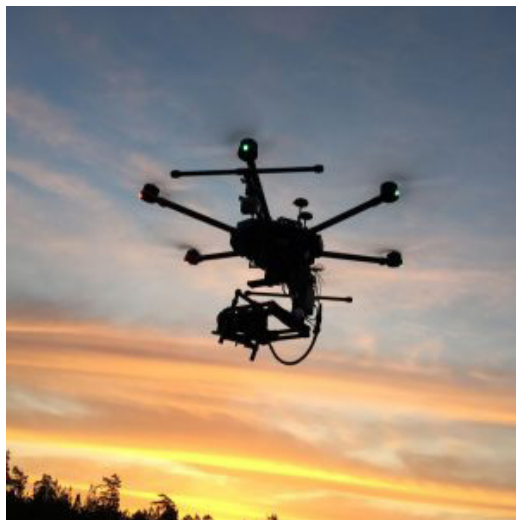
- Anders Robertsson, Team leader, Professor, Department of Automatic Control
- Marcus Greiff, Doctoral student, Department of Automatic Control
- Rikard Tyllström, Lecturer in Aeronautical Sciences, TFHS
- Emil Rofors, Postgraduate, Department of Physics
- Christopher Rääf, Professor, Department of Translational Medicine

### Core deliverables

- Autonomous Radiation Mapping
- Isotope Composition Identification
- Mobile Gamma Spectroscopy

### Industry involvement

- Barsebäck Nuclear Power Plant
- European Spallation Source



### Procurement codes

Electrical engineering and magnets  
Gases, chemicals, waste collection and radiation equipment  
Health, safety and environment

ESS

## BRIGHTNESS

Coordinating university: Mid Sweden University, [www.miun.se](http://www.miun.se)

### 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  $\mu\text{m}$  can then be achieved.

### Core deliverables

Pixel detectors for high resolution neutron imaging.

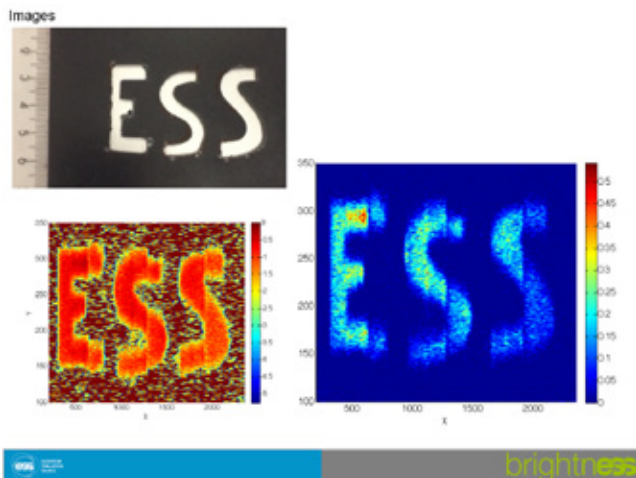
### Year

2016–2019

### Team

Mid Sweden University:

- Christer Fröjd, Professor, radiation detection and imaging
- David Krapohl, Doctor, radiation detection and imaging



### Procurement codes

Information technology

Particle and photon detectors



LUNDS UNIVERSITET

ESS

## COST-EFFECTIVE AND VERSATILE TESTBED FOR NOVEL NEUTRON DETECTORS

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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 (STF) 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.

### 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

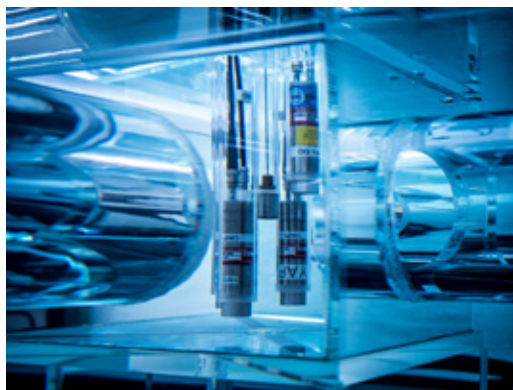
### Hyperlink

[www.nuclear.lu.se/forskning/neutronfysik](http://www.nuclear.lu.se/forskning/neutronfysik)

### 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



### Procurement codes

Civil engineering, building and technical services

Information technology

Particle and photon detectors

Optics and photons

Gases, chemicals, waste collection and radiation equipment



UPPSALA  
UNIVERSITET

ESS

## DESIGN STUDY OF ACCUMULATOR RING

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

### 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:

- Elian Bouquere

### 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

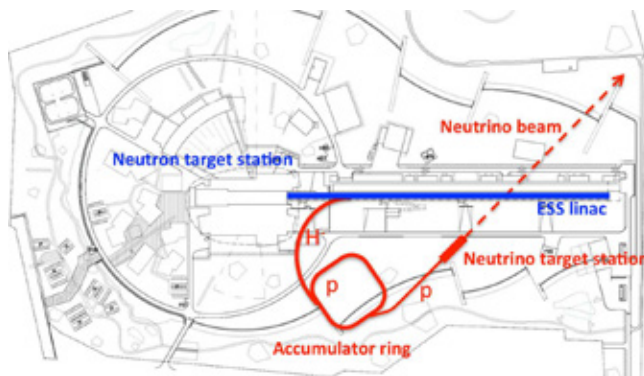
2017–2021

### Total budget

EUR 500,000

### Hyperlink

<http://essnusb.eu/site/wp3>



### Procurement codes

Electrical engineering and magnets  
Vacuum and low temperature  
Particle and photon detectors

ESS

## GRID AND APERTURE MONITOR ELECTRONICS



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)

### 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.

### 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

### Collaborations

- Lund University
- ESS (ERIC)
- Institute of Modern Physics, China
- Japan Proton Accelerator Research Complex, Japan

### 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



### Procurement code

Electronics and radio frequency Information technology

ESS

# HIGH POWER MODULATORS DESIGN FOR THE ESS LINAC



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)

## 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 codes

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



LUNDS UNIVERSITET

ESS

## HIGH-RATE READ-OUT ELECTRONICS AND DATA ACQUISITION SYSTEM

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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

Electronics and radio frequency  
Information technology

ESS

## LOW-LEVEL RF SYSTEM

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

### 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

### Collaborations

- Lund University
- The Polish Electronics Group
- DESY
- ESS Bilbao

### Procurement codes

Electronics and radio frequency  
Information technology

ESS

## LUMINESCENT COATINGS

Coordinating university: University West, [www.hv.se](http://www.hv.se)

### 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](http://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

Mechanical engineering and raw materials

ESS

## MASTER OSCILLATOR FOR ESS

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

### 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

### Core deliverables

- Design of master oscillator
- Prototype and tests

### Industry involvement

Cervitrol

### Year

2012-2018

### Total budget

EUR 50,000



283

### Procurement code

Electronics and radio frequency



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

ESS

## MODULATOR DESIGN AND DEVELOPMENT

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)

### 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

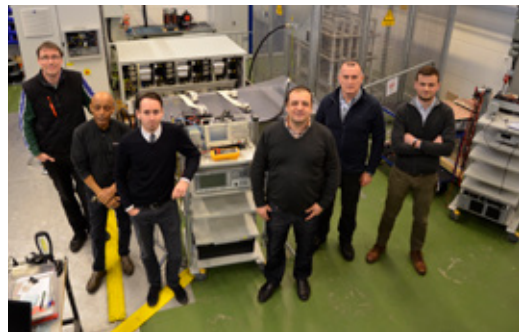
2013–2018

### Total budget

EUR 1.2 million

### Hyperlink:

<https://europeanspallationsource.se/article/how-do-you-power-worlds-most-powerful-linacs>



### Procurement codes

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

ESS

# NEUTRON REFLECTOMETRY DETECTORS

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

LUNDS UNIVERSITET

## 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

## Core deliverables

Neutron detector for cold and thermal neutrons

## Year

2016-2020

## Total budget

EUR 400,000

## Hyperlinks

- 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



285

## Procurement code

Particle and photon detectors

ESS

## PHASE REFERENCE LINE

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

### 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



### Procurement codes

Electronics and radio frequency

Mechanical engineering and raw materials

ESS

# REMOTE HANDLING WITHIN THE ACTIVE CELLS FACILITY AT THE EUROPEAN SPALLATION SOURCE, USING DIGITAL REALITY TECHNIQUES



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)

## 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

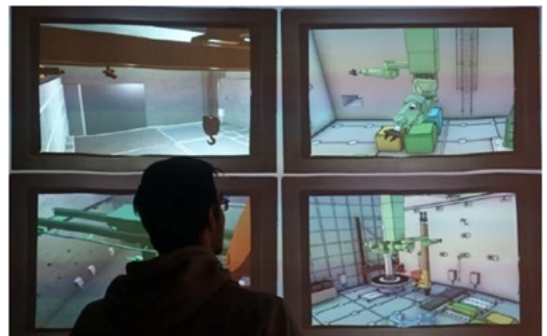
2016

## Total budget

EUR 25,000

## Hyperlink

<http://lup.lub.lu.se/luur/>



## Procurement codes

Information technology



ESS

## SAMPLE ENVIRONMENT FOR IN-SITU ULTRA-HIGH TEMPERATURE MECHANICAL TESTING

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

### 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

### Collaborations

- 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:

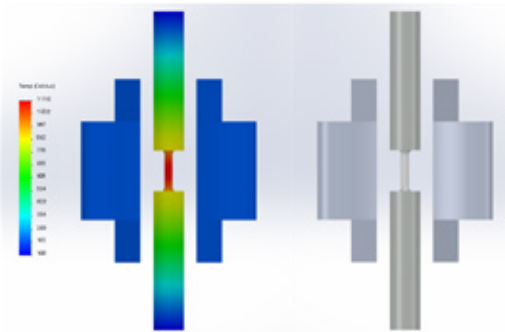
- Ru Lin Peng, Professor, Engineering Materials

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

Mechanical engineering and raw materials



UPPSALA  
UNIVERSITET

ESS

## TEST OF THE ESS HIGH VOLTAGE PULSE MODULATOR

Coordinating university: Uppsala University, [www.uu.se](http://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

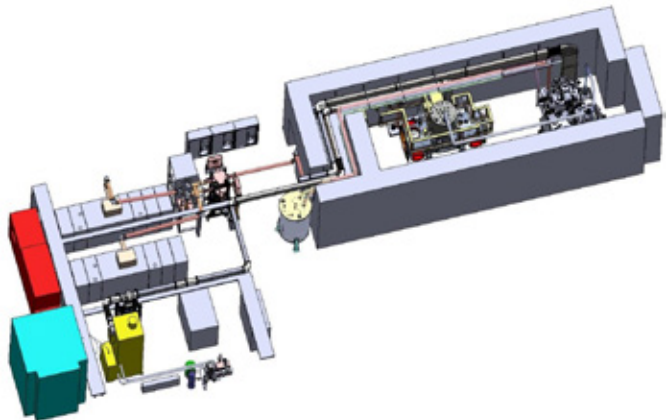
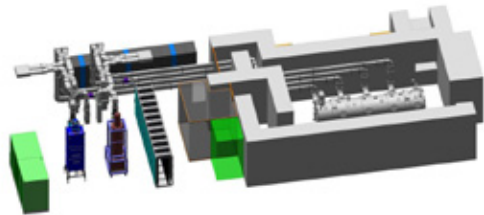
- Uppsala University
- Lund University

### Core deliverables

- System design
- System characterization

### Industry involvement

Ampegon



### Procurement code

Electronics and radio frequency



LUNDS UNIVERSITET

ESS

## TEST OF THE FAST-NEUTRON ATTENUATION OF NOVEL SHIELDING MATERIALS

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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.

