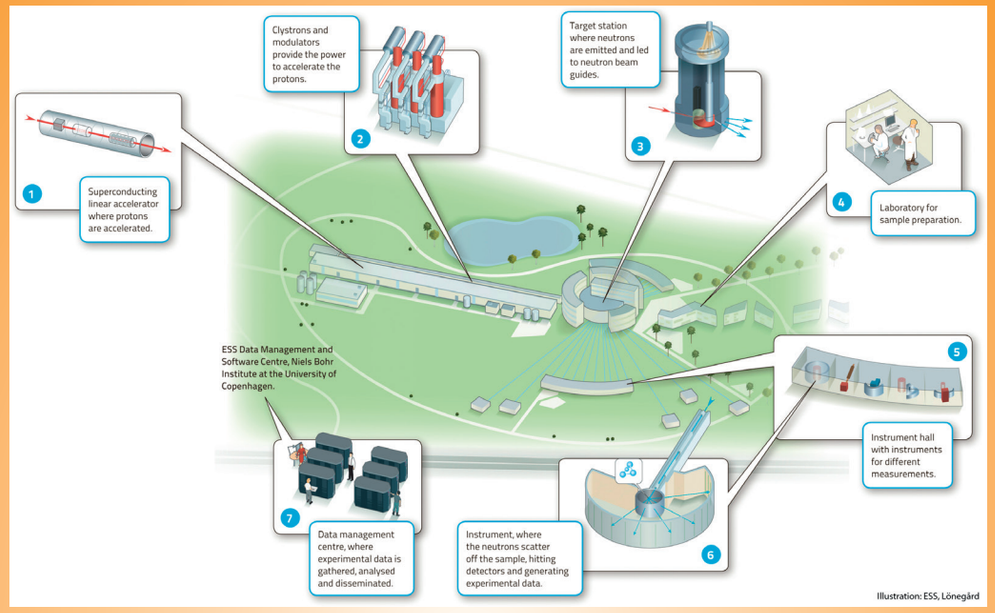




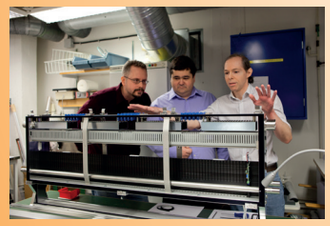

NWO
Netherlands Organisation for Scientific Research

Dutch Scientific

where business and science meet

www.bigscience.nl

Involving Dutch industry in Big Science

The European Spallation Source (ESS)

12 March 2014

ESS EUROPEAN SPALLATION SOURCE

where business and science meet

www.bigscience.nl

Dear participants of the ESS Partner Day,

I am very honoured to chair this meeting, the ESS Partner Day, with such a large audience. Very good to see the impressive delegation from the ESS project, the European Spallation Source, to be build in Lund, Sweden. This is a clear demonstration that it is very important for ESS to have good communication with the important players in the Netherlands, both from the scientific and the industrial world.

At the ESS Partner Day we will start with presentations from the Dutch parties that are involved in ESS: the ministry of Education, NWO, the Dutch research organisation and RID, the Reactor Institute Delft. Then we have 5 different speakers from ESS and 7 leaders in Dutch industries who already have some kind of involvement in ESS. After the presentations we have scheduled Meet & Match where all the persons who have given a presentation will be ready to have further discussions with the audience. This will be organized as follows: we will have high tables where people can stand around and where the speakers are divided in small groups in accordance with their expertise. Furthermore, tables are reserved for the ILO's and also for the RID experts, so they are ready to answer any questions, as well.

Only since January 1, 2014, I am acting as the ILO, the Industrial Liaison Officer for the ESS project. My background is in fusion energy, where I am for about 10 years now the ILO for ITER and other fusion projects. I am located in DIFFER, the Dutch Institute for Fundamental Energy Research, formerly known as Rijnhuizen. Here, we do research on both fusion-oriented plasma physics and on Solar Fuels: production of fuels by breaking down C02, using plasmas and microwaves. The DIFFER institute is located in Nieuwegein, but will move to the campus of the Technical university in Eindhoven in 2015.

For more information please look on the websites **www.iter-nl.nl** or **www.bigscience4business.nl**

Toon Verhoeven

Industrial Liaison Officer for ITER and ESS, the European Spallation Source
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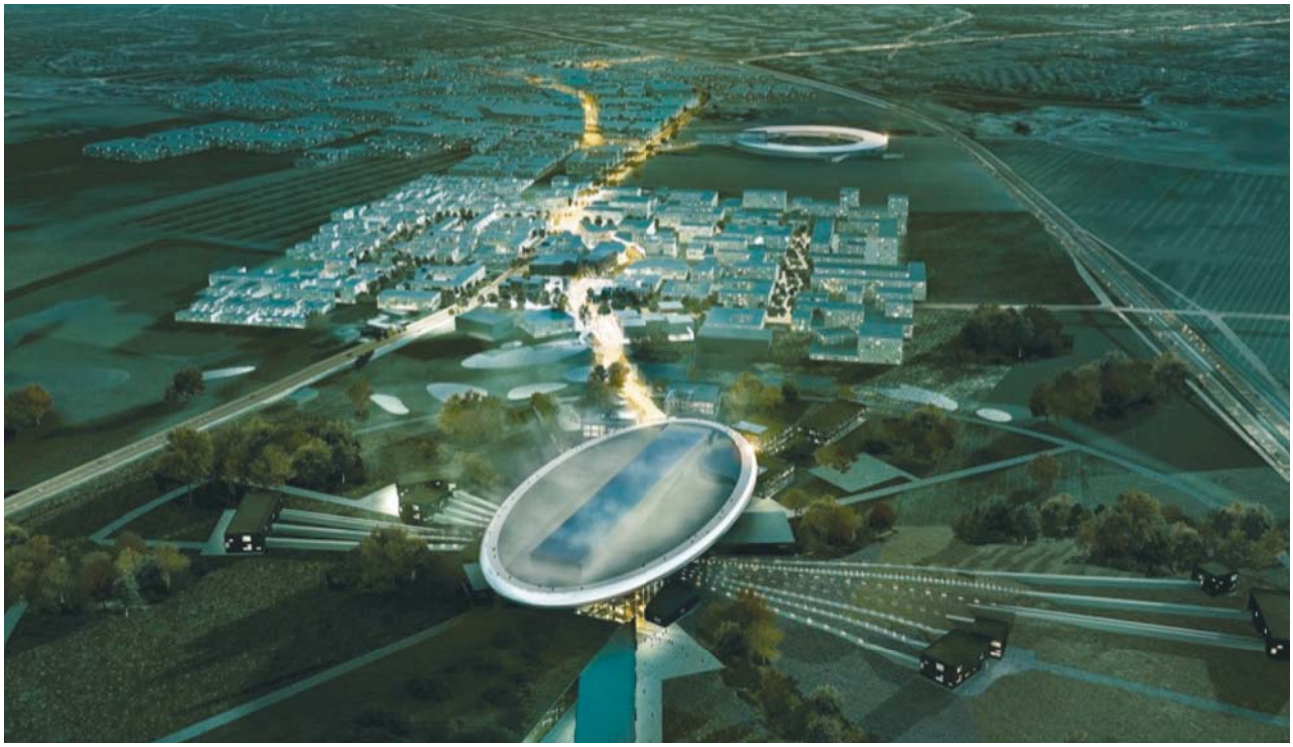
DIFFER
Dutch Institute for
Fundamental Energy Research

EUROPEAN
SPALLATION
SOURCE

The European Spallation Source (ESS)

The European Spallation Source (ESS) is one of the largest research infrastructures being built in Europe today. ESS aims to complete and operate the best and most powerful neutron source in the world by the end of the decade. Designed to generate neutron beams for science, ESS will benefit a broad range of research, from life science to engineering materials, from heritage conservation to magnetism.



Europe's need for an advanced, high-power neutron facility was already articulated 20 years ago. ESS is a pan-European project. It will be jointly built and operated by at least seventeen member countries from all over Europe, with Sweden and Denmark acting as host nations. The ESS facility will be built in Lund, Sweden, next to the world-leading synchrotron light source MAX IV currently under construction, while the ESS Data Management and Software Centre will be located in Copenhagen. Around two to three thousand guest researchers will carry out experiments at ESS each year. Most of the users will be based at European universities and institutes, others within industry.

The European Spallation Source will have a state of the art particle accelerator, which can be compared to a microscope, using a neutron beam instead of the conventional light- or electron beam. This neutron source is the equivalent of the lamp in a normal microscope. The ESS construction is a collective effort by scientists and engineers from more than 60 partner laboratories all over Europe and worldwide. Together, they have developed and specified a technical design of the facility, including the accelerator, the target and instrument concepts. This resulted in the delivery of the ESS Technical Design Report and Project Specification in 2013. The technical design work continues as construction approaches. Partner laboratories, universities and research institutes involved will also take part in the construction phase, contributing human resources, knowledge, equipment, and financial support.

The European Spallation Source interacts with the international research community in order to ensure that the instrument suite meets the needs of science, enabling the breakthroughs of tomorrow. Instrument concepts for ESS are being developed around Europe, making this a facility built by the scientists, for the scientists.
The European Spallation Source will be built on a green-field site, a challenge which brings with it great potential, for society as well as for science. As a facility built from the ground up in the 21st century, ESS will be constructed and operated with high ambitions for environmental sustainability. As part of its recyclable goal, ESS will recycle the waste heat generated in the facility and supply Lund's district heating network with a full 20% of its annual requirement. This is a unique new feature or a large-scale research facility.

The work that will be advanced at ESS has implications even for some of the most fundamental dilemmas in science. Promising investigations into the structure and origin of the universe, and others attempting to reconcile incompatible, and yet functional, theories of gravity and quantum physics, suggest the possibility of breakthroughs in human knowledge that go beyond our wildest imaginings. ESS is an essential investment in the future health of the Europe's people, and society. Among other things, it will dramatically improve the study of organic molecules enabling scientists to gain new insights on gene therapy or how to construct better medical implants.

ESS is going to break ground in 2014, and deliver first neutrons by the end of the decade.

European Spallation Source – An Overview

ESS is a next generation materials research infrastructure that will benefit science and society. ESS is a partnership of 17 European nations committed to the goal of collectively building and operating the world's leading facility for materials research using neutrons by the second quarter of the 21st century.

Neutrons are excellent for probing materials on the molecular level – everything from motors and medicine, to plastics and proteins. Detailed studies are dependent on how many neutrons can be produced by a neutron source. As a result, scientists and engineers have developed a new generation of neutron sources based on particle accelerators and spallation technology. ESS will provide around 30 times brighter neutron beams than existing facilities today and thus compliments existing neutron scattering facilities.

The ESS project is a partnership between 17 European Countries with Sweden and Denmark serving as the host nations and the Czech Republic, Estonia, France, Germany, Hungary, Iceland, Italy, Latvia, Lithuania, The Netherlands, Norway, Poland, Spain, Switzerland and the United Kingdom as member countries. The Scandinavian countries have committed themselves to fund 50% of the 1.843 Billion Euro construction costs, while the remaining 50% of the costs will be distributed between the European partners. The operations cost target has been set at 140 Million Euro per year, which will also be divided between the partners.

ESS is currently entering the construction phase, which will be followed by the initial operations and ramp-up, and enter the steady-state operations by 2026. Currently, ESS is in the process of finalising the contribution agreements with the member countries, which have resulted in the first Letters of Intent. The strong Dutch interest among scientific institutes and companies is a good foundation for including the ESS in the future national roadmap for large-scale Research Infrastructures.

ESS is a collaborative effort and many of the project contributions will be in the form of In-Kind Contributions from shareholders and partners. The project provides an abundance of collaboration and partnership opportunities in all areas and ESS encourages all interested parties to get involved!

James Yeck
CEO and Director General, ESS

Science at ESS / Instruments and Future Users – How the Netherlands can be involved

ESS will be a world-leading research facility, providing neutron instrumentation and scientific support to a wide range of scientific disciplines. With the power to non-invasively probe matter and report on structure and dynamics from molecular detail to whole engineering objects, neutrons provide insight is areas as diverse as magnetism and superconductivity, life science, engineering materials, geoscience, particle physics, smart materials, energy solutions, and more. The European neutron community is now coming together to design and construct next-generation instruments that will make optimal use of the unmatched intensity of the ESS neutron source, while addressing the scientific and societal challenges that lie ahead.

Success relies heavily on the experience and competence at the national and international neutron sources currently operating, and on the university groups that contribute to neutron science today. Many state-of-the-art instrument concepts have been proposed by European groups, and these are currently undergoing peer-review. More proposals are anticipated this year. Meanwhile, construction partners are being sought as the instrument construction project is taking shape in preparation for groundbreaking this summer.

Now is the time to get involved. Instruments, sample environment, science support facilities, data management and software and neutron technologies are all joint efforts. A significant part of the construction can be contributed in-kind from laboratories across Europe. Facility, university and industry partners are pivotal to realising the ESS vision. Many are already engaged and more partners are welcome.

Prof. Dr. Dimitri Argyriou
Director for Science, ESS

The Target Station

The ESS Target Station Project includes the systems needed to convert the energetic proton beam coming from the ESS accelerator to neutron beams that are utilised for science experiments. The first step in this process is production of high-energy neutrons through a spallation process involving the proton beam interaction with a helium-cooled, rotating, tungsten target. The fast, high-energy neutrons that are created through the spallation process are slowed down to energies that are suitable for different types of experiments and delivered to the ESS instruments through beam ports. Key features of the target station are the target itself, the supercritical hydrogen and ambient water neutron moderators, neutron reflector (beryllium), neutron beam-extraction system (beam guide inserts, shutters, neutron beam windows), cooling and environmental control systems, and shielding and other structures needed to confine or protect people and the environment from the radioactive target station components and environments. Remote handling systems needed to maintain the activated Target Station equipment and process some items for waste disposal are also included in this portion of the ESS facility. This presentation will describe the Target Station scope, status and plans, and in-kind partnership opportunities.

Dr. John Haines
Head of Target Division, ESS

The Machine / The Accelerator

The neutron production at ESS is based on a spallation process, where high-energy protons hit a rotating target of tungsten metal. To produce the world's highest flux of neutrons, the linear accelerator, or linac, will have the highest beam power of any particle accelerator built so far. With a proton energy of 2 GeV and a current of 62.5 mA, the product of these two numbers gives an instantaneous power of 125 MW. Taking into account the pulse structure, where 2.86 ms pulses arrive to the target at 14 Hz, the average beam power is 5 MW. The linac design has been perfomed by a European collaboration. At the beginning of the accelerator are the proton source and low-energy beam transport from INFN, Catania. The first linear accelerator component is a radio-frequency quadrupole (RFQ) designed by CEA, Saclay. Then follows a medium-energy beam transport from Bilbao. The last normal-conducting acceleration structure is a drift-tube linac (DTL) designed by INFN, Legnaro. After the DTL, the particles have reached 90 MeV, and superconducting acceleration cavities, operating with superfluid helium at 2 K, take over. Three families of such cavities, known as spoke cavities, medium-beta elliptical cavities and high-beta elliptical cavities, studied and prototyped by IPN, Orsay and CEA, Saclay, accelerate to the final 2 GeV. At the end, a high-energy beam transport designed by ISA, Århus, bring the beam onto the target. Separated from the linac itself are the RF sources that provide the electromagnetic fields at 352 and 704 MHz fed into the cavities and accelerating the particles. These constitute the largest cost driver of the accelerator. Another large investment is the cryoplants providing the superfluid helium. Many other systems and technologies are needed for the ESS proton linac, and the presentation aims at showing on the potential for collaboration both with industry and academia.

Dr. Håkan Danared

Deputy Head of Accelerator Division, ESS

In-Kind Contributions, Procurement and the ILO Network at ESS

The process towards an In-Kind Contribution begins with an Expression Of Interest (EOI) by the interested institute or supplier and it ends with the evaluation of the In-Kind Review Committee followed by the approval of the contract by the ESS Council. It is foreseen that approximately 35% of the total ESS project will be in the form of In-Kind Contributions from shareholders and partners. The strategy entering the Construction Phase is to maximise In-Kind Contributions. The framework for In-Kind Contributions for this phase is ready, and the contract template is in place and approved by the governing committees. The potential areas of cooperation will be presented as well as all the necessary steps from the EOI to the In-Kind Contribution contract.

The European Spallation Source will be constructed through a combination of In-kind and cash contributions. The implementation of the In-kind contributions will be the responsibility of the Partner Countries and result in various collaborations between national institutes and industry. The selection and assignment of the companies will follow national procurement rules. As of today, the ESS Procurement Rules comply with EU public tender procedures, which allow for four different methods, including open procedure, restricted procedure, negotiated procedure and competitive dialogue.

The European Spallation Source is striving to become a European Research Infrastructure Consortium (ERIC). As ESS transitions into an ERIC, the project has the opportunity to define Procurement Rules to help facilitate the construction of the research infrastructure. An evaluation is currently undergoing whether the In-kind partners will be able to follow these same procurement rules.

To facilitate the cooperation with partners and institutions an ESS Industry Liaison Office (ILO) Network has been established. The ILO Network will build awareness for ESS, in addition to developing collaboration and partnership opportunities, and in general provide transparency and equal opportunity to the Partner Countries and their respective industries.

Collaboration and cooperation are essential for the building of ESS and many milestones must still be achieved before the imminent breaking ground. Therefore, all interested parties, are sincerely encouraged to join and participate in building one of Europe's most exciting new research infrastructures.

Allen Weeks
Deputy Head of Project Support and Administration Directorate, ESS

After her PhD she spend some years at Leiden University before she switched in 2000 to work for the government.

She is for most of her time engaged in national and international policy for large-scale research facilities since her work for the Innovation Platform in 2004-2005. She serves as a delegate for the Netherlands in the Programme Committee for Research Infrastructures and the ERIC Committee, and is also involved in ESFRI. Recently she helped setting up some of the ESFRI projects as an ERIC.
The other part of her work is on national and international policy on Life Sciences, which in some cases overlaps with infrastructures.

Dr. Jeannette Ridder-Numan

is working for the Ministry of Education, Culture and Research,
Department for Research and Science Policy.

The European Spallation Source and The Netherlands

About ten years ago the brave decision was taken by the Swedish and Danish governments to take the lead towards the construction of the European Spallation Source (ESS). Since that date Lund has been the centre of vigorous activity to realize this ambition. Many technical and political hurdles were ahead. In 2009 the definitive selection of Lund was endorsed by the European research ministers. In 2010 this led to a breakthrough at the political level with the signing of an international Memorandum of Understanding. The Netherlands, represented by the Netherlands Organisation for Scientific Research (NWO) was among the countries recognizing the potential of the ESS and joined in this event. This started the preparatory phase. A number of countries joined the host states in this effort with in kind contributions. For the Netherlands it was the Reactor Institute Delft that engaged in this effort by delivering an instrument study. Now, ESS has delivered all necessary documentation and is ready for construction. This should start as soon as sufficient funding is secured.

NWO, in collaboration with the Ministry of Education, Culture and Science has a coordinating role towards the Dutch participation in large scale infrastructures. It has taken its role in bringing the Dutch viewpoints forward in the governing bodies of the ESS. Joining the ESS requires attaining the necessary funding. NWO, with the support of the Ministry of Education, Culture and Science offers scientists an opportunity to submit a proposal for participation in the ESS in the framework of the national roadmap in 2015/2016.

The Netherlands has a strong home base at the Delft University which is currently renovating the reactor and the instrumentation to prepare for the future. In order to succeed in the strong competition for our national roadmap budget, Dutch scientists will have to join forces to convince our review committee of the necessity to participate in the ESS. A well-organized community and a strong interest from industry are prerequisite for a successful application. A number of criteria are used to establish a ranking between the applications. These concern scientific quality, potential to attract talent, the importance for society and industry and the importance for the Netherlands, besides a number of more technical/organizational aspects. Although the competition is usually very strong, the ESS has the potential to pass this test!

Nico Kos
Netherlands Organisation for Scientific Research
Member of the ESS Administrative and Finance Committee

Prof. dr. Catherine (Katia) Pappas joined 2009 Delft University of Technology to lead the section Neutron and Positron Methods in Materials (NPM2), within the Faculty of Applied Sciences. Her field of expertise is in neutron scattering science and techniques, with focus on high-resolution (neutron spin echo) spectroscopy and polarized neutrons. Besides neutron instrumentation, her scientific interests are in the field of magnetism and chiral magnetism, an emerging field of research where polarized neutrons are indispensable. Before Delft Katia spent several years at the Hahn-Meitner Institute – nowadays Helmholtz Zentrum Berlin – where she was involved in numerous large neutron instrumentation projects. She was deputy director of the Berlin Neutron Scattering Center and head of the "Neutron Instruments and Methods" department. Once in Delft, she was again the initiator of several big instrumentation projects, such as the neutron powder diffractometer PEARL or the multipurpose instrument LARMOR, a Dutch-UK collaboration, which is being built at the UK neutron source ISIS and is supported by a NWO-Groot grant. Katia and the section NPM2 have had tight links with the ESS team in Lund since the very early days of the project. These close connections lead to the present Dutch in-kind contribution, which is being realized by NPM2 in close collaboration with the ESS.

Prof. dr. Catherine (Katia) Pappas
Delft University of Technology
Section Neutron and Positron Methods in Materials (NPM2

After having finalized his Masters in Business Economics, Hans started his career at ASML. Based on his experience within Finance and Product Management, he joined Assembleon to assume responsibility over the company's Installed Base Business. Since 2011 , Hans is with VDL ETG. He is, as part of VDL's company development activities, responsible for building VDL ETG's business based on her ultra-precision machining & metrology, vacuum, and handling competences. Apart from the fact that this is in the long run of added value to ETG's mainstream businesses, it already has lead to a significantly growing added value to astronomy instruments, accelerators, FELs, en space applications.

Hans Priem

Business Manager Science & Technology, VDL ETG

Victor Pastoor is Commercial Director Sustainable Buildings at Division Building & Real Estate at Grontmij Nederland. Grontmij is a leading European company in the Consulting & Engineering industry with world class expertise in the fields of sustainable buildings, energy, highways & roads, light rail and water. Victor is specialized in sustainable concepts for new built, refurbished and existing buildings. He enhances business of clients through sustainable vision based design processes and improves sustainability in asset management to create added value. In September 2012 he was chosen as Number 20 on the list of Duurzame 50 Vastgoed NL (Sustainable Top 50 Real Estate NL). This list represents the most influential persons at sustainability in construction and real estate business in the Netherlands. Victor has a broad and wide experience of 19 years in the buildings engineering consultancy business in The Netherlands and abroad and is a licensed BREEAM-international assessor as well as a BREEAM-NL expert for both New Built and In Use buildings.