### Core deliverables

- Design and tuning of the experimental setup
- Performing the measurement
- Data analysis

### Year

2016

### Total budget

EUR 3,500

### Hyperlink

<https://doi.org/10.1016/j.nima.2017.03.064>

### 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



### Procurement codes

Information technology

Particle and photon detectors



UPPSALA  
UNIVERSITET

ESS

# TESTING OF THE ESS SUPERCONDUCTING ELLIPTICAL CAVITY

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

## 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.

## Team

Uppsala University:

- Han Li, researcher RF and accelerator systems
- Rolf Wedberg, Researcher high power RF system
- Rocío 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

## Year

2018

## Total budget

EUR 50,000

## Collaborations

- Uppsala University
- Saclay



## Procurement codes

Electrical engineering and magnets  
Electronics and radio frequency

ESS

## TESTING OF THE ESS TETRODE 352 MHZ RADIOFREQUENCY POWER SOURCE

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)



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UNIVERSITET

### 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.

### Year

2017–

### Total budget

EUR 1 million

### Collaboration

- Uppsala University
- Lund University

### Team

Uppsala University, FREIA:

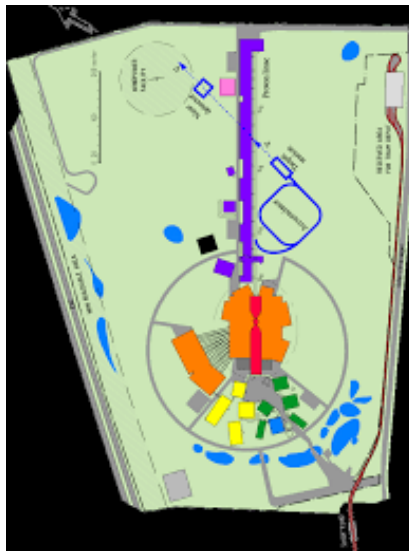
- Rolf Wedberg, Research engineer Department of Physics and Astronomy
- Dragos Dancila Docent, Department of Engineering Sciences, Solid State Electronics
- Tord Peterson, Research engineer, Department of Physics and Astronomy
- Long Huang Duc, PhD student Department of Engineering Sciences, Solid State Electronics
- Han Li, Researcher, Department of Physics and Astronomy

### Core deliverables

System design

### Industry involvement

- Thales
- Itelco
- DB Elletronica



### Procurement code

Electronics and radio frequency



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UNIVERSITET

ESS

## TESTING OF THE ESS SUPERCONDUCTING SPOKE CAVITY PROTOTYPE

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

### 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.

### 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

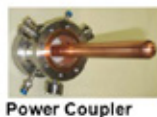
- Test stand design and building up
- Test method and algorithm design
- Data acquisition and control software development
- Coupler RF conditioning
- RF test in high vacuum and cryogenic system
- Data analysis
- Test result report

### Year

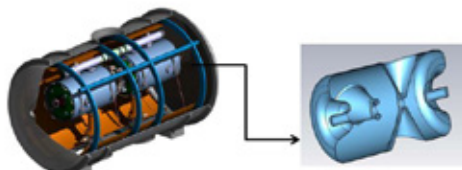
2017

### Total budget

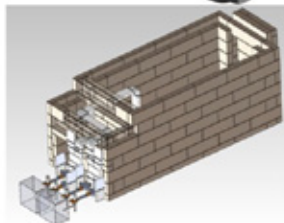
EUR 70,000



Power Coupler



Horizontal cryostat and test bunker at FREIA Laboratory



### Procurement codes

Electronics and radio frequency

Mechanical engineering and raw materials

FAIR

## CONTRIBUTION TO THE CALIFA BARREL R3B EXPERIMENT AT FAIR



LUNDS UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

### 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 (SFAIR) 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

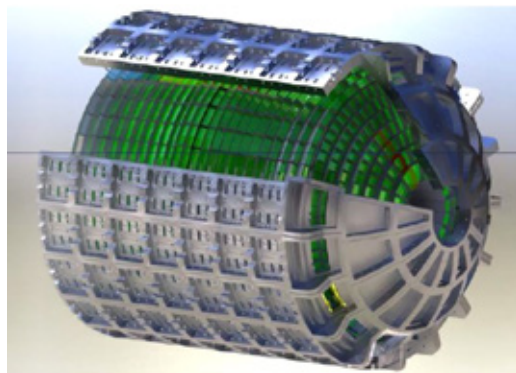
2013-2017

### Total budget

EUR 340,000

### Collaboration

- Lund University
- KTH Royal Institute of Technology
- Chalmers University of Technology



### Procurement codes

Particle and photon detectors  
Optics and photons

FAIR

# LUND-YORK-COLOGNE CALORIMETER (LYCCA)



LUNDS UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

## 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 ( $\Delta E$ ), and total energy ( $E$ ) measurements, eventually in conjunction with a magnetic spectrometer. R&D and provision of the  $\Delta E$ - $E$  detector modules is the main Swedish contribution to LYCCA.

## Year

2010-2019

## Total budget

EUR 250,000

## Collaborations

- Lund University, Sweden
- Universität zu Köln, Germany
- University of York, United Kingdom
- GSI Darmstadt, Germany

## Hyperlink

[www.nuclear.lu.se/english/research/basic-nuclear-physics/nustar/lycca/](http://www.nuclear.lu.se/english/research/basic-nuclear-physics/nustar/lycca/)

## Team

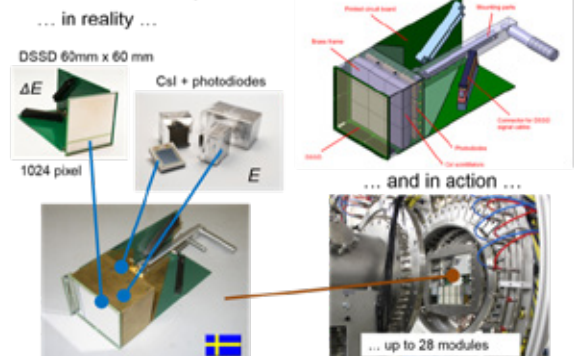
Lund University

- 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-Csl  $\Delta E$ - $E$  detector modules (tailor-made)
- The LYCCA Csl read-out electronics (GSI-EE development)
- The LYCCA high- and low-voltage supplies (commercial NIM modules)

## LYCCA telescopes ...



## Procurement code

Particle and photon detectors



UPPSALA  
UNIVERSITET

FAIR

# ELECTROMAGNETIC CALORIMETER FOR THE PANDA EXPERIMENT

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

## 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 (SADCs) 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

## Industry involvement

- Semicon
- Crytur

## Year

2016–

## Total budget

EUR 2.6 million

## Collaboration

- Uppsala University
- Stockholm University

## Hyper link

<https://panda.gsi.de/article/electromagnetic-calorimetry>

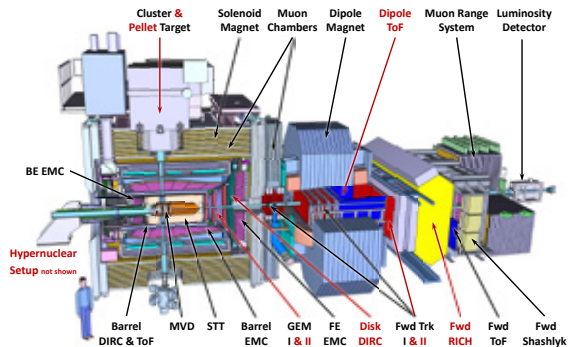
## Team

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



## Procurement codes

Electronics and radio frequency  
Information technology  
Particle and photon detectors

FAIR

# PHOTON- AND PARTICLE CALORIMETER CALIFA – FRONT END SYSTEM



Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

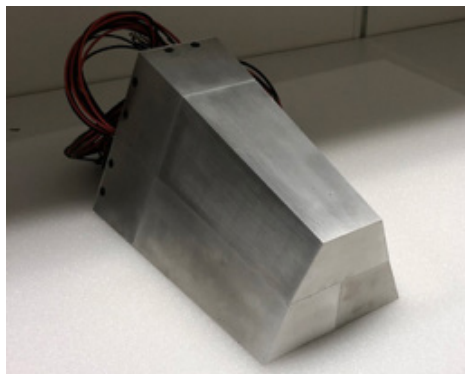
## Project description

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 LaBr<sub>3</sub>-LaCl<sub>3</sub> 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

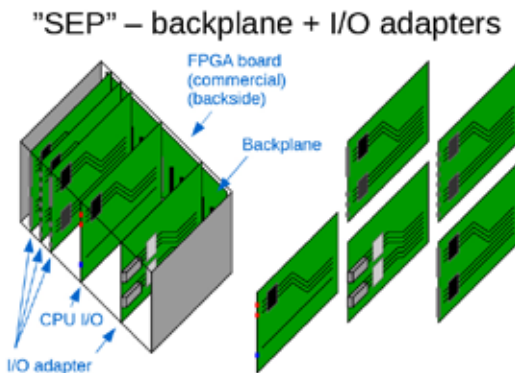
2010-2023

## Total budget

EUR 850,000

## Collaborations

- Chalmers University of Technology
- SFAIR consortium



## Procurement codes

Electronics and radio frequency  
Information technology  
Particle and photon detectors