One of the highlights so far in his carreer is his contribution as multidisciplinairy technical projectmanager (Chief Technical Designer) for the new built design of the world most sustainable office tower and new energy research center, the Wuhan New Energy Institute in China. He travelled several times to China for the tender meetings and design phase meetings, the building will be delivered in the summer of 2014. The power of Victor Pastoor lies in his competence to analyze and translate innovative and complex projects into a clear multidisciplinary vision and realistic technical solutions, on which the design of the building enhances the core-business of the client. He enables his clients to make informed decisions and well-considered investments as they develop the built environment

Ir. T.V.J. (Victor) Pastoor

Sander Kossen (1979, Haarlem) is graduated at the TU Delft with a master's degree in Telecommunication and is employed since 2007 at the radar department at TNO. During his first years he has been involved in research on imaging and classification with radar. Last 3 years he has been involved in the development of applications with radar for commercial use. Recently Sander is committed to initiate Het Huygens Huys, where high tech companies, ILO and TNO combine forces. We aim to develop high technological instrumentation or infrastructure for Big Science projects.

Ir. A.S. (Sander) Kossen

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Dutch Scientific and Big Science

Holland has been joining many Big Science programs for over 60 years. Examples are: particle accelerators like the LHC at CERN, fusion like ITER, optic- and radio telescopes like the E-ELT and Lofar but also light sources, free electron lasers and neutron facilities. Regardless that these projects are very important for Dutch scientists who obviously belong to the top in the world, many highly technological companies in the Netherlands are involved in building these large instruments. There is no doubt that innovation is driven by science and the development of scientific instruments. Innovative companies are the first to emerge when a crisis ends.

Dutch Scientific used to be an organisation of firms developing for science in close cooperation with scientific research institutes and their engineers. Now Dutch Scientific has been re-invented by the Dutch Industrial Liaison Network for Big Science and will be supporting all Dutch high-tech systems companies for doing business with Big Science. The Dutch ILO-net is a network of Industrial Liaison Officers in the Netherlands supported by the Dutch government and NWO.

The Netherlands Organisation for Scientific Research that funds thousands of top researchers at universities and institutes and steers the course of Dutch science by means of finances and research programmes. Since companies listed in this booklet are very well equipped for translating their scientific knowledge to commercially applicable solutions, Dutch Scientific proudly presents a number of frontline high-tech companies who can support you with any project in which you want to be successful.

April 2014

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NWO
Netherlands Organisation for Scientific Research

Dutch Scientific

Contents

3D-Metal Forming

Product information

3D-Metal Forming B.V. is specialized in metalworking by the use of dedicated explosive materials.
New production processes are developed within the company by using CAD, FEM simulations and photogrammetry.

Explosive bonding makes the joining of unique metal combinations possible, such as molybdenum to copper or tungsten to CuCrZr.
3D-Metal Forming B.V. is your partner in developing new solutions.
We can provide a full process and manufacturing chain including e.g. explosive bonding, machining, brazing, electroplating, HIP etc.

Explosive forming provides complex double curved shapes, formed from sheetmetal.
The possibilities in size, shape, metal and sheet thickness are almost unrestricted.
Only one tool part (comparable to a lower die) is needed so that Non Recurring costs are kept to a minimum.

3D-Metal Forming B.V. serves customers Worldwide in the markets Big Science, Energy, Aerospace and Architecture. We continuously develop new, innovative solutions. For example, the development of the explosive forming of large, 60 mm thick stainless steel plates for the ITER vacuum vessel led to the development of an integral Nose Fuselage for Airbus. This component is explosive formed out of one, 100 mm thick aluminum plate, and fully machined after explosive forming. For Airbus this results in significant weight reduction of the Nose Fuselage structure.

References

RES (Cadarache): explosive formed panels of the water basin – ITER (F4E): explosive bonded CuCrZr-stainless steel tube transitions – ITER (RFX): explosive bonded molybdenum to copper, machined and warm formed – MAST (Culham, UK): explosive formed cans for poloidal field coils

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3D-Metal Forming

AcQ Inducom

AcQ Inducom develops, produces and delivers solutions for a wide range of embedded electronics applied in aerospace, science, transportation and industrial automation. In most cases this involves the design, building and support of embedded real-time hardware- and software components. Strengths of AcQ Inducom are fast prototyping, safety-critical designs, form-fit-function replacements for discontinued products and long product life cycles. AcQ Inducom also participates in large European 7th framework programs, such as SCARLETT, Actuation 2015, ASHLEY and AFLoNext.

Products and Competences

- Embedded System Engineering
- High-throughput data processing systems
- Rugged small form factor systems
- Safety critical applications
- FPGA design (e.g. Xilinx, Lattice)
- High-performance processor boards (e.g. Freescale)
- Real-time OS support (e.g. VxWorks, PikeOS)
- Developing according to market specific standards (e.g. DO-178, DO-254)
- VPX, AdvancedTCA, VME, CompactPCI and PCI products
- PMC, XMC and M-modules
- Various I/O boards:
  - CAN, ARINC429, MIL-STD-1553/STANAG, AFDX
  - Ethernet, switch and controllers
  - Analog – Digital (ADC, DAC)
  - High-speed serial communication
  - Temperature measurement (PT100,200,500,1000)
  - Serial communication
  - Audio and video controllers
  - Motion control, LVDT/RVDT, encoders

References

Airbus, Alstom, Bombardier, Eurocopter, Danieli-Corus, Horiba, Tata Steel

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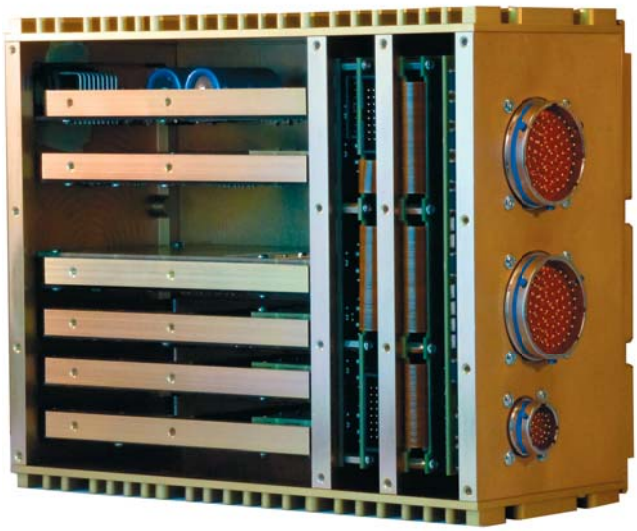

Actemium E&A

Actemium E&A is specialist in controls, Printed Circuit Boards, electronic units, machine and modules for the high tech Industry.
Actemium is a tradename of VINCI Energies and consists of a network of cooperating VINCI Energies companies which delivers their products and services to the industrial market. Actemium advises, supports industrial customers in the construction, optimization and maintenance of their industrial production facilities.

Product information

The core competence of Actemium E&A is the development, engineering, production and testing of high tech electro mechanical systems and PCB (printed circuit boards).

Customers of Actemium E&A can be found in Medical, Electronics, Lighting, Optical, Semiconductor, Military, Solar & Energy, Food, Feed, Chemicals, Logistics and Science.

Our capabilities summarized

- Machine controllers and line
- Mechatronics Measuring and testing systems Module Construction Panel Construction (prototypes and serial) Power control cabinets PCB (printed circuit boards) Prototyping Engineering Embedded software Cleanroom UL Panelshop, CE certification Supply Chain Management QMS After Sales (repair and spare)

Project reference EFDA

Actemium built four control units for the new high voltage supply units (160.000V, 130A) for the Joint European Torus (JET) project of UKAEA in Culham – United Kingdom.
The improved supply units will be used to facilitate a higher energy output of the Torus (50 – 70%).

Reference

Philips – ASML – NXP – Bosch – Océ – Canon – Kema – TNO – Vialis – Moba – ASM – van der Lande – Mars – VDL group, Pon Power – Fuji – PANalytical – UKAEA and EFDA.

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Turnover: (M)€ 56 | 450 Employees

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ACTEMIUM

Active Space Technologies

Active Space Technologies is an SME incorporated in The Netherlands since 2004. We have been engaged in high added-value projects in two main areas:

- **automated infrastructures;**
- **telemetry systems.**

Our customers include the European Space Agency, TNO, and ITER.

Product information

Infrastructure

Active Space Technologies specializes in automation and control, in particular for remote handling manipulation, automated operations, and logistics. We have sound experience in the use of Automated Control Vehicles (AGVs), robotic arms, electro-mechanical systems, complex operations, and programming (FPGA, PLC, wireless communications).

Telemetry

Whether it's in space or on firm ground, Active Space Technologies deals with harsh environments (temperature, radiation, high pressure, among other critical conditions). In order to meet this market need, we use and install smart sensors capable of measuring flow, temperatures, strain, and pressure while withstanding the most adverse conditions. These self-sufficient smart sensors are capable of harvesting energy and encrypting data, and can communicate both via wired cable and wireless.

Insulation

Active Space Technologies further commercializes Aerogels – Aeroflex© – which was originally designed for super insulation applications in space. Aeroflex©can be used both for thermal insulation (cryogenics and pipelines) and absorption (oil & spill and organic contaminants from wastewater). Its proprieties are the following:

Thermal conductivity: 35 mW m^{-1} K^{-1}
Highly hydrophobic
Porosity: 93 - 97%
Low density - < 80 kg m^{-3}
Operating temperature: -200 to 350 °C

António Torres da Costa
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activespace technologies
making space a global endeavour

Amstel Engineering BV

In business for more than 25 years, Amstel Engineering offers advanced Mechanical Engineering services to customers that help them in developing complex mechanical designs and products. Our customers call on our expertise to design or evaluate critical components for reasons such as reducing cost, reducing time-to-market, increasing load capacity and extending life span.

End-to-end capability

Amstel Engineering's capabilities in providing solutions throughout the product development life cycle from conceptual design, industrial and mechanical engineering design, CAD modelling and detailing, to simulation, analysis and prototyping, product testing and manufacturing, makes Amstel Engineering a unique one-stop solutions provider for Engineering Services.
Clients outsource their engineering work to Amstel Engineering, allowing them to focus on their core competencies. We not only solve unique engineering challenges, we manage the routine day-to-day engineering tasks that many clients no longer can complete in house.

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We are staffed by professional engineers and designers with extensive experience and expertise in engineering design and 3-D drafting in a range of industries. We focus on delivering technically accurate and scientifically sound solutions based on our training and industry knowledge.

Proven expertise

We have a proven track record of providing complete Mechanical Engineering solutions for customers in verticals like Aerospace, Automotive, Rail, Material Handling, Food Processing and Retail.
What does that mean for you? When you partner with Amstel Engineering, you can depend on better value, faster delivery, superior products and services and a collaborative relationship throughout your project – as well as an engaged, expert partner for the life of your business Amstel Engineering is part of the Neitraco Groep

References

ASML – Nikhef – ECN – Dutch Space – Philips – ASM – Vanderlande Industries – Stork/Fokker – Multin Hittech – SKF

André Scharis
Commercial Manager

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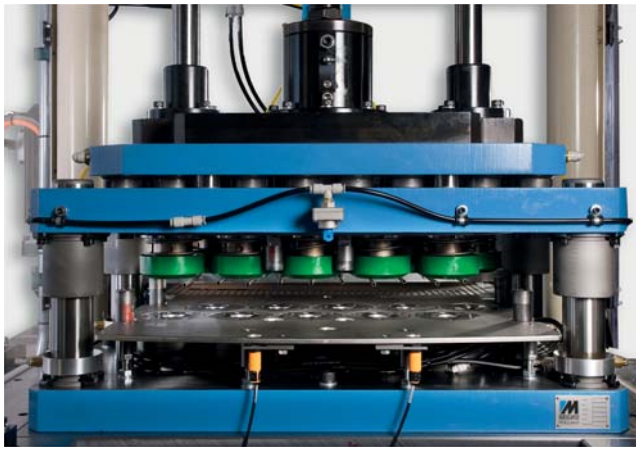

Amsterdam Scientific Instruments

We offer you the benefits of cutting edge detector technology developed by the Medipix collaboration lead by CERN.
Our customer-focused team consists of scientists and engineers with a vast global experience covering all aspects of particle detector technology. We close the gap between innovation at the frontier of science and ready-to-use products for science and industry.

Product Information

Our Timepix hybrid pixel detectors can be used in a wide range of applications.
Besides X-ray imaging, ASI detectors are used for precise spatially resolved detection of electrons, neutrons and heavy charged particles. We also offer our detector in a vacuum compatible system.
Conventional detectors use a counting method. We offer clever pixels: every pixel can operate in three different modes. These are counting mode, time-over-threshold and time-of arrival mode.
For more information on our products, please visit our website: amscins.com or write us an email: info@amscins.com.

References

Nikhef, NL
AMOLF, NL
Reactor Instituut Delft, NL
Royal Adelaide Hospital, AU
Tribogenics, USA
Brookhaven National Laboratory (BNL), USA
Princeton Plasma Physics Laboratory (PPPL), USA
Stanford (SLAC/LCLS), USA

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10 employees

www.amscins.com

AMSTERDAM SCIENTIFIC INSTRUMENTS

AR Benelux

Specialists in test and measurement solutions from DC to RF

AR Benelux offers products from well established industry names including Teledyne LeCroy, Kepco and MITEQ. To compliment our standard of the shelf solutions we also provide custom solutions, a wide variety are offered ranging from AC/DC power supplies to special designed RF solutions.

European partner

AR Benelux is part of the AR Europe group of companies which consists of the European AR offices in the Benelux, Germany, France, United Kingdom and sales associates across Europe.

Product groups

- AC/DC Power
- Electrical Safety
- Oscilloscopes
- EMC
- RF/Microwave
- General T&M
- Custom Solutions

AE TECHRON® Precision Industrial Amplifiers

AMETEK® PROGRAMMABLE POWER

GLASSMAN HIGH VOLTAGE INC. Designing Solutions for High Voltage Power Supply Applications

AN ISO 9000 COMPANY KEPCO® THE POWER SUPPLIER™

MITEQ

TELEDYNE LECROY Everywhereyoulook™

Ronald Rehorst
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ar benelux bv

ATG Europe

ATG is recognized as a leading provider of specialized engineering, scientific and technical services to the Aerospace, High Tech and Offshore industry. With highly educated personnel operating in different branches ATG Europe provides access to the brightest minds. ATG has three main core competencies: Projects, People and Medialab.

ATG Projects

ATG Projects excels at delivering highly demanding engineering projects in the areas of structural, thermal and flow analysis. Our team of in-house engineers is experienced in analyzing and solving complex problems in demanding technical fields and industries. Major customers include the European Space industry, EADS/Airbus, Atlas Copco and Shell. From 2008 onward our focus has broadened to other challenging areas such as Offshore, Energy and High Precision. As an example ATG Projects has worked on structural parts of various Airbus aircraft, it has been responsible for the thermal design of the vegetation instrument on board the Belgian PROBA-V satellite and has given consultancy for the optimization of a supersonic gas separating system for Twister. Next to that it is and has been involved in various R&D projects ranging from investigations in new structural concept using composites to the development of a helicon plasma thruster.

ATG People

ATG People is the key player in delivering highly educated personnel for High Tech environments throughout Europe. Our brightest minds are engaged in innovative projects performing to high standards and utilizing the full extent of their professional knowledge. With our 30 years of experience we have access to the brightest minds in for instance structural, electrical, mechanical and automation engineering.

Medialab

ATG Medialab is our high-end 3D visualization studio that has the ability to visualize technical and scientific complex projects is unmatched worldwide. The outstanding reputation among customers is earned by the scientifically and technically sound visuals of complex subjects. Sectors of activities are the Aerospace, Semiconductors, Defense, Offshore and Energy industries.

References

ESA – OHB – Qinetiq – Kongsberg – ASML – TNO – EADS/Airbus – Lockheed Martin – Atlas Copco

Michiel Vullings
Manager Projects

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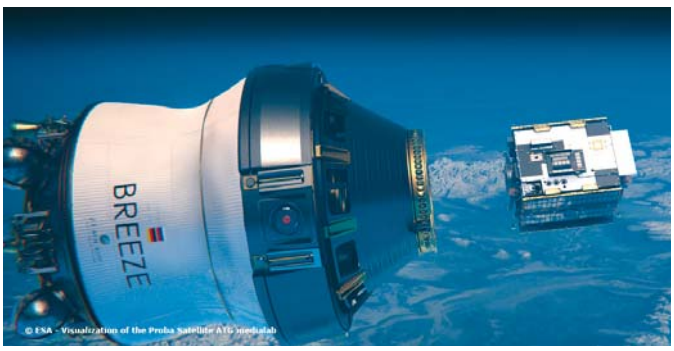


Atkins BV

Atkins BV, part of Atkins Aerospace and Atkins Plc, is a leading multinational aerospace design and analysis consultancy, with over 17000 permanent staff worldwide.
Atkins Plc operates in multiple markets, including: Aerospace, Defence, Highways & Transportation, Oil and gas, Nuclear, Telecommunications, Rail, Water and Environment.
As a result we have access to a variety of engineering capabilities such as Atkins Nuclear. Qualified to AS9100 : 2004 rev. C across all offices

Product information

We design and analyse main components for many new aircraft programs, as have emerged onto the market over the past ten years such as the Airbus A380, A400 M and A350XWB, Lockheed Martin JSF and Mitsubishi Jet:

- Wing structure including integration of engine, landing-gear and movables
- High-lift devices
- Fuselage structure and interior
- Future aircraft program concept studies
- Structural integrity prediction methods development
- Landing gear systems & structures engineering services
- Engine components for low pressure compressor

For ITER-NL, Atkins performed an optimisation study of the concept for Remote Handling Tooling of the Port Plugs.

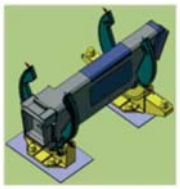
Specific expertise includes

Structural and mechanical engineering for large and complex international projects including integration and design for manufacturing.

- Structures – Light weight metallic and composites
- Systems – Landing gear, Controls, Fuel systems
- Interiors – cabin, cargo-hold, flight-deck
- Aero Engines – Compression & transmissions
- Our main tools are CATIA V5, Unigraphics NX, MSC PATRAN/NASTRAN, HyperMesh, PDM.

References

Our Customers include Airbus, Rolls-Royce, Fokker, Bombardier

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Head of Composites design, Aerospace

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ATKINS

Bakker Fijnmetaal

Company Profile

Bakker Fijnmetaal BV – development and manufacturing of ultra-precision parts and assemblies. Bakker Fijnmetaal concentrates on cutting technology based from proto up to high volume production with a far-reaching qualification standard.

The completely automated machinery guarantees short lead times and cost-efficient-production. Materials used include copper, brass, stainless steel, aluminum, titanium and various plastics.

Bakker has an assembly hall and a clean room, class 10.000 where experienced professionals carry out assembly work. All the means required to clean and assemble products are in house available.

To develop customer-specific products, Bakker Fijnmetaal uses Hypermill CAM software. Bakker Fijnmetaal is able to assist from idea, new product introduction (NPI), DFM (Design for Manufacturing) up to release for volume (RFV).

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www.bakkerfm.nl

BAKKER
fijnmetaal
precies, daarom

From 1 to 10.000 pcs, parts and assemblies!

Boessenkool

Machinery Manufacturer Boessenkool: knowledge, competence and facilities. Co-maker mentality. Pro-active thinking and handling. Based on a complete knowhow and service mentality. Engineering, steel structures, metalworks, mounting facilities and mechanical machining. When needed also supplied with controls, electronics and final treatment. For that reason "Made by Boessenkool" is a guarantee for quality and success to many of our customers.

Product information

Product	Description	Customer
Beampipe Bake Out Shell	Beampipe for electrons, matter research	CERN (CH)
Revolver Mobile Undulator Carriage	Electron fibration tool , matter research	E.S.R.F. (FR)
Galacsi Structure + Graal Tools	Alu structure to mount mirrors for space research	E.S.O. (D)
Product & Utility Swivel	Off-shore FPSO (Oil Production & Storage Unit)	Bluewater Energy Services (NL)
Rotary Bottle Filling machine	Bottle filling machine for the food industry	Stork (NL)
Compression Piston Rods	Piston Rod for high pressure compressor	Thomassen Compression (NL)
Rollers & Shaft for Test Bench	Rollers & Shaft of a testbench for trucks diam. 5 mtr.	Froude Hofmann (GB)
Warehouse Stacker Crane	Order picking unit for warehouses upto 40 mtr. height	FKI Logistex (World Wide)
Vacuum Vessel	Vacuum vessel for Wafer-Stapper production	ASML (NL)
Bearings & Gears	Bearing & Gear for Windmills upto 4 mtr. Diam.	Siemens (D) / Flender (D)
Services	**Description**	**Max. weight**
Milling	Upto 10 meters to 4 meters to 2 meters	60 tons
Boring	Upto 10 meters to 4 meters to 2 meters	60 tons
Turning	Upto 6 meters length with a diameter of 1 meter	20 tons
Vertical Turning	Upto 5 meters diameter with a height of 4 meters	60 tons
Fabrication	To customer specifications	120 tons
Welding	Certified welding in all materials and thicknesses	120 tons
Machine-building	Hardware incl. electronics, pneumatics and hydraulics	120 tons
Assembly	Products upto 60 meters with weight upto 120 tons	120 tons
Project-management	Projectmanagement incl. traceabillity	
Powder coating	Upto 4 meters long	
Hoisting	Hoisting capacity inside the factory is 120 tons	Max. 120 tons

Ing. E.M. Osse
CEO

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Turnover: 5 M€ | 40 employees

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MACHINEFABRIEK Boessenkool
Osse Equipment Manufacturing Group

Revolver Mobile Undulator Carriagesfor the E.S.R.F. in ,France. Repeating Paralellism tolerance between the beams is 0,05 mm over 2,5 meters incl. beam rotation.

Large Welding constructions including the Large Machining against small tolerances in just one factory!

Butraco

let BUTRACO hatch your idea!

BUTRACO is a small service oriented prototyping activity for machines & parts. We not only engineer but also manufacture. To save time and costs we often work from a sketch only, or convert/ adapt existing products. Knowing many production techniques and having a large network of sub suppliers we can offer the best suitable production technology. Our way of working guarantees professional solutions and low throughput times. We can deliver in a timeframe that it normally takes to merely draw it on paper .

Our offer:

- One stop shop for prototypes: we engineer **and** have it made.
- Over **25 years experience** in machine building and part making.
- **Know how**; always the best suitable production technology.
- Small, flexible, and thus **speedy results**.

References

Mostly universities or research institutes e.g. Technische Universität München (ZAUM) Germany; RIVM, The Netherlands, Adam Mickiewicz University, Poland; University of Evora, Portugal etc .