ILL

## SUPER ADAM @ ILL

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

### 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

### Collaborations

- Uppsala University
- Lund University
- Linköping University

### Hyperlinks

- <https://www.ill.eu/users/instruments/instruments-list/superadam/description/instrument-layout/>
- <http://www.physics.uu.se/research/materials-physics+/super-adam/>



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UNIVERSITET



### Procurement codes

Electrical engineering and magnets

Mechanical engineering and raw materials



ITER

# ADDITIVE MANUFACTURING FOR FABRICATION OF 316L-GRADE COMPONENTS

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

## 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 subdivision 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

## Collaborations

- Chalmers University of Technology
- Mid Sweden University
- Stockholm University
- Swerim

## Procurement code

Mechanical engineering and raw materials



## ITER

# FUSION REACTOR DEVELOPMENT. PARTICULAR PROJECT: PLASMA-WALL INTERACTIONS IN FUSION DEVICES

Coordinating university: KTH Royal Institute of Technology, [www.kth.se](http://www.kth.se)

## 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.

## Team

Royal Institute of Technology, KTH

- Marek Rubel, Team leader, professor, School of Electrical Engineering and Computer Science, Department of Fusion Plasma Physics
- Per Brunsell, professor, School of Electrical Engineering and Computer Science, Department of Fusion Plasma Physics,
- Per Petersson, researcher, School of Electrical Engineering and Computer Science, Department of Fusion Plasma Physics
- Henric Bergsäter, docent, School of Electrical Engineering and Computer Science, Department of Fusion Plasma Physics,
- Uppsala University
- Daniel Primetzhofer, associate professor, Department of Physics

## Core deliverables

Work is focused on:

- 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

## Year

2007-

## Total budget

EUR 2.2 million (estimate)

## Collaborations

- 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

[www.euro-fusion.org](http://www.euro-fusion.org) and [www.iter.org](http://www.iter.org)

## Procurement code

Particle and photon detectors



## ITER

# ITERIS – DESIGN AND IMPLEMENTATION OF AN INTEGRATED MODELLING INFRASTRUCTURE

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

### 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

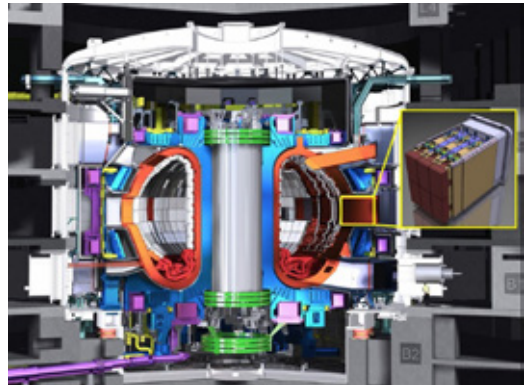
EUR 1.7 million

### Collaborations

- CEA
- Chalmers
- EPFL

### Hyperlink

<http://iopscience.iop.org/article/10.1088/0029-5515/55/12/123006>



ITER

# NEUTRON DIAGNOSTICS FOR FUSION POWER PLANTS

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)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

## Collaborations

- 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

[www.physics.uu.se/research/applied-nuclear-physics/groups/fusion-diagnostics-group](http://www.physics.uu.se/research/applied-nuclear-physics/groups/fusion-diagnostics-group)

## Procurement code

Particle and photon detectors



ITER

# MODELLING OF PLASMA-SURFACE INTERACTIONS IN ITER

Coordinating university: KTH Royal Institute of Technology, [www.kth.se](http://www.kth.se)

## 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. Tolias, 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

## Collaborations

- 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



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## Procurement codes

Electrical engineering and magnets

## MAX IV Laboratory

# DETECTOR FOR SIMULTANEOUS X-RAY DIFFRACTION AND ABSORPTION SPECTROSCOPY



Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

## 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

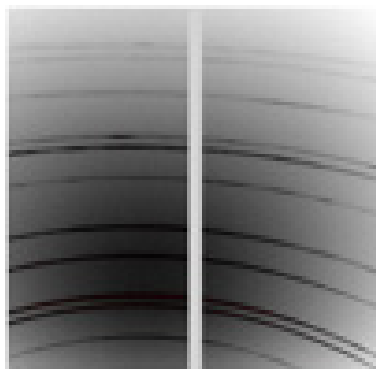
- Specification and purchasing of 2D detector
- Assembling of 2D detector and robotic arm incl. software control
- Software development for synchronous control and acquisition
- Demonstration of synchronous measurements on catalytic materials

## Year

2018-2020

## Total budget

EUR 500,000



First diffraction image of a Cu-block measured at Balder.

## Procurement code

Particle and photon detectors

MAX IV Laboratory

## DEVELOPMENT OF A NEW RHEOMETER SYSTEM

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

### 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

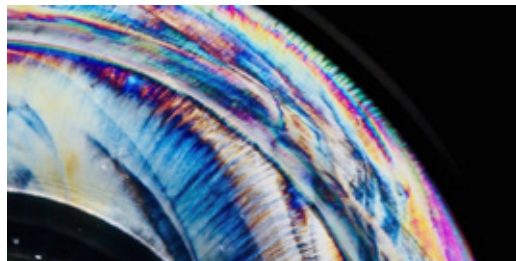
2020-2022

### Total budget

EUR 420,000

### Hyperlink

<https://www.chalmers.se/en/departments/ims/news/Pages/New-unique-test-opportunities-in-bio-based-materials-at-MAX-IV.aspx>



### Procurement code

Mechanical engineering and raw materials

## MAX IV Laboratory

## HIGH FIELD/HIGH GRADIENT MAGNETS

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)LUNDS UNIVERSITET  
Lunds Tekniska Högskola

## 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.

## Year

2019-2021

## Total budget

EUR 300,000

## Potential collaborations

Synchrotron SOLEIL, France  
ISA, Centre for Storage Ring Facilities, Denmark

## Hyperlinks

<https://www.maxiv.lu.se/about-us/governance/vision-goals-values/>



## 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  $\leq 300$  mm, field strength  $B_0 = (0.5-0.6)$  T, gradient up to 70 T/m
- Quadrupole: aperture  $\varnothing = (11/12)$  mm, yoke length  $\leq 100$  mm, gradient up to 250 T/m
- Sextupole: aperture  $\varnothing \geq 15$  mm, yoke length  $\leq 150$  mm, gradient  $B''/2$  up to 20 kT/mm<sup>2</sup>
- Magnet block containing the magnets listed above.

## Potential industry involvement

- Scanditronix
- Danfysik

## Procurement codes

Electrical engineering and magnets  
Mechanical engineering and raw materials

## MAX IV Laboratory

## NANOMAX KB-MIRRORS

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)LUNDS UNIVERSITET  
Lunds Tekniska Högskola

## 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

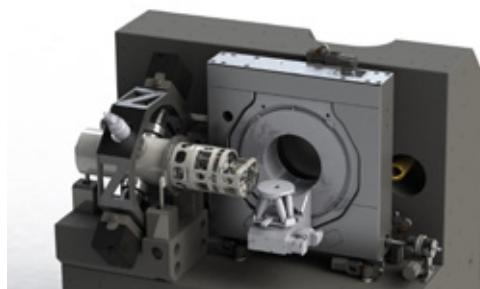
- Jtec
- Arrema Mekano
- FMB Berlin
- Pfeiffer Vacuum

## Year

2016-2017

## Total budget

EUR 350,000



## Procurement codes

Mechanical engineering and raw materials  
Optics and photonics

Max IV Laboratory

# SAMPLE ENVIRONMENT FOR COMBINED NANO-MECHANICAL TESTING AND NANODIFFRACTION



Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

## 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 (SEMs), 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

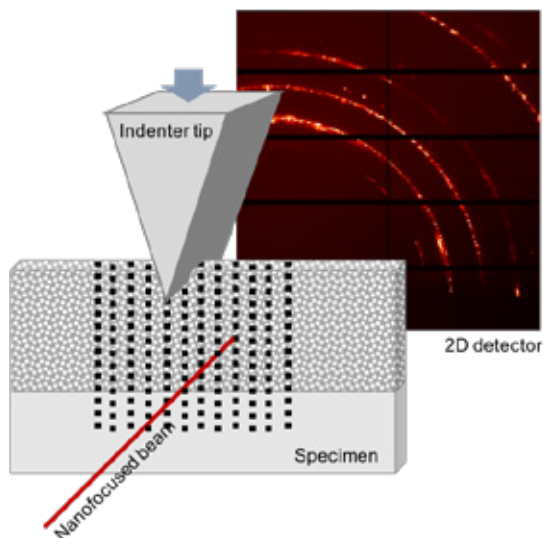
## Team

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 codes

Mechanical engineering and raw materials

## MAX IV Laboratory

# THE VACUUM SYSTEM OF MAX IV 3 GEV STORAGE RING



LUNDS UNIVERSITET

Coordinating university: Lund University, [www.lu.se](http://www.lu.se)

## 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

## Collaborations

- Lund University
- CERN
- ESRF
- ALBA

## Hyperlinks

[www.maxiv.lu.se](http://www.maxiv.lu.se)

## Procurement Code

Mechanical engineering and raw materials  
Vacuum and low temperature

## Max IV Laboratory

## VERITAS

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)UPPSALA  
UNIVERSITET

## 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

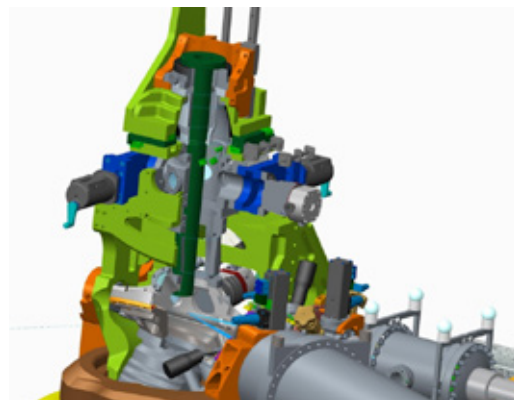
- FMB Berlin
- Toyama
- Jtec
- Piltz Optics
- SKS
- EWCON
- Surface Concepts
- Englund Engineering
- Pfeiffer Vacuum
- Österby Gjuteri

## Collaboration

- Uppsala University
- Lund University
- Linköping University

## Hyperlink

[www.maxiv.lu.se/accelerators-beamlines/beamlines/veritas/](http://www.maxiv.lu.se/accelerators-beamlines/beamlines/veritas/)



## Procurement codes

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



UNIVERSITY OF  
GOTHENBURG

## XFEL

# INSTRUMENT TO INCREASE THE CAPACITY FOR LIFE-SCIENCE STUDIES SFX AT XFEL

Coordinating university: University of Gothenburg, [www.gu.se](http://www.gu.se)

### Project description

The aim of the Serial Femtosecond Crystallography (SFX) 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 (SPB) instrument that was the first beamline constructed at the European XFEL. To accommodate a second (SFX) 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.

### 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

### 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

### Collaborations

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

[www.xfel.eu/facility/instruments/spb\\_sfx/sfx\\_user\\_consortium/index\\_eng.html](http://www.xfel.eu/facility/instruments/spb_sfx/sfx_user_consortium/index_eng.html)



### Procurement codes

Particle and photon detectors  
Vacuum and low temperature

## XFEL

## LASER HEATERS

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)



UPPSALA  
UNIVERSITET

## 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

DESY:

- 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



## Procurement codes

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



UPPSALA  
UNIVERSITET

XFEL

## MASS SPECTROMETER AND CELL SORTER FOR BIOLOGY INFRASTRUCTURE

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

### 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.

### Team

Uppsala University, Laboratory of Molecular Biophysics:  
Janos Hajdu, Professor molecular biophysics, specialist in extreme photon science, ultra-fast diffractive imaging, biophysics, structural sciences

### Core deliverables

Construction of the XBI infrastructure at XFEL  
Successful user operation of the XBI infrastructure at XFEL

### Year

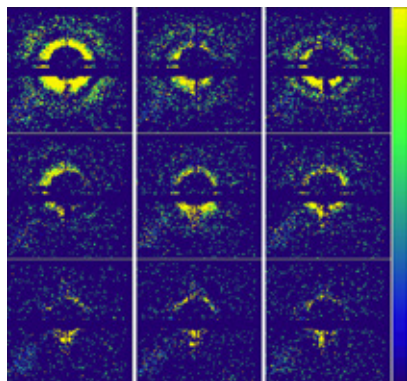
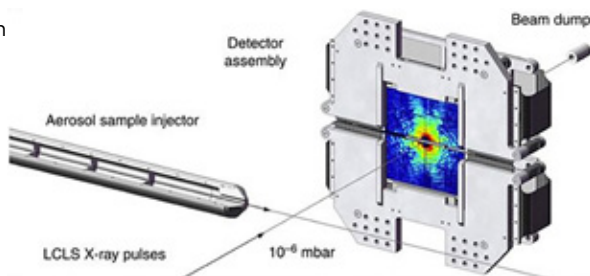
2013-

### Total budget

EUR 1.6 million

### Hyper link

[www.xfel.eu/users/experiment\\_support/user\\_labs/the\\_xfel\\_biology\\_infrastructure\\_xbi\\_user\\_consortium/index\\_eng.html](http://www.xfel.eu/users/experiment_support/user_labs/the_xfel_biology_infrastructure_xbi_user_consortium/index_eng.html)



### Procurement code

Optics and photonics

## XFEL

## NIR SPECTROMETER FOR EUROPEAN XFEL

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)UPPSALA  
UNIVERSITET

## 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

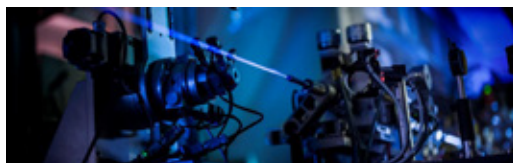
2018-2019

## Total budget

EUR 50,000

## Collaboration:

- 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

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



UPPSALA  
UNIVERSITET

XFEL

## SAMPLE INJECTOR AND DIAGNOSTIC SYSTEM

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)

### 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

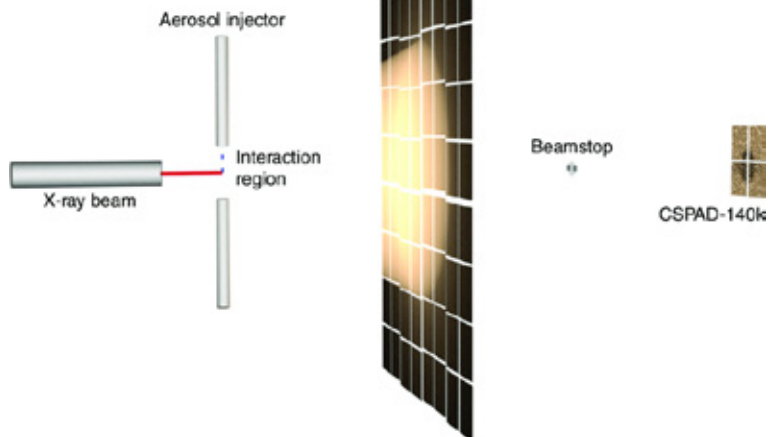
### Total budget

EUR 520,000

### 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



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SKA

## BAND 1 RECEIVER FOR THE SQUARE KILOMETRE ARRAY

Coordinating university: Chalmers University of Technology, [www.chalmers.se](http://www.chalmers.se)

### Project description

The Square Kilometre Array (SKA) 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.

### Year

2013-2018

### Total budget

EUR 6 million

### Collaborations

- Chalmers University of Technology
- EMSS, South Africa
- EMSS Antennas, South Africa
- South African Radio Astronomy Observatory (SARAO)
- Chalmers Nanofabrication Laboratory

The project is part of the SKA DISH consortium.

### Hyper link

<https://research.chalmers.se/person/flygarej>

### 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.



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 codes

Electronics and radio frequency  
Mechanical engineering and raw materials

Brookhaven National Laboratory

## PIXEL-PAD DETECTORS

Coordinating university: Lund University, Faculty of Engineering, [www.lth.se](http://www.lth.se)



LUNDS UNIVERSITET  
Lunds Tekniska Högskola

### 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

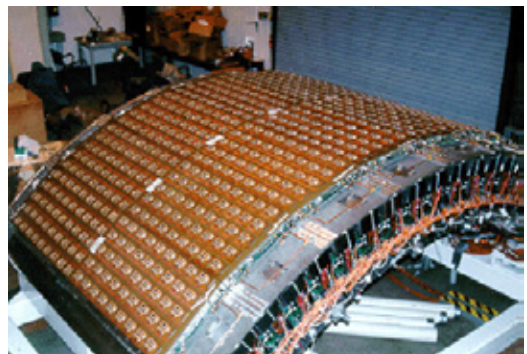
EUR 900,000

### Collaboration

- Lund University
- Vanderbilt University,
- Stony Brook University
- Oak ridge National Laboratory
- Brookhaven National Laboratory
- Weizman Institute

### Hyperlink

[www.phenix.bnl.gov](http://www.phenix.bnl.gov)



### Procurement codes

Electronics and radio frequency  
Particle and photon detectors

Other

## ICECUBE EXTENSION

Coordinating university: Uppsala University, [www.uu.se](http://www.uu.se)



UPPSALA  
UNIVERSITET

### Project description

IceCube is the largest neutrino detector ever built. It is located at the South Pole where  $1 \text{ km}^3$  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.

### 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

### Collaborations

- Stockholm University
- Michigan State University
- 50 collaborating institutions worldwide

### Hyperlink

[icecube.wisc.edu](http://icecube.wisc.edu)

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### Team

Uppsala University:

- Olga Botner, Team leader, professor, specialist in high-energy physics
- Allan Hallgren, professor, specialist in high-energy physics



### Procurement codes

Electronics and radio frequency  
Particle and photon detectors

## SUCCESS STORIES

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More success stories on our homepage.



## ELAJO MEKANIK

### Challenging quality requirements drive research and development

Elajo, with its head office in Oskarshamn, is one of Sweden's leading companies for electrical, mechanical and energy installations and services. One of the company's specialist areas is advanced welding in metal. Elajo has long experience of working with clients in, for example, the nuclear power industry. Like research facilities, these clients have strict requirements in terms of quality and documentation.

#### Framework agreement with ESS

In March 2019, Elajo entered into a four-year framework agreement with ESS. This marked the start of an extensive collaboration, with ESS contracts now accounting for a significant proportion of the company's sales. One example is a large ventilation project. The various ESS projects involve design and production in Elajo's own facility, and installation and staffing at ESS. Elajo currently has 15 employees engaged in ESS-related projects, but this figure will shortly increase to at least 40.