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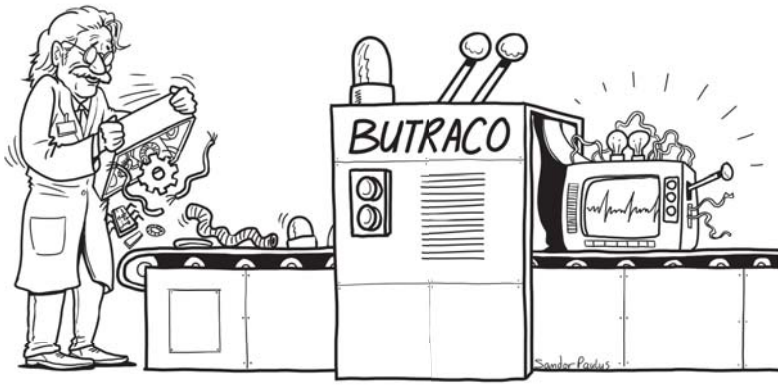
BUTRACO

expierenced in machinebuilding



CAPABLE BV

Cables and connections. That is the strength of Capable BV Cable Application Engineers. We develop customer-specific specialty cables and connectors as well as systems for a broad diversity of applications in high-tech environments (e.g. space industry, offshore and medical). Years of experience, a broad knowledge base and expertise in specialty cables are the basis for our solutions. You won't find a catalog at Capable; we develop unique solutions for every individual application. Capable is part of the TKH Group NV, an international group that is specialized in advanced telecommunication, electrical and industrial solutions (www.tkhgroup.com). Capable is an exclusive partner of Axon' within the BENELUX.

Products and services of CAPABLE BV

- Innovation support
- Micro-connection
- Micro assembly

Mr. Alex de Wijs

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www.capable.nl

capable
create your connection

CCM

CCM is a well experienced innovative product development company, founded in 1969.

Company Profile

We translate technology into solutions in the field of mechatronic products and systems.
Our main focus goes to the appropriate functionality, performance requirements and time-to-market, without ever losing track of product cost price and development costs.
Our competences in physics, mechatronics, mechanics, electronics and software enable us to support our customer's success.

Commitment, motivation, education and skills of our employees are the solid basis for our business approach.

CCM specializes in customized innovation for the semiconductor industry, medical diagnostics, pharmaceutics industry and the imaging and printing industry.

Edwin Langerak
Senior Project Developer

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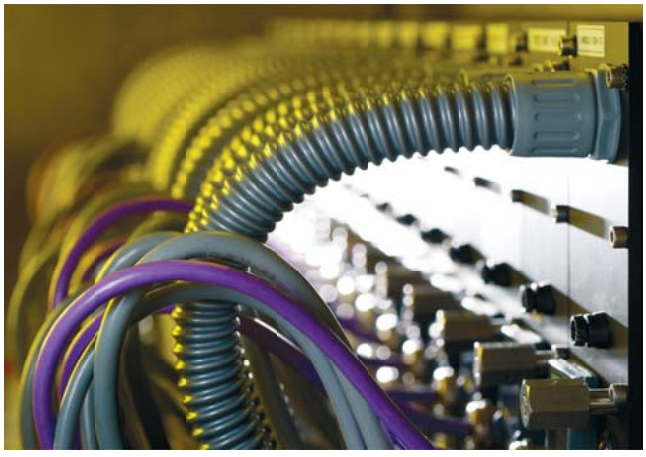
centre for concepts in mechatronics



DARE!! Development

DARE!! Development is a Research & Development company bases in Woerden, The Netherlands, specialized in the development of analog RF and EMC measurement instruments. In the past 20 years DARE!! has acquired a strong name in RF electronics. With the successful implementation of several daring RF projects for civil and military use, DARE!! Development is always stretching the limits.

Specific expertise includes

Our expertise lies in the field of:
- RF signal generation
- Analog LASER applications
- Custom made RF filters
- Custom made RF mixers
- Custom made antennae, including custom patch antennae.

In our state of the art facilities we can simulate designs, build fast prototypes and perform accurate measurements. As we can perform the total activities in house we have an very fast research and development cycle. Next to the hardware development we have our own embedded software team which has also expertise in the RF field.

References

DARE!! Development has performed projects for Dutch Defense, Dutch Government and many private companies. Our measurement systems are sold worldwide to renowned customers. Recently a RF power meter has been developed for the linear accelerator of DESY, Hamburg, Germany. This unique power meter is capable of measuring RF signals till 18 GHz at an unprecedented measurement speed of 1 Msamples/sec. At this moment the measurement speed is increased to 5 Msamples/sec. At the same time a trigger input/output is added.

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Technical Director

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45 employees

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DARE!!
Development

Deerns

Profile

Deerns is a multi-disciplinary consulting engineering firm founded in 1928 to provide expert design services in the fields of Energy Supply, Sustainability, MEP systems and Master Planning. With 22 offices in 12 countries we excel in combining sustainable and innovative concepts with reliable and practical implementation to help our clients build comfortable, safe and sustainable working and living environments.
Deerns' Clean Technology Group has extensive expertise and decades of experience in planning, designing and delivering contamination controlled research and production facilities and high tech laboratories to international standards (ISO, VDI, GMP, BSL, FDA).
In all our projects, we place our client's processes at the centre of the design. This approach is crucial in achieving a successful solution which effectively integrates all aspects of operations and processes with the facility, the supporting systems and the infrastructure. This methodology threads through the whole project, from concept development to completion and operation.

Markets

- Electronics
- Life Sciences
- Solar
- Containment
- Health Care
- R&D Laboratories

Services

- Project programming consultancy
- Project management
- Design and engineering
- Construction supervision
- Qualification and validation
- Hook-Up

References

To date Deerns has designed more than 200,000 sqm of contamination controlled area for a wide variety of clients and applications both in The Netherlands and abroad. References include ASML, Philips, TNO, MESA+, DIFFER, Solliance, NXP, COBRA, Erasmus Medical Centre and Space Research Organization Netherlands.

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Deerns

Delft Neutron Instruments BV

The long experience of Delft University of Technology in the development of instrumentation for neutron science now serves the global neutron scattering community through a spin-off company. Delft Neutron Instruments designs and delivers a wide variety of high-tech components for polarized neutron applications tailored according to your specifications:

- High-frequency magnetic flippers and our in-house developed HF-generators
- Foil-based flippers (like in SESANS at the TU Delft)
- Coils for adiabatic spin rotation
- General purpose custom build DC coils and guide field configurations
- Complete add-ons for polarized neutron and Larmor labelling applications (like on OFFSPEC at ISIS in the UK)
- Our product range will be expanded in the future, please contact us if you need any other components or instruments.

Delft Neutron Instruments BV delivers the full package: not only a component but also design, specify, install, and supply test reports and simulations.

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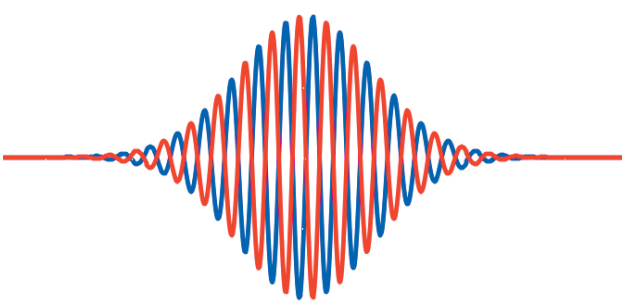

Delta Elektronika

DC Power Supplies

Delta Elektronika designs and manufactures DC power units since 1959. A power supply is seen as a minor part of any equipment and often taken for granted. For many just an electronic box ordered at the last moment. It can be compared with our heart. It's often neglected and we tend to pay even more attention to our hair. But if the heart fails the system goes down.

Design concept

By reputation, a Delta power supply must be reliable. This is why our design concept has a strong emphasis on excellent technical specifications and long life. The specifications of our products may seem unrealistic but turn out to be even better when measured. Delta users expect perfection and an almost infinite life time at continuous full power and low cost of ownership. An ongoing research program has resulted in production designs that can meet an ever increasing number of specifications.

Result

As a result of our design philosophy the units react more than 10 times faster on load transients, produce hardly audible noise and produce 10 – 30 times less electromagnetic interference. Delta customers will never face any problems due to radiated or conducted emissions of our power supplies. The same design philosophy applies for immunity: the toughest standard is not good enough for us. A Delta power supply will operate totally reliably even in a very noisy environment.
All our power supply units are thoroughly tested before being dispatched to the customer. All this ensures the long term correct functioning of each unit and client satisfaction. Delta Elektronika produces world class DC power supplies.
We are proud to hear our customers say: ***"you are making them too well."***

Service and Support

Just designing and producing excellent products is not enough. At Delta we believe that excellent power supplies are incomplete without outstanding service and support. Only the best manufacturers do not let you down when problems might occur. We keep on helping. Also when equipment has been bought many years ago or when you made the mistake.
For us it is only natural that Delta users get technical support and advice about applications within 24 hours. Lead times are as short as possible and our product support is at least 10 years after the production of a unit has been stopped. Just because our customers appreciate this.
Delta Power Supplies: excellent products, excellent service!

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DELTA ELEKTRONIKA
DC POWER SUPPLIES

Programme 12 March 2014

09:30 *Registration and welcome coffee*

10:30 **Welcome**
H.T. (Bert) Wolterbeek, director Reactor Institute Delft

10:45 **Introduction by the chairman of the ESS Partnerday**
A.G.A. (Toon) Verhoeven, Industrial Liaison Officer ESS

10:55 **The importance of the ESS for R&D in the Netherlands**
J.W.A. (Jeannette) Ridder, Dutch Ministry of Education

11:05 **The European Spallation Source and The Netherlands**
N. (Nico) Kos, Senior Manager (International)
Innovation Programme NWO

11:15 *Coffee break*

11:35 **ESS overview**
J.H. (James) Yeck, Chief Executive & Director General, ESS

12:00 **Science at ESS / Instruments and Future Users –**
how the Netherlands can be involved
D.N. (Dimitri) Argyriou, Science Director, ESS

12:25 **The Dutch in-kind contribution: present state and perspectives**
C. (Katia) Pappas, Head of the Neutron and Positron
Materials research group, TU Delft

12:50 *Lunch break*

13:30 **The Machine / The Accelerator**
H. (Håkan) Danared, Deputy Head of Accelerator Division, ESS

13:45 **The Target Station**
J. (John) Haines, Head of Target Division, ESS

14:00 **The In-Kind Contributions**
A. (Allen) Weeks, Deputy Director of Project Support and Administration

14:15 **Procurement and ILO Network**
A. (Allen) Weeks, Deputy Director of Project Support and Administration

14:30 Presentations by Dutch Companies
Ronald Dekker Demaco
Cock Heemskerk HIT
Hans Priem VDL-ETG
Victor Pastoor Grontmij
Hans Poolman Amsterdam Scientific Instruments
Erwin Lenten Imtech
Sander Kossen Het Huygens Huys

15:30 *Tea and cookies*

15:50 **Meet and Match** (schedule next page)

17:15 **Summary and Closing Remarks**
R. (Rob) Klöpping, Industrial Liaison Officers Network coordinator

17:30 **Drinks reception & buffet**

15:50 **Meet & Match**

After the presentations we have scheduled Meet & Match where all the persons who have given a presentation will be ready to have further discussions with the audience. This will be organized as follows: we will have high tables where people can stand around and where the speakers are divided in small groups in accordance with their expertise. Furthermore, tables are reserved for the ILO's and also for the RID experts, so they are ready to answer any questions, as well.