"It's enriching and stimulating for both Elajo and our employees to be involved, and contribute to research and development," explains Kristofer Bard Ahlström, Sales and Business Development Manager. "Our long experience of, for example, the

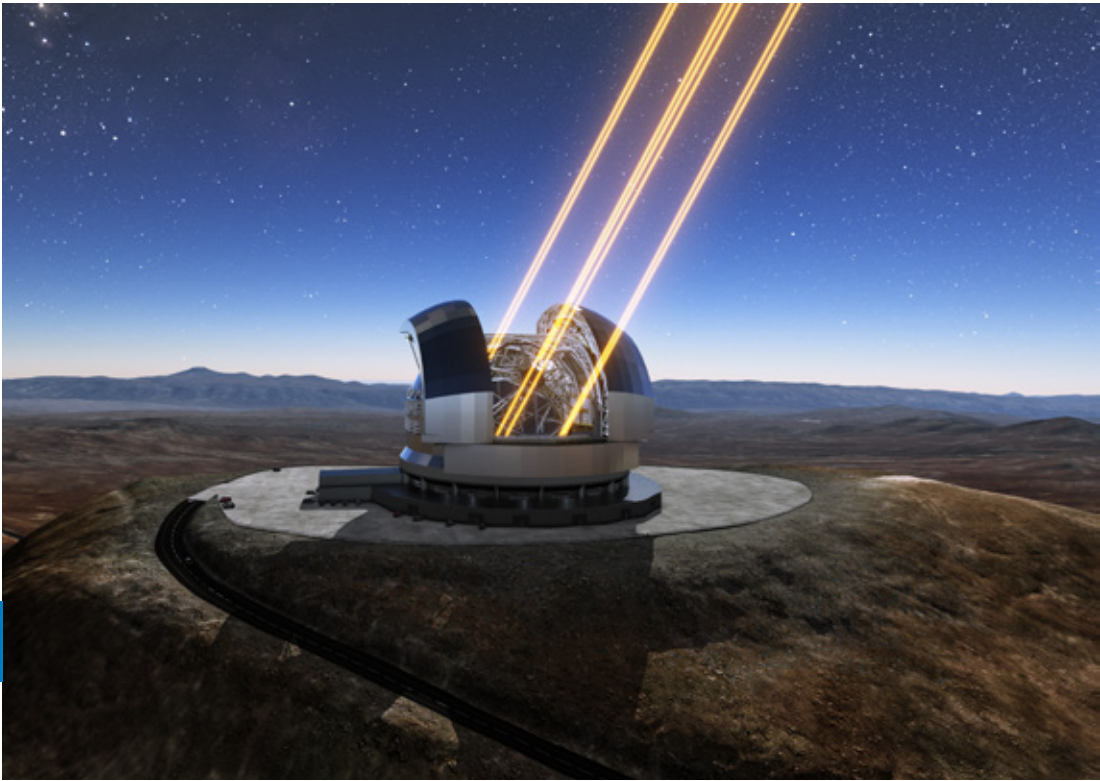
nuclear power industry means that we can match the research facilities' requirements for quality and expertise. Our workers, welding experts, project managers and engineers, all have specialist expertise in their fields. We supply everything from products manufactured according to client specifications to turnkey solutions with our own design."

#### Established Big Science supplier

Elajo is continuing to extend its contact network with research facilities. The company has recently signed agreements with the UK Atomic Energy Authority (UKAEA), and future plans include initial contacts with CERN and ITER. The company has come a long way in a very short time and has established itself as a successful Big Science supplier.

"We've shown that we are solution-oriented and that we deliver. We listen to and work as a team with the client. We're looking for more contacts with researchers to collaborate with on developing new products. We'll certainly be using Big Science Sweden, who can also help us find relevant calls to tender and put us together with other suppliers in the network."

**"We listen to and work as a team with the client. We're looking for more contacts with researchers to collaborate with on developing new products."**



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## FAGERSTRÖM INDUSTRIKONSULT

### Specialist expertise behind ESS collaboration since 2015

As a technical consultant company, Fagerström Industrikonsult is unique in that it also offers its own product portfolio. A consequence is that employees – engineers and designers – continually work with internally challenging projects that raise the level of expertise.

In 2015, the company took its first steps into the Big Science market. Carl Johan Fagerström, Managing Director of Fagerström, describes how this came about.

“ESS in Lund was just getting under way, and our consultants were commissioned to work with mechanical designs. Our high level of expertise put us in a strong position, and we’re now one of the larger companies on site at ESS.”

#### Expertise and contacts

Since its first project for ESS, Fagerström Industrikonsult has widened its expertise and contact network in the research facilities, both in Sweden and in other countries. Carl Johan Fagerström underlines the value of Big Science Sweden.

“Big Science Sweden has been extremely important for us. They’ve shortened our communication channels to clients and partners. We’ve learned more about the facilities and their

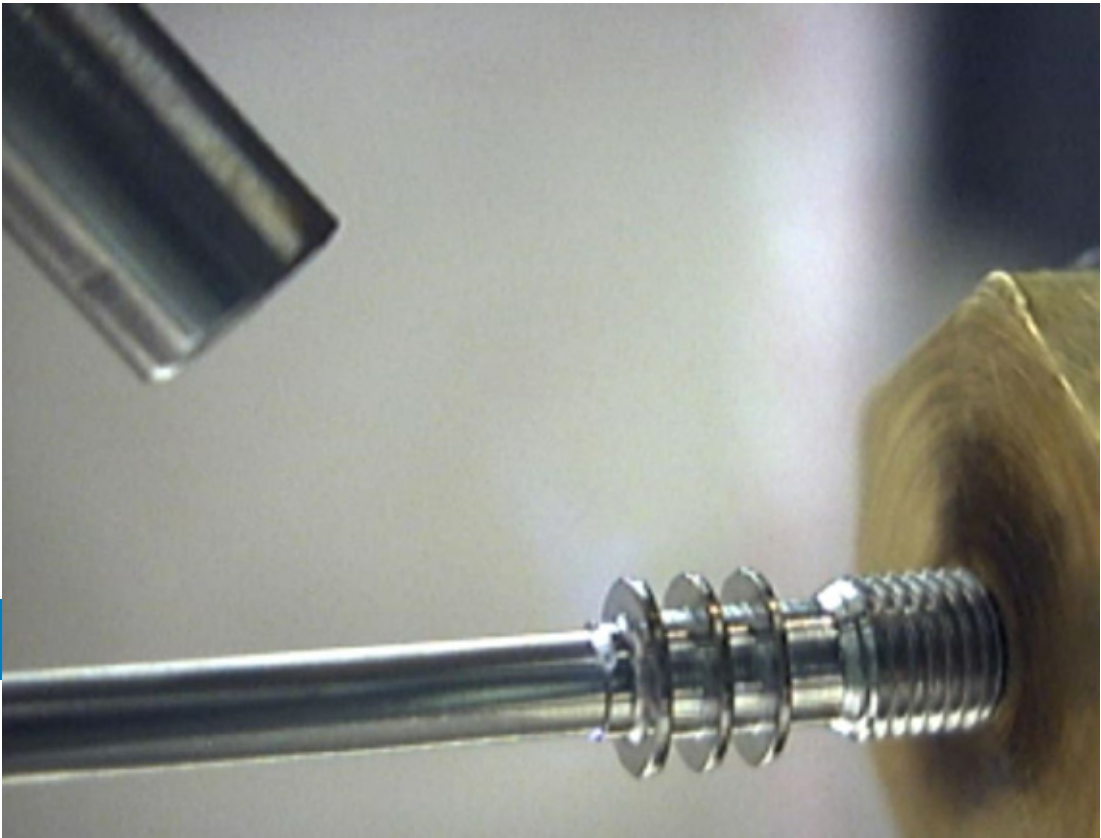
needs, and the ILOs have been invaluable sounding boards for discussing how to initiate contacts, who to talk to and, not least, how to handle cultural differences.”

#### In-house solution led to ESO order

In 2019, the company responded to a call to tender from ESO, European Southern Observatory, which was building the world’s largest telescope for visible and infrared light, placed in Chile. Against tough international competition, Fagerström won the order, and became responsible for designing and constructing the M1 Washing and Stripping Plant. With its automation concept, developed in-house, the company will wash and strip the old coating on the extremely expensive mirror segments, which is necessary before a new reflecting layer can be placed on the mirrors to retain the telescope’s performance.

“In the competition for contracts from the world’s research facilities, we’re a small player. We can’t work with procurements like most of the others. We must be on the ball and make an impression. We start from scratch, asking ourselves the question ‘What’s the problem?’, and find our way to our very own, better solution, and that’s what we offer in tenders. That’s our strength.”

“We’re a small player that gets noticed. We start from scratch, asking ourselves the question ‘What’s the problem?’, and find our way to our very own solution.”



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## LASER NOVA

### Research facility projects drive company development

Laser Nova in Östersund uses laser technology in cutting, welding, engraving and drilling. The company has specialist expertise in micro-processing using lasers, mainly in metal, and can work in tiny dimensions, down to 0.015 mm.

Its clients are found in areas such as the space industry, medical technology, offshore and R&D – where Big Science is growing – all segments with high demands for precision, accuracy and quality.

“We see Big Science and research facilities as a natural area for us to grow in,” says Rickard Olsson, Head of Research and Development. “We’re already collaborating with many universities in various R&D projects, and interacting with other companies and organisations on development issues.”

#### Effective channels for establishing contacts

Laser Nova has made deliveries to CERN, including equipment for drilling of optical filters. The company is holding continuous discussions with MAX IV, and has registered in the ITER supplier database. In 2019, representatives of the company

accompanied Big Science Sweden on a Business Trip to CERN to make new contacts.

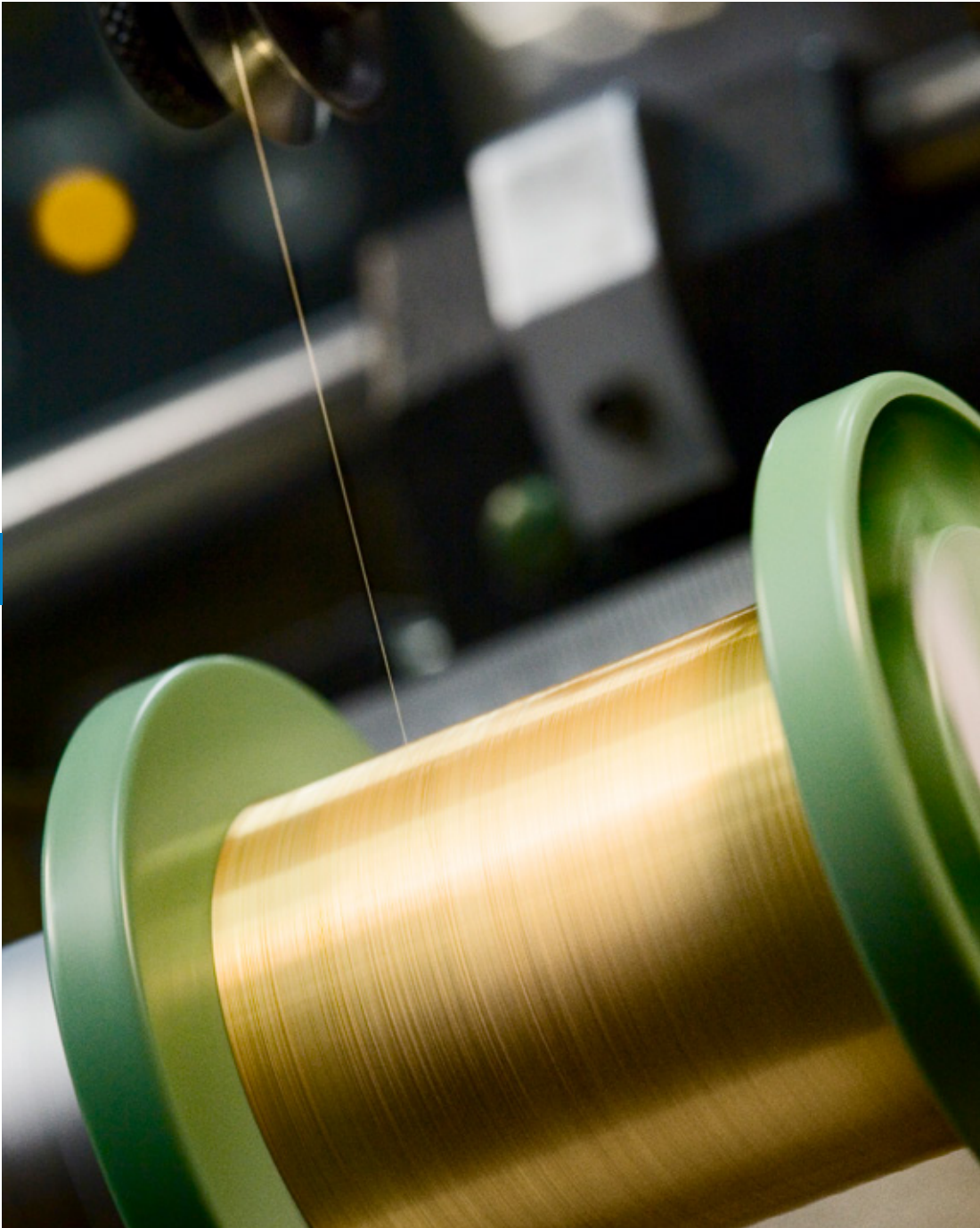
“Visiting the research facilities and participating in various Big Science conferences are effective channels for broadening our network. It brings you into contact with both clients and other suppliers. It’s not only the big research facilities that are important for us – we want to broaden our interfaces in many different directions.”

#### Investment for the future

Rickard Olsson says that contracts with research facilities present positive challenges, because they involve high technical demands that drive the company’s development. From a business perspective, the challenge is to supply one-off orders in low volumes, with quite low profitability. However, Laser Nova sees these orders as investments for the future.

“It’s by getting reference projects that you increase your chances of getting established on the Big Science market and winning more contracts.”

**“Big Science is a natural growth area. Contracts with research facilities involve high technical demands that drive the company’s development.”**



## LUMA METALL

### Significant order from CERN for more than 400 km of wire

Luma Metall in Kalmar has developed into a specialist in the plating of fine and ultrafine wire in tungsten and molybdenum, two materials traditionally used for filaments in light bulbs. From being Sweden's most well-known brand of incandescent lamps, Luma is now a high-tech supplier of fine wire products and precious metal plating technologies to research facilities and industry.

In 2019 Luma received a significant order from CERN for more than 400 km of wire, to be used in the upgrade of a detector in the Atlas experiment at CERN. The material that Luma is supplying consists of 50-micron (= 0.05 mm) base tungsten wire on which a gold plating is added (about 0.35-micron pure gold).

Luma has been working with CERN since 1985, when the collaboration started with the Opal Project. Luma is constantly in contact with researchers working for CERN worldwide, often at local research institutes or universities.

#### Production and research company

Luma Metall is engaged in both production and state-of-the-art research and technology development. Ulrich Stöhr, Sales and Marketing Manager explains:

“We're a production and research company. We collaborate and conduct research together with our clients, with research institutes and with universities. This makes us quite unique for a company of our size, with around 25 employees.”

The significant order to CERN is delivered, but the years of collaboration and the important contacts have led to new and regular smaller contracts with CERN. Luma also delivers to ESS and has established contacts with DESY in Hamburg.

#### Future challenges

Future challenges for Luma Metall include expanding its operations. This will involve investments in new technology, machinery and more highly qualified recruitments, especially in material sciences and chemistry.

“We're now relatively unique in our area, sometimes even ‘single source’, but our competitors are not sleeping. There are now more players, not least from Asia. In order to grow, and that's our ambition, we must both focus and become even better at what we do today, and broaden our activities. The real challenge is to adapt to different needs that we don't even know about today”, explains Ulrich Stöhr.

“The real challenge is to adapt to different needs that we don't even know about today.”



## NOTE

### A proactive company not afraid to look to the future

NOTE, with its head office in Kista, is a leading northern European manufacturing partner for electronics-based and complete products. The company operates in the Medtech, Industrial, Communication, Defence, and High-end Consumer segments, and since 2019 has been increasing its contacts in Big Science.

NOTE's expertise, comprising advanced engineering services, manufacturing specialisms, production design and rapid development of prototypes, makes the company an attractive partner for research facilities. Jonas Alexander Söderlund, Business Development Manager at NOTE, explains.

"The Big Science market has demanding clients, but we see that as a stimulating challenge. It drives the internal development in the company. Facing and tackling new challenges is perhaps the biggest advantage of working with facilities like ESS and CERN.

"One of our strengths is our very broad expertise in manufacturing. We supply everything from simple products to sophisticated communications equipment. Our factories are highly automated, with lean, efficient, and competitive production. Clients see us as being easy to work with, which is crucial for building long-term relationships."

#### Business Trip to CERN quickly paid off

In March 2019, NOTE accompanied Big Science Sweden on a Business Trip to CERN, where participating supplier companies were able to meet buyers and technical experts. NOTE had prearranged eight 1-to-1 meetings.

"The set-up was extremely good and effective. Of the eight people I met, I'm still in contact with four. Now they know what NOTE does and who we are. Things have happened quickly. After the

meetings in March, we received an order during Q4 and now, in February 2020, we're involved in several projects for CERN."

So far, NOTE's deliveries to CERN have mainly comprised printed circuit boards. NOTE assembles the boards, carries out testing, and supplies everything from quite simple to highly sophisticated printed circuit boards. You never know exactly where the CERN products will end up. It can be in a control room or in an accelerator.

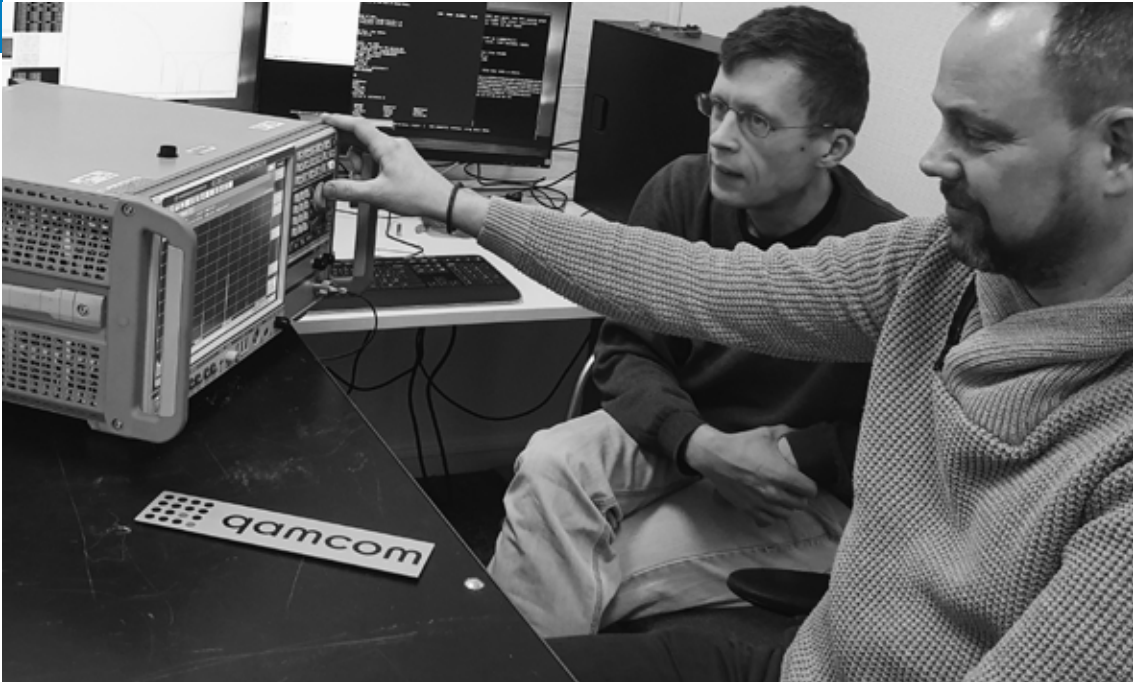
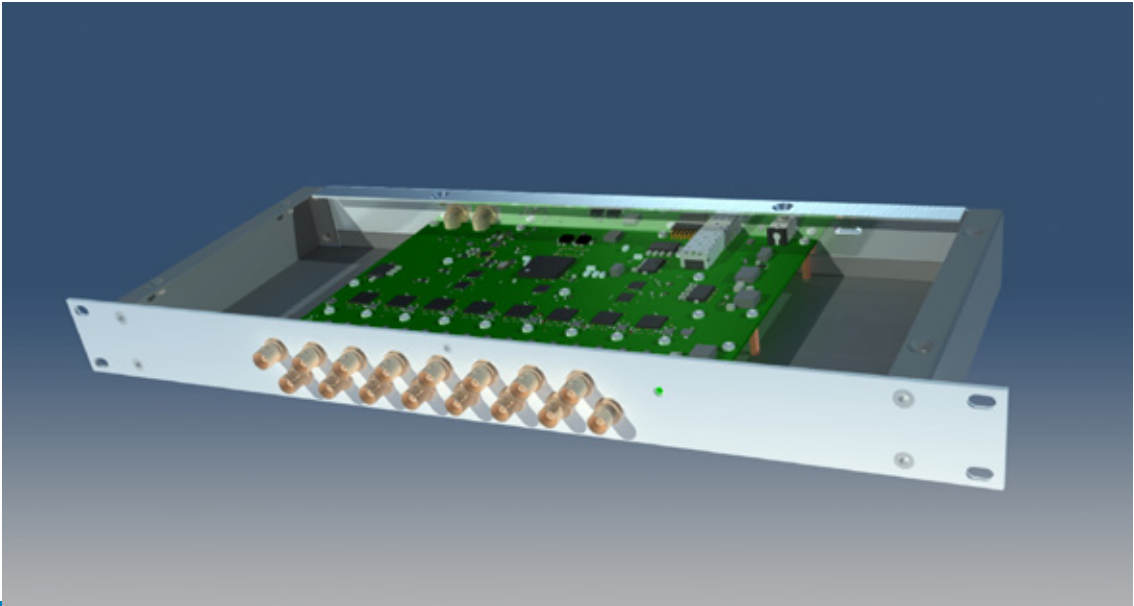
The ambition is to supply more complete products, advance in the food chain, and work with really demanding orders. Jonas Alexander Söderlund is not daunted by the development that may be required to satisfy the needs of research companies. Instead, he sees it as a strategic investment that will also benefit the company in contacts with other clients.