- Dutch governance Bert Wolterbeek; Jeannette Ridder; Nico Kos
- ESS science & Instr. James Yeck; Dimitri Argyriou
- ESS machine Håkan Danared; John Haines
- ESS business Allen Weeks; Ute Gunsenheimer
- Dutch scienc at ESS Brück Ekkes; Wim Bouwman
- Dutch instrumentation at ESS Katia Pappas; Lambert van Eijck; Jeroen Plomp; Ad van Well
- Het Huygens Huys Sander Kossen
- HIT Cock Heemskerk
- Imtech Erwin Lenten
- Amsterdam Sc. Instr. Hans Poolman
- Demaco Ronald Dekker
- VDL-ETG Hans Priem
- Grontmij Victor Pastoor
- ILO's Rob Klöpping; Toon Verhoeven
- Organisation André Groenhof; Kirsten Soekhoe; Yvonne Weijgertse-Janssen

DeMaCo Holland BV

If you are looking for…

- Support in Cryogenic Engineering
- Cryogenic expertise in manufacturing and installation of your Cryogenic Infrastructure like
  - Helium Transfer Lines
  - Helium Distribution Valve Boxes
  - Helium Interconnections between your facility and the storage tank or liquefier
  - Cryostats
  - Liquid Nitrogen Systems
- Optimisation or Modification of your existing Cryogenic Infrastructure

…please don't hesitate to contact us and send us your enquiries. It will be our pleasure to provide you with a suitable proposal with your Cryogenic Solution!

As a Partner in Cryogenics and Vacuum Technology, we are continuously investing in technological innovations and optimisations.
As a matter of fact our company has been accredited to ISO 9001, SCC**, ISO 3834-2 and PED H/H1

References

CERN

- Multiple Helium Transfer Lines for LEP, LHC, ATLAS and CMS
- UHV-chambers for LEP separators
- Helium Siphons
- Liquid Argon Valve Box

DESY

- HERA-by-pass Helium Transfer Lines
- Bunch Compressor bypass pipelines I and II
- Helium Valve Boxes and Transfer Lines for the X-FEL Test Facility
- Extension for the TTF Transfer Lines

ESA

- Main Valve Boxes for the LSS Satellite Test Facility
- LN2 Transfer Lines and Phase Separators

Triumf – NSRRC – ESRF – KIT – GSI – ITER – PSI – ISRO – NIKHEF – Helmholtz – Max-Planck

Ronald Dekker
Director

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DeMaCo
cryo and vacuum technology
Thinking in solutions

Dutch Space

Dutch Space is the largest space company in The Netherlands. It develops complex systems for space, civil & defence applications and is a System Integrator for multidisciplinary, multinational programmes. Subsidiary of EADS Astrium N.V.

Product information

Building on over 40 years of heritage, Dutch Space has acquired considerable expertise in the areas of both organizational/programmatic skills and in-depth engineering supported by advanced in-house tools and facilities, which can readily be applied to complex large research infrastructures. Typical space applications primed by Dutch Space are:

- the European Robotic Arm for the International Space Station, providing valuable heritage for ITER Remote Handling
- the main engine frame of the Ariane 5 launcher, a complex and technically demanding structural element
- various space instruments and subsystems for earth observation & astronomy, providing heritage for ITER diagnostics

Specific expertise includes

- Management of international multidisciplinary development projects
- Engineering for vacuum, cryogenic and other complex/hostile environments: thermo-mechanical & thermo-dynamic analysis; coolers, hot structures & thermal protection systems; advanced materials & processes; complex mechanisms.
- Control & robotic systems
- Real-time simulation and data-processing s/w environments

References

Customers include ESA, ESO, NASA and large European space contractors. Next to many ESA projects, Dutch Space has contributed to LOFAR, VLTI, E-ELT and is preparing for ITER contributions. Dutch Space is a key player in the high-tech industrial and institutional networks in the Netherlands.

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Head of Technology 8 Innovation

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Turnover: 75 M€ | 230 employees

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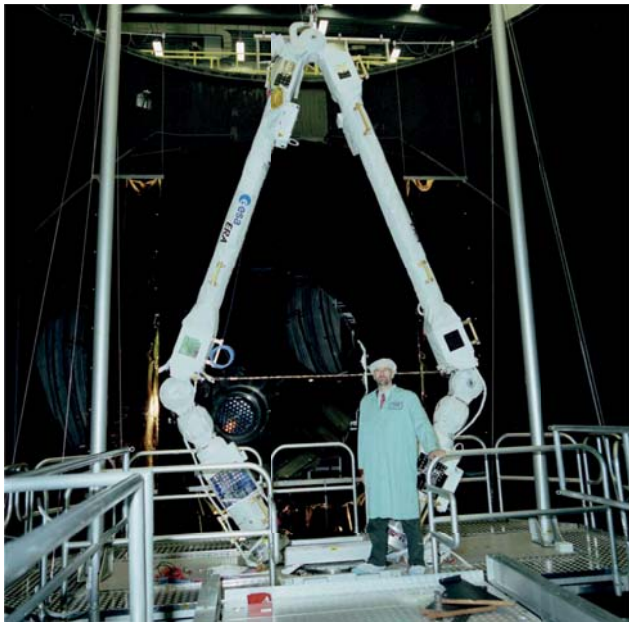
Dutch Space
an EADS Astrium company



Etchform BV

Etchform stands for "ETCHing & electroFORMing" of metal precision parts especially for high-tech applications.
With our know-how, our network and our enthusiasm we offer innovative (total) solutions with an optimal TCO (Total Cost of Ownership) during the entire lifecycle of your products.

Full Service

Etched and electroformed parts often require one or more additional processing treatments in order to fulfil their end function. These specialized treatments are outsourced, placing the requisite burden on your organization.

Etchform offers a full service option for this. With Supply Chain Management, we take over management of the supply chain as well as responsibility for the final result, thus increasing the added value and taking as much off your hands as possible.

Etchform has chosen to anchor these additional services in a strong network. Our network partners pool their resources within this network in order to realize concrete added value in the field of engineering, production and logistics. This network comprises professionals who have been successfully collaborating for years.

Additional processing options include:
- assembly;
- bending;
- precision mechanical treatments;
- laser cutting;
- surface treatments;
- heat treatments.

If YOU CAN SKETCH IT WE CAN ETCH IT

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Product Manager

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Futura Composites BV.

Specialists in Fibre reinforced Composites

Components for products of the future. That is what Futura Composites produces. As a specialist in fibre reinforced composites, we are a reliable partner for all manufacturers of high-grade technical applications.
Futura Composites operates at the very highest technical level. We supply products of high-grade material according to unusual designs, which require extensive engineering work and are produced using highly advanced techniques. An extremely high delivery reliability complements the picture.

Technology

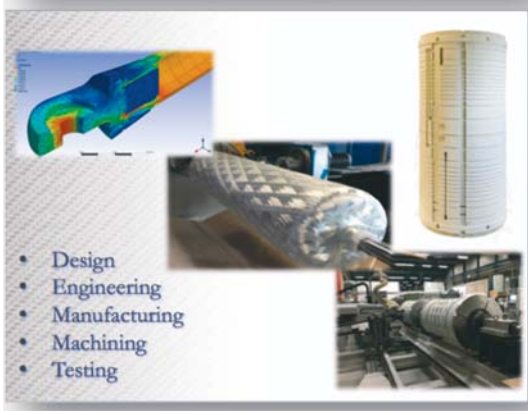
Futura Composites offers solutions for the technological challenges encountered by specific clients. We do not supply standard but only tailor-made products. Each product we make requires some measure of innovation. That is why creativity is central to our working methods.
Futura Composites performs the entire production process in-house, from design and engineering to production and testing. For this reason, too, we can guarantee the very highest quality.
Futura Composites is certified Iso 9001:2008 / Iso 14001:2004 / Iso13485:2003

Production techniques

- Filament winding
- Prepreg (In and out of Autoclave)
- Resin Infusion
- Sandwich Construction
- Resin Transfer Moulding (also Vacuum Assisted)
- Machining Composites
- Testing Composites

Materials

- Epoxy
- Phenolics
- Glass Fibres (E-R-S)
- Carbon Fibres (HM/ HS - Pitch /PAN)
- Aramids
- Dyneema



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Managing Director

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Futura
Specialists in fibre reinforced composites

Grontmij

Grontmij provides consultancy, design & engineering and management services in a broad range of market sectors related to the built and natural environment. We work in all sectors, ranging from infrastructure all the way to urban development, Energy and Water.

Within our range of expertise, we aim for European leadership in five Group growth activities: Energy, Highways & Roads, Light Rail, Sustainable Buildings and Water. Our guiding principle is sustainability by design which is a leading value proposition for our customers.
Grontmij ranks among Europe's largest engineering consultancies and has a presence in the Netherlands, France, Denmark, Sweden, Belgium, United Kingdom, Germany, Poland, Turkey and China. We have approximately 7,500 professionals around the world where we work on a project basis.

Our envisioned future – what we aspire to become, to achieve and to create

- Recognised by our clients for market leadership and quality of delivery.
- 'Sustainability by Design' is our leading principle.
- Preferred company for talented professionals and offering ample opportunity for development.
- Among the best on financial performance in the Consulting & Engineering industry.

Core purpose – our fundamental reasons for being

- We enable our clients to make informed decisions and well-considered investments as they develop our natural and built environment.

Core values – our enduring beliefs: engaged, collaborative and reliable

- Engaged: Our engagement is driven by our clients' desire to improve life and society. We have the courage to develop new ideas and pursue new ways of achieving a sustainable future. We stay committed, overcoming problems and obstacles without compromising our integrity. Our working environments ensure that everyone's untapped source of creativity adds value to our clients' solutions.
- Collaborative: For us, collaborative means being part of a collective effort to meet our clients needs. We pool our knowledge, skill and expertise – acting as one company and sharing the same goals. We work together to find win-win solutions with empathy and respect for all. Together we celebrate our success.
- Reliable: We aspire always to perform and deliver – on time and on budget. We do more than just the job; we do it well and we are always there for our clients – now and into the future. Clients, partners and colleagues can all rely on us to deliver quality performance. We aim to be down to earth and practical in all our dealings.

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Grontmij

Heemskerk Innovative Technology

Heemskerk Innovative Technology offers strategic and operational consultancy in the areas of robotics, mechatronics and hightech systems, and primarily targets the European institutional market.

Product information

Innovation Management – Heemskerk Innovative Technology (HIT) blends innovation management, systems engineering, and people management to support research projects and to develop spin-offs into proof of concept and market readiness, working in close cooperation with Institutes, Universities, and industrial partners.
ITER Remote Handling studies – During operation, plasma facing components of the experimental fusion reactor ITER will get activated and contaminated with radioactive and toxic materials. Remote Handling (RH) maintenance is performed by master-slave telemanipulation techniques. Heemskerk Innovative Technology develops new RH technologies and tools and validates RH maintenance sequences.
Virtual Slave – In an industrial partnership with Dutch Space and TreeC, HIT develops a simulation tool to simulate in real-time kinematics, dynamics and physical interaction of designs and environments imported from CAD software. The Virtual Slave system is multifunctional; it can be used to analyse the maintainability of components in the design phase, to validate maintenance procedures, to train operators and to provide operational support during maintenance operations.