"It means that we're proactive, that we have a clear picture of what will be breaking through in three to four years' time. We can learn a certain technology before it becomes an industry standard."

#### 1-to-1 meetings a first step to the market

NOTE will be participating in Big Science Virtual Workshop in May 2020, for virtual 1-to-1 meetings with representatives from various research facilities. "It's an effective way for us to continue working our way into the market. Once you become established, and deliver components to facilities like CERN, MAX IV, and ITER, you're on a strong footing. The people you meet at these meetings are solution oriented. They want an optimal product at an optimal price, and they're open for discussions," concludes Jonas Alexander Söderlund.

"Things have happened quickly. After the meetings in March, we received an order during Q4 and now, in February 2020, we're involved in several projects for CERN."



## QAMCOM

### Strategic order from EISCAT\_3D – pioneering radar facility in northern Scandinavia

Around 130 engineers currently work at Qamcom, most of them with a research background and long experience of industry. The company is a catalyst for transfer of advanced technology between academia and industry.

“We work with specialist consulting and with product development, which places demands on our employees,” explains Omid Sotoudeh, Site Manager at Qamcom. “In addition to consulting, we’re engaged in national and international research projects. We serve as a technology house – we develop products and outsource production of bigger volumes.”

Qamcom specialises in products and services in AI, wireless communication, autonomous systems, radar systems and industrial IoT.

#### Pulse and steering control unit for phase control of antennas

Many of the company’s employees have worked on projects involving Big Science, and many have a background in space research. In 2019, Qamcom won a big, strategic order to supply equipment to the EISCAT\_3D facility, an international research infrastructure that is building up a pioneering radar facility with three large antenna fields in Norway, Finland and Sweden. Basic research will examine how the Earth’s atmosphere is linked with space.

The equipment that Qamcom is supplying is a pulse and steering control unit that generates and sends radar pulses and signals to control and monitor the transmitters. The control unit is being developed in close collaboration with the client.

“There’s a lot of preparatory work needed before winning an order like this, and Big Science Sweden has helped with important contacts,” explains Omid Sotoudeh. “Good collaboration between the research facility and us as supplier is crucial for developing really strong research at the cutting edge of technology.”

#### Clear presentation

In its pitch, Qamcom presented the technically most interesting solution for EISCAT\_3D. A complete design was used that clearly showed how they would develop the product and what the finished product would look like.

Now the company wants to increase its engagement with the research facilities, and continually monitors updates of the facilities’ needs.

“We will need to recruit new staff. It can be hard to find skilled workers on a hot market, but Big Science serves as a carrot. Big Science is perceived as challenging, fun and interesting.”

“Good collaboration between the research facility and us as supplier is crucial for developing really strong research at the cutting edge of technology.”

**All kind of business meetings**

Seminars, trade fairs, workshops, business trips – Big Science Sweden offers many different ways to generate contacts and exchange knowledge.





## BIG SCIENCE SWEDEN – meetings, networks and business

Big Science Sweden is the link between Swedish industry and Big Science. We connect Swedish high-tech companies with research facilities, enabling facilities all over the world to find the best suppliers. We have built up a broad bank of knowledge about the companies, their expertise and skills, and their ability to deliver. We establish contacts with procurement officers and other personnel who work with technological development or purchasing at the European research facilities.

Important success factors for development and innovation are access to new knowledge and exchange of professional experience. All the activities arranged by Big Science Sweden offer opportunities to make valuable contacts and acquire new, strategic knowledge that will promote business and development within Big Science.

### Industry, academia and research facilities

Developing the cutting-edge technology demanded by Big Science requires continual exchange between industry, academia and research facilities. Collaboration helps to identify common challenges, and activities are directed towards relevant areas. This accelerates the development of new products and services.

These three key actors – industry, academia and research facilities – regularly participate in our various events. Personal meetings generate confidence and mutual understanding, which leads to long-term, constructive relationships.

### Big Science Business Trip

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 at the facility, and get the opportunity to present the company's unique expertise, skills and resources.

Mats Orup, Managing Director of RFR Solutions, which manufactures sophisticated stainless steel solutions: "These trips are good for making new contacts and learning new things. We've previously supplied solutions to ESS, CERN and MAX IV, and by visiting other facilities and talking with their contact persons, we can form an impression about whether we could supply similar projects to them."

### Conferences and other networking events

Large, international trade fairs and conferences within Big Science are also important meeting places for research facilities and Swedish companies. Representatives from the facilities can form an overall impression of Swedish high-tech capacity, and important contacts are made through personal meetings.

Knowledge is also exchanged, and contacts made, when representatives of research facilities come to Sweden and take part in road trips, where they visit Swedish companies with the specialist expertise and skills that the facilities are looking for.

### Big Science Morning

At a Big Science Morning event – an informal breakfast meeting – companies that are, or that are interested in becoming, suppliers to research facilities, are brought up to date about current developments within the Big Science field, and can discuss opportunities for collaboration. These morning meetings are held in the offices of Big Science Sweden (Luleå/Kiruna, Uppsala, Göteborg, Lund) or at one of the supplier companies.

Frida Tibblin Citron, Business Development and Project Management, at Big Science Sweden in Lund: "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 very much appreciated and stimulates networking. Big Science Mornings are usually fully booked."



### 334 Big Science Morning

Big Science Morning – our forum where business representatives meet each other over breakfast and learn more about what generates business on the Big Science market.



### 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 that 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: "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 with one another."

### Big Science Sweden Conference

The Big Science Sweden Conference is a 'meeting place for meetings' – 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. The theme for Big Science Sweden Conference 2019 was "Join us in driving Big Science technology". 250 delegates from ten different countries met up during two intensive days that offered nine parallel sessions, 300 unique one-to-one-meetings, round table discussions and some 50 exhibitors.

Quotes from the 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".

### 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 fields that reflect the facilities' requirements and needs, such as accelerator technology, future AI, and ultra-high vacuums. The Academy also covers procurement regulations and business processes. During 2019 some of the training opportunities were Winning Big Science Contracts, CRYO and RF for Big Science, and Ultra High Vacuum.



*Anders Johansson from ESS/Lund University held a presentation at one of our Big Science Mornings. ESS handles an enormous quantity of data, with sophisticated electronic components in radiation environments. The ESS systems will have no fewer than 1.6 million control points.*



*Mats Nielsen and Filip Sandberg from Glenair on a visit to the FREIA Laboratory at Uppsala University, together with Fredrik Engelmark, Big Science Sweden. Tord Ekelöf from the FREIA Laboratory gave a guided tour and talked about the work done in the laboratory.*



**Study visit to CERN.** Over two days packed with one-to-one meetings, industry exhibition, site visits, informal lunches and discussions, the Swedish suppliers made many new contacts and received up-to-date information about current projects and business opportunities.



Anders Unnervik, Head of Procurements at CERN met Swedish suppliers, such as Camille Feuillet at Bumax (left). Right: Anders Unnervik and Rickard Jakobsson, CERN, each received their own copies of The Swedish Guide, with Anna Hall, ILO and Fredrik Engelmark, ILO from Big Science Sweden.

### Business Trip to ITER

*Big Science Sweden on a Business Trip to ITER, together with Swedish suppliers: Österby Gjuteri, Fagerström Industrikonsult, Habia Cable and Scanscot. Skanska and ESS also took part in the Business Trip.*



*The Swedish delegation, here together with the Director-General of ITER, Bernard Bigot.*



### High-level meeting for ITER

*High-level meeting in Stockholm aimed at increasing Swedish participation in ITER. Stina Billinger, State Secretary to the Swedish Minister for Enterprise and Innovation, talked about the importance of greater international collaboration on research and innovation, and working with ITER.*





#### Study visit to suppliers

*CERN representatives visiting Sweden, here at Elmia Subcontractor. The visit ended with a road trip where CERN visited Swedish companies. Anna Hall, Big Science Sweden, Jérôme Pierlot, CERN, with Johan Rutfors Isaksson at Siemens.*



*Examec Maskinmontage in Tomelilla supplies lead end bars and magnet tie rods in special material for the cryomagnets at CERN.*



*A visit to Liedholms Maskinteknik, a mechanical supplier in machining, surface treatment, welding and assembly. Liedholms Maskinteknik is a mechanical workshop, involving materials such as the stainless steel alloy, 316LN, and titanium.*

### Conference with Lund University

The conference *Big Science@LU* (Lund University) addressed the need for academic input in building, maintaining, and operating *Big Science* facilities. A number of people from Lund University and the *Big Science* community gathered for an interesting day of discussions on the university's role in supplying *Big Science* facilities. One important conclusion was that collaboration drives the development of Sweden as a *Big Science* country.

#### Left

Anders Oskarsson, Lund University, and Mats Lindroos, ESS, in discussion with Anna Hall, *Big Science* Sweden.

#### Right

Dirk Rudolph, Lund University, Colin Carlile, *Science Village Scandinavia*, and David Silvermyr, Lund University.



Anna Hall, *Big Science* Sweden, led the discussion at one of the tables. Her discussion partners were Kajsa Paulsson (Lund University), Lennart Gisselsson (*Big Science* Sweden), Natasa Pahlm (Vinnova), Caterina Doglioni (Lund University), Ekaterina Oisпова (Luleå University of Technology), Dirk Rudolph (Lund University), Colin Carlile (*Science Village Scandinavia*), David Silvermyr (Lund University), and Mats Lindroos (ESS).



### ILO meetings

Big Science Sweden represents Sweden as the official Industrial Liaison Organisation and Purchasing Advisors at the research facilities co-financed by Sweden. International collaboration is firmly established through the pan-European network of ILOs.