References

ITER – Dutch Space – FOM Insitute DIFFER – FlexGen – TNO – Oxford Technologies – VDL APTS

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Managing Director

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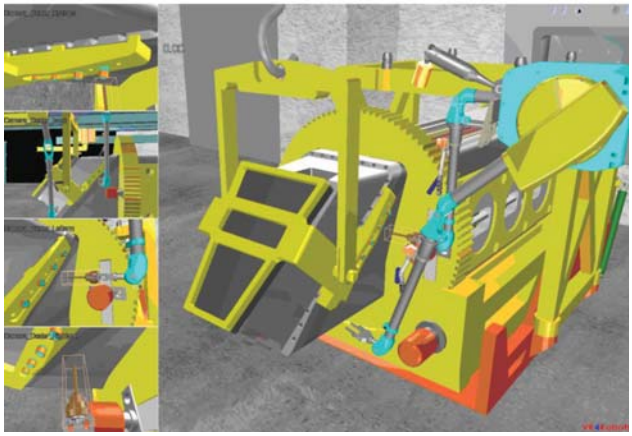
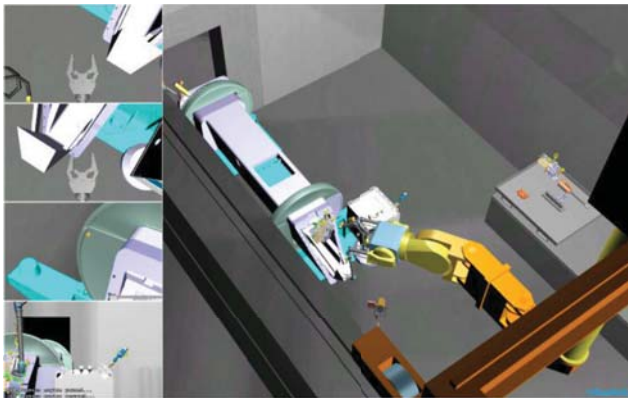
Turnover: 400.000 € | 7 employees

www.heemskerk-innovative.nl





Hositrad Vacuum Technology

Hositrad Vacuum Technology combines more than 45 years of experience in vacuum and cryogenic technology. We supply standard vacuum parts CF, KF and ISO components from stock.

Product information

Hositrad Vacuum Technology

- Have capabilities covering all areas starting from a standard flange up to designing a complete vacuum system,
- Manufacturing, repair and after sales service of vacuum equipment
- Experts in TIG-Laser and Microplasma welding en He. leak testing <1x10-10 mbar l/sec.
- Laser welding for medical devices and clean technologies
- Own production and an AutoCad design in Holland and in the Far East
- "Custom made specials" according to customer drawing in our workshop
- Supply the following products: CF-KF and ISO vacuum components – Electrical/Linear/Rotary Feedthroughs - Edge welded bellows – Isolators – View ports – Fiber Optics – Glass to Metal seals – Manipulators - Ferrofluidic feedthroughs – All Metal Valves – Angle Valves – Gate Valves – Diode Ion/Triode pumps and Titanium sublimation pumps – Cryopumps – Cryostats

Hositrad Vacuum Technology represent

Ceramtec: Ceramic-to-metal sealing technology. Hermetically sealed electrical & optical components include D-type/circular feedthroughs, multipin connectors, coaxial connectors, thermocouples, isolators, viewports and accessories.
These components are ideally suited to support optical, gas, liquid, power, instrumentation and sensing applications.
ColdEdge Technologies: provides custom <4K to 1000K closed cycle cryostats with interfaces.
Extrel: Extrel is the world's leading manufacturer of Research and Proces Mass Spectrometers, Residual Gas Analyzers (RGA's), Quadrupole Mass Spectrometry Systems and Components from 1-100 amu to 16000 amu
Thermionics: Manipulators, Valves, E-Guns, Ion Pumps, MBE Systems, Mechanical feedthroughs.

References

CERN, DESY, (XFEL, EMBL, Hasylab Hamburg), Helmholz Zentrum Berlin (Bessy, HMI), FZ Jülich, GSI Darmstadt, KIT Karlsruhe, GKSS, DLR, IPP Garching, PSI Villigen, ESA Noordwijk, ESRF Grenoble, ALBA Barcelona, FOM-Nikhef Amsterdam, FOM Nieuwegein and all Universities and Research Labs in Europe.

J.L.J. (Jurgen) Tomassen
Director

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Turnover: 4 M€ | 10 employees

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VACUUM TECHNOLOGY
Hositrad

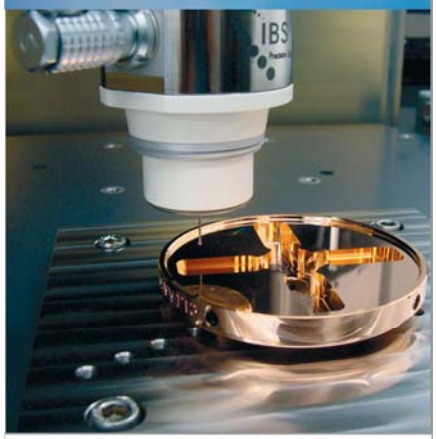
IBS Precision Engineering BV

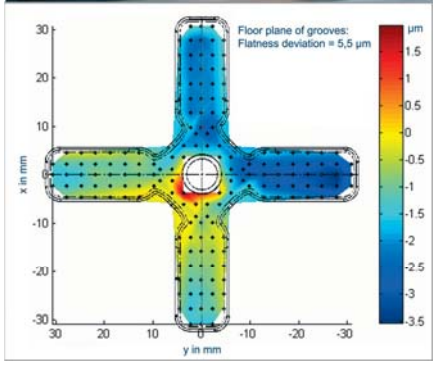
For over 20 years IBS Precision Engineering has been helping its customers to realise their demands for measurement, positioning and motion systems where ultra-high precision is required. With our expert foundation in metrology, we understand the true meaning of precision and how to help our customers achieve it.

IBS products and solutions can be found at leading companies world-wide serving industries from disk drive to semiconductor equipment, printing and medical systems. In the field of machine tools we serve both builders and users with measurement systems delivering significant bottom-line productivity improvements. For the research community, we provide support from standard ultra-precision components to custom made systems.

At IBS we have a long history in successfully helping our customers address unique problems. We do this through both our standard products as well as our design house. The latter provides support from feasibility through to pilot production for modules through to machines.

From advice on component application to full system design and realisation, our aim is to deliver the innovative solutions required by our clients where leading measurement or high accuracy motion capability is critical.





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IBS Precision Engineering

Imtech Industry International BV

Imtech Industry International BV is an international operating technical service provider with focus on Project Development, Engineering & Contracting, Operation & Service. Imtech Industry International has employed specialism on the Power Electronics, Energy and Oil & Gas markets.

Company information

Imtech's business unit Power Electronics has more than 40 years of experience in the field of Power Electronics and Applications. Activities within Imtech Power Electronics are conceptual- and detailed design, construction, assembly, factory testing, installation and commissioning of tailor made Energy Conversion and Distribution Systems for Scientific and Industrial applications.

Imtech, has gained a strong reputation of tailor made Energy Conversion solutions up to the following figures:

- current: up to 150 kA
- voltages: up to 100 kV
- rated power: up to 20 MW (continuous)
- up to 150 MW (pulsed)
- frequencies: up to 100 kHz
- stability: down to 1 ppm

Our solutions find their way into various applications for:

- Enrichment processes
- Nuclear fusion research
- Particle accelerators / synchrotrons
- Galvanic industry
- Film processes
- Electricity distribution grids
- Electrolysis processes
- Fuel Cell processes
- Renewable energy

Some of our references for scientific institutes

IPP Garching (D) – 145 MVA Modular Conversion System for ASDEX upgrade IPP Garching (D) – Extension of the Pulsed Power Supply Network of ASDEX by a set of Compact Modular Generators (8 MVA, 32 MJ), HFML Nijmegen (NL) – 20 MW DC Converter System – DESY Hamburg (D), Klystron modulator for the XFEL RF station Helmholtz Zentrum Berlin (D) – 8 MW 20 kA Power Converter System, Solvin Antwerp (B) – 1 MW PEM fuel cell conversion system

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Strategic Sales Manager

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Imtech Industry International is part of the Imtech NV Group | 400 employees.
Turnover: Imtech NV 5.1 Billion € | 29.000 employees (2011)

www.imtechindustryinternational.nl

Imtech

INCAA Computers

INCAA Computers is a well-established company with over 35 years experience in design and manufacture of professional high-tech electronic equipment for industry, science, and OEM. We provide solutions for technical automation projects and take system responsibility.

Product information

Applications extend from industrial and scientific scalable data acquisition systems through transient recorders, timing systems, superconducting magnet test benches and power supply control modules to alarm and safety systems.

Hardware Development: Modules can be designed from scratch or standard modules can be tailored to customers specific needs. Characteristic product properties are the high quality level and the relatively small to medium production volumes.
Software Development: Due to our in-house hardware expertise we know best to separate projects into hardware and software functions and how to interface them to build innovative fail-safe systems. Specialisations include system software, databases and graphical user interfaces.
System Integration: We not only deliver hardware modules and software packages but also integrate these with third-party components into complete functioning turn-key systems.

References

Our client base includes a wide selection of international organisations and companies:
CERN – Sincrotrone Trieste – GSI – UKAEA – MIT – FZ Juelich – Alstom – ASML

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Project manager

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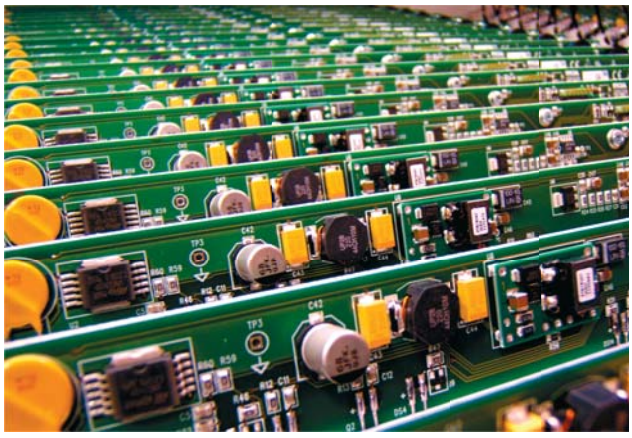

Inno4Life

Your Engineering-to-order Partner

Inno4Life is gespecialiseerd in complexe, klantspecifieke ''engineering-to-order" projecten voor met name de Life Sciences en andere hoogwaardige technologische industrieën zoals bijvoorbeeld de humane & veterinaire farmacie, de medische, healthcare, voedsel en semiconductor.

Onze kennis zit diep geworteld in de farmaceutische industrie op het gebied van het geautomatiseerde aseptische proces en bijbehorende (primaire verpakkings) machines. Vanuit die achtergrond hebben wij de expertise om in diverse vakgebieden, innovatieve oplossingen te bieden die beantwoorden aan de steeds veranderende behoeften van onze klanten.
Vertrouwende op de combinatie van vele jaren ervaring en vaardigheden op het gebied van het managen van grootschalige internationale projecten, bieden wij een compleet pakket aan oplossingen in de volgende gebieden:

- Equipment & Support
- System Integration
- System Optimization
- Expert Advice

Wij leveren een breed pakket aan equipment en diensten op het gebied van geautomatiseerde hoogwaardige productiemachines:

- System & module development
- System architecture design
- Engineering
- Prototyping
- Test equipment
- System improvement
- Validation
- Assembly
- Installation
- Service support

Inno4Life specialises in complex customer-specific engineering-to-order projects for the Life Science Industries, namely the Pharmaticeuticals (Human and Veterinary), Medical and Food Industries. Requests from other industries will be considered on a case-by-case basis.
Our knowledge is deeply rooted in the automated pharmaceutical packaging industry, we have therefore the in-built expertise, discipline and the very specific know-how to help overcome the evolving challenges constantly faced by our customers in highly regulated markets.

Johan Klootwijk
Managing Director

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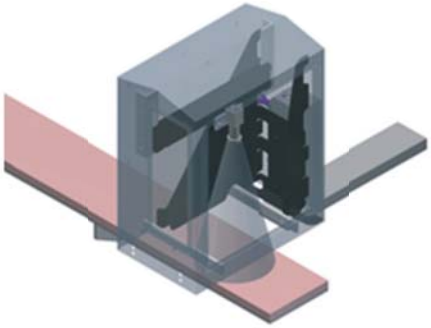
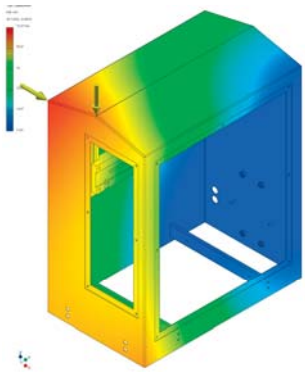




Irmco BV

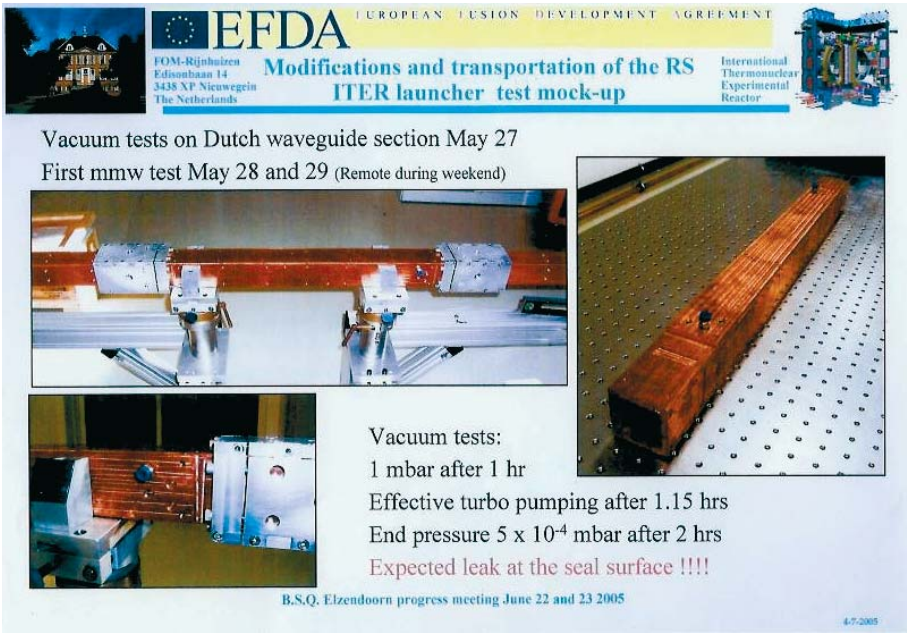
Irmco bv has been formed in 1972.

Irmco bv developed the legendary educational toy **Sjobus.**

Irmco bv takes the lead in co-operation between reliable Dutch companies.
Heeze Mechanics, Schelde Exotech, Innovation Handling, Sunfys, TNO.

Irmco bv gathers the technology experience and know-how to design and manufacture:

- **waveguides**
- **measuring instruments based on accoustics**



Michael Koot
Director

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Kin Machinebouw

System supplier to the industry. Long lasting experience combined with craftmenship. Specialized in certified welding constructions and the machining thereof.

Facts

- Expert in certified welding constructions in various materials; ISO 3834-part 2 and PED module D certified.
- Modern machining capabilities: boring 1.5x 1.5mtr, milling upto 4,5 mtr, horizontal turning up to 8 mtr, vertical upto 6mtr.
- Experienced engineering capable of co-ordinating large projects (up to € 3 mio).
- Experienced in the assembly and project co-ordination of complex machines.
- Extensive network of sub-contractors.

Industry served

Special machines and apparatus for e.g. Defense, Nucleair, off-shore, food and aviation industry. Supplier of pressure vessels, lifting and towing equipment and amusement rides.

Pim Buters
Sales

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KIN machinebouw

Landes High End Machining

Reliable supply of mechanical parts ready for assembly is the core competence of Landes High End Machining. Landes incorporates 30 years of experience in the manufacturing and on-time delivery of complex and/or accurate components for high end industries. Products are realised by means of CNC-turning, CNC-milling and CNC-measuring. This privately owned business was established in 1985 and has demonstrated consistent growth in turnover and technology development over the years. Landes currently employs approx. 50 employees and is both ISO 9001 and AS-9100C certified.

Capabilities

The capabilities within Landes range from the industrialisation of new components and qualification of manufacturing and outsourcing processes as well as high end machining of titanium (all grades), aluminium and high alloy steels. Manufacturing activities may include special processes like heat treatments, surface treatments, finishing and cleaning with the aim to deliver components that are ready for next higher assembly. The dimensions of Landes in-house manufacturing go up to 1000 x 1000 x 1000 mm. Documentation and traceability are an integral part of the quality management system within Landes.

Products

Structural parts, precision components, turbine components, landing gear components, interior components, frames, housings, limiters, rotation parts, pick- and place components, etc.

Markets

Aircraft- and Space industries, Defence (land systems, naval systems, air bound systems), Semicon industries, Optical industries, Medical equipment, Offshore industries, Special machinery.

References

Fokker, Airbus, Marshall Aerospace, General Electric, Stork, Pratt & Whitney, VDL, Siemens, Fresenius etc.

Certification

ISO-9001, AS-9100C

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Sales Manager Aerospace & Defence

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Landes
HIGH END MACHINING

Lencon

Lencon provides high end mechanical engineering. Core competencies are the development and optimization of complex products and systems.

Project based engineering
Lencon is an inspiring partner for engineering projects. Markets are Semiconductor industry, Defence, Space research and Medical.

- Engineering for smart cost reductions
- Reliability optimization
- Precision and optomechanical engineering

Add experienced engineers to your team

For many companies and scientific institutions Lencon is a flexible engineering supplier. Our engineers have acquired a wealth of experience by working on-site at a large variety of customers.

- Highly trained and experienced engineers
- Large support network of professional colleagues
- Added flexibility
- Outsourcing of FEM engineers

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Business Developer

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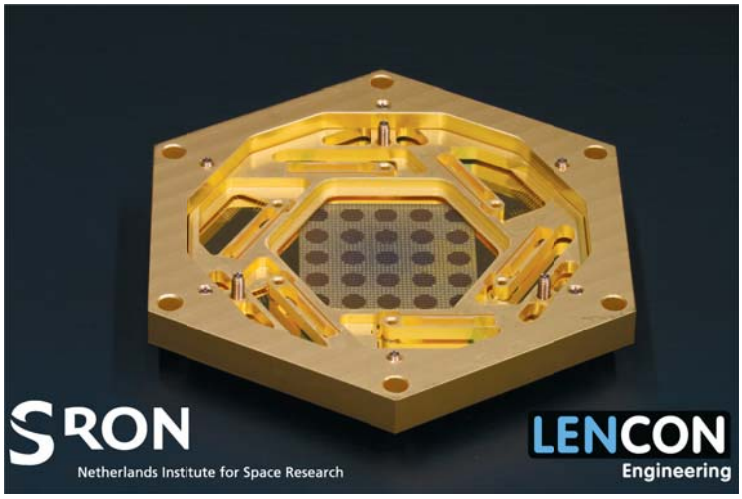
LENCON Engineering



Mat-tech B.V.

Mat-tech B.V. is an innovative metallurgical company with a proven track record as interconnection technology supplier. Mat-tech consists of two business units and focuses on research, development and production of high-tech soldering and brazing.

R&D and Production

Mat-tech Development & Testing has specialized in development, optimization and implementation of innovative joining technologies. Various services such as contract R&D (e.g. application and process development), consultancy (process improvement), testing services (reliability) and failure analysis, prototyping and special alloy production are offered. Mat-tech Production offers the opportunity to outsource your high-tech soldering and brazing production, for large series as well as for single pieces.

Mat-tech is servicing a wide variety of industries, a.o. medical, lab equipment, electronics, electronic components, automotive, machine building, process industry, solar industry and aerospace.

Know-how and Equipment

Both extensive know-how as well as in-house equipment are present at our company and through our trusted network.

A wide variety of equipment, such as Scanning Electron Microscopy equipped with Energy Dispersive X-ray Spectroscopy, Optical Microscopy, Meniscograph (Wetting balance) and furnaces for vacuum brazing, inductive soldering, etcetera.

Industrial applications

Mat-tech is servicing multiple industries, such as medical, lab equipment, electronics, electronic components, automotive, machine building, process industry, solar industry and aerospace.

Erik Brom
Technical Commercial Director

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mat-tech
innovative soldering & brazing

MI-Partners

Innovative High-End Mechatronic Solutions

Our company

MI-Partners is your contract R&D partner for the development of high-end mechatronic systems. Offering the complete cycle of predevelopment, design, realization and testing of high-tech systems, MI-Partners can assist you in your development efforts. MI-Partners uses a compact and highly educated team which results in fast solutions that work. Operating in a wide variety of market sectors results in solutions that characterize themselves as fresh, innovative and out-of-the-box. Choosing MI-Partners means choosing for open communication throughout your project, profiting from the mechatronic approach and reaching your goals on time.

Our competences

To assist in developing mechatronic total solutions, MI-Partners has a high level of knowledge of the customary mechatronic disciplines and competences at its disposal:

- Design principles for precision engineering
- (Advanced) motion and equipment control
- Predictive modeling (dynamic/thermal)
- Dynamic error budgeting
- Floor vibration isolation
- Air bearing design
- Design for vacuum/contamination
- Magnetically levitated systems
- Optics

and of course:

- Project management
- Customer focus
- Cost awareness

Leo Sanders
Director

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30 Employees

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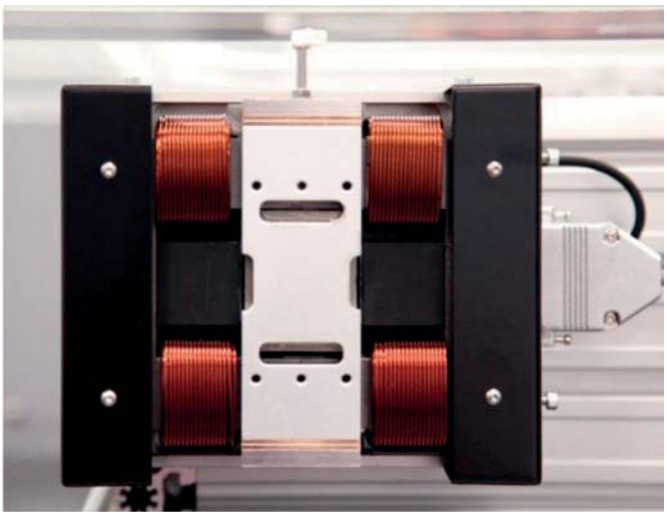
MI PARTNERS
PARTNERS IN MECHATRONIC INNOVATION



New Cosmos – BIE

New Cosmos – BIE is a supplier of stationary and portable gas detection equipment, mixing high qualified gas detectors with smart forms of communications suitable for applications in gas and oil as well as any other type of industry.

Started in Europe over 25 years ago with a range of detectors for the Semiconductor Industry, New Cosmos – BIE is effectively since early 2011 a part of the global New Cosmos organization.
Together with our 60 years old parent company, New Cosmos based in Japan, New Cosmos – BIE serves beside Europe also customers in the Middle East and North Africa.
Our mission is to create a safer global environment with a reduced number of accidents.
Whilst continuing the developments of products and combining the excellent technology from both sides we aim to create a safer world with a reduced number of accidents in the industry and living environment.

Our strengths
- Sensor technology in house
- Over 50 years of experience
- Reliability
- Unique Selectivity
- Long life time
- Extended range of sensors for different gasses

Solutions for the following markets:
- New Energy Markets
- Gas & Oil Exploration
- Chemical & Petrochemical
- Automotive Industry
- Laboratories
- Micro Electronics
- PV Industry

Product range:
- Fixed gas detectors (diffusion/suction)
- Portable gas detectors
- Alarm systems
- Software supervision systems
- Grease /oil dust meter