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*PERIIA - a pan-European network for ILOs at various research facilities in Europe. Big Science Sweden is represented on the Board of Directors.*

*The Swedish ILOs, Patrik Carlsson, Anna Hall and Fredrik Engelmark, discussing collaborations between the Swedish company Studsvik and various research facilities.*



*ENRIITC is an EU project aimed at establishing best practice for industrial relationships with research facilities. Big Science Sweden is involved, together with ESS, ESRF and European ILO organisations. The project concerns both use of the facilities and tech transfer.*





Big Science Sweden is funded by:

VINNOVA  
Sweden's Innovation Agency

Swedish Research Council

European Agency for Innovation and Creativity

**big science sweden**

# BIG SCIENCE SWEDEN CONFERENCE 2019

**JOIN US IN DRIVING BIG SCIENCE TECHNOLOGY**

LUND, SWEDEN, 26 NOVEMBER 2019

**30 speakers contributed to an exciting programme**

## Big Science Sweden Conference 2019

The theme of the inaugural Big Science Sweden Conference was Join Us in Driving Big Science Technology. High-tech companies, institutes and academia met with ESS, European XFEL, CERN, MAX IV, and ITER/Fusion for Energy in Lund. The event proved very popular, and the conference was fully booked with over 250 delegates.



Anna Hall, Director of Big Science Sweden, held the opening address together with Ian McNulty, General Director of MAX IV, Kevin Jones, Technical Director at European Spallation Source, Ulrika Geeraedts, Director of Regional Development at Region Skåne, Sylvia Schwaag Serger, Deputy Vice-Chancellor at Lund University, and Joakim Appelquist, Deputy Director General at Vinnova.



**Day 1** • 50 delegates from 10 different countries, 69 from universities, 93 from industry, 49 from Big Science facilities, 50 exhibitors, 5 exhibitors on Strategic and Sustainable Environments, 30 speakers, 300 1-to-1 meetings, 140 attended the Big Science Evening, 20 took part in study visits to ESS and MAX IV. 9 parallel sessions on various technical themes.

**Day 2** • Challenge-driven innovation: 19 different challenges identified by CERN, ESS, ITER, MAX IV, attracting 96 delegates, 7 applications for pre-studies.



Kevin Jones, Technical Director, ESS.

"I can see everything that ESS needs out in the industry exhibition. The exhibition was made up of 50 industrial companies, universities, institutes and research facilities."



Ian McNulty, General Director, MAX IV.

"MAX IV has been in operation for a couple of years, and has received good help from Swedish suppliers. There are now several beamlines ready for use by researchers and industry."



Mario Di Castro

Head of Mechatronics, Robotics and Operation Section, CERN.

"It's been valuable to meet so many people and discuss development ideas. The format's been good, with short meetings focused on results."



Darren Spruce  
Head of Controls & IT, MAX IV Laboratory.

Patrik Carlsson, Co-Director Big Science Sweden and Industrial Liaison Officer (ILO) for ITER, ESO and SKA, talked about what was happening at SKA.

"A conference like this gives us an overview of technological opportunities and possible future suppliers."





Niels Van de Ven, Commercial Manager, Fusion for Energy.

7 research facilities took part

Jerome Pierlot, Head of Procurement for Accelerators & Technology Section, CERN, was impressed by what Swedish industry can supply.



Jonas Söderlund NOTE, Erik Strömqvist, GE Healthcare, Mats Orup RFR Solutions and, at the microphone, Mikael Vieweg, Scanditronix Magnet.



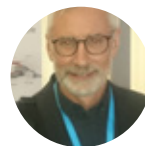
Antonio Bonucci, Industrial Liaison Manager, XFEL.  
*"We can inspire companies to become suppliers by presenting all the exciting things that lie ahead in the next few years."*



Pia Kinhult, Head of Host States Relations, ESS.  
*"ESS will have a unique capacity that will enable important scientific discoveries."*



Stefan Wikman, Head of Materials & Manufacturing Technologies & Processes Group, Fusion for Energy, ITER, is responsible for materials and fabrication of fusion reactor material, and sees great opportunities for Swedish industry.



*Mikael Vieweg,  
VD Scanditronix.*

*"I've made a number of new contacts, and met previous customers, so I've been able to get up to date on their plans."*



*Erik Sundström, Head  
of Communications,  
ScandiNova.*

*"It's important for us to keep up to date and find out about all the developments in our technological field."*



### **Nine parallel sessions on technological developments**

Big Science Sweden invited participants to Join Us in Driving Big Science Technology. With a strong focus on knowledge sharing and establishing contact networks, the two days were packed with workshops on various challenges relating to technology.



1. Advanced materials & Production methods
2. Electronics
3. Technology Integration, consortia and sub-contracting
4. Remote handling and robotics
5. Vacuum and Cryogenics and magnets
6. AI, Control Systems, Data Acquisition, Big Data
7. Power Supplies & RF systems
8. Virtual reality and Augmented reality
9. Safety and Quality

**Networking  
generates  
business**



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*Mikael Vieweg,  
CEO at  
Scanditronix  
Magnet and Kevin  
Pepitone from  
FREIA Laboratory  
at Uppsala  
University.*





*Jerôme Pierlot, Head of Procurement for Accelerators & Technology Section at CERN (to the right) discussing upcoming business at CERN together with Sofia Davidsson and Torbjörn Björk from Qtech Group.*





*Professor Adrian Rennie, Uppsala University.*  
*"It's very useful to be able to speak informally with the participants between the sessions."*



*Karin Cedergren, Researcher in transportation and safety, RISE.*  
*"A totally fantastic event! The one-to-one meetings have been extremely valuable."*



*Leif Gjerløv-Jensen, Technical Sales, Carlsson & Möller.* *"A big plus for the one-to-one meetings, and that Big Science Sweden has attracted so many exhibitors."*



*Jenny Ståhlbom, Sales & Marketing Manager, Finepart.*  
*"It's been interesting to learn more about all the facilities and their projects, so we can now start to look for supply opportunities."*



*Mats Ohlsson, CEO Examec.* *"The best conference I've ever been to. And, yes, you can quote me on that!"*



*Anders Siward, Business Development Manager, BitSim.*  
*"We want to submit more tenders for procurements from CERN and other research facilities."*



*Anna Söderlund, Sales, Österby Gjuteri, here with Anna Hall, Programme Director, Big Science Sweden and Tord Ekelöf, Professor and Project Manager, FREIA Laboratory, Uppsala University.*  
*"For us at Österby, it's about finding business opportunities at the facilities, and finding collaboration partners and possible customers."*



### Big Science Sweden Award

During the evening, the Big Science Sweden Awards were presented for the first time. Three Big Science Influencers were announced as prizewinners:

*Influencer Facility: Rickard Jakobsson, CERN  
Influencer Industry: Anna Söderlund, Österby Gjuteri  
and Influencer University: Tord Ekelöf, FREIA, Uppsala University.*



### Big Science Study Visit

Delegates from Swedish industry and CERN took the opportunity to visit ESS and MAX IV on the Wednesday morning. At ESS, we took part in a guided tour of the facility by bus and, at MAX IV, we visited the accelerator ring.





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At the AIMday Big Science Technology, researchers and representatives from industry gathered to discuss challenges identified by the research facilities. The aim was to enable long-term collaborations on the basis of the issues raised by the research facilities.

*The day was arranged according to the internationally renowned AIMday method, developed by Uppsala University. The programme item concerned challenges, as identified by CERN and ESS. Five applications for pre-studies for joint projects were submitted.*



### **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 are 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 having them work autonomously? (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 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 optimize 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)
- What does 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 can we optimize machine performance with machine learning?

### **Magnets and Cryo**

- What can Sweden do for helping CERN to 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?



7  
applications  
for pre-study  
funding



Frederik Engelmark, ILO for CERN, together with Frida Tibblin Citron, Lennart Gisselsson at Big Science Sweden and Ekaterina Osipova Research Funding Advisor at Luleå University of Technology.

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Aerospace och Big Science Morning. Intensiva dagar för Big Science Sweden med en tur till Kalix, Luleå, Piteå och Umeå. Mycket glädliga möten med en rad intressanta företag. ...see more

See translation



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THANK YOU ALL! Big Science Sweden Conference 2019 has come to an end. 230 delegates, 50 exhibitors, nine breakout sessions, 19 challenges and over 300 1-1-meetings. The program was full and feedback from delegates so far show ...see more



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Will you be at the worlds largest particle accelerator conference IPAC20 in May? Get unique possibilities to expand your network at Big Science Sweden Matchmaking Event 11 May at IPAC20. This is an excellent opportunity to meet with Eun ...see more



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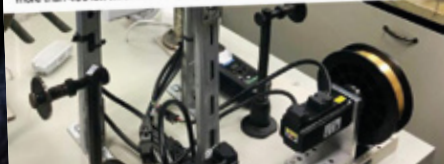
Big Science Morning om att bearbeta i unika material. Forskningsanläggningar är svåra att bygga och kräver ibland bearbetning i unika material. Läs mer. ...see more

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Luma Metal wins substantial order from CERN  
Swedish high-tech producer of Ultra Fine Wire, Luma Metal has won a large order for more than 400 km wire. The company's wire will be used for the upgrade ...see more



Luma Metal wins s  
bigsciencesweden.se

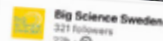


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Besök hos ny Big Science-medlem! <https://lnkd.in/t/WsBrGs>  
See translation



Malmö Mönsterkort gör runt 2000 unika prototyper per år  
bigsciencesweden.se



**Big Science Sweden**  
321 followers  
23h •

"Thank you for this very well organized workshop, even if it is in 'virtual' the teams of Big Science Sweden offer us a high quality event!"  
Tack 188 deltagare från 15 länder på Big Science Virtual Workshop! ...see more

PARTICIPANTS	
Austria	1
Belgium	2
Estonia	1
Finland	1
France	25
Germany	25
Greece	1
Israel	1
Netherlands	3
Portugal	1
Romania	10
Spain	40
Sweden	75
Switzerland	1
United Kingdom	6
<b>Total</b>	<b>188</b>

Big science Virtual Workshop • 15 europeiska länder samlade  
bigsciencesweden.se • 2 min read



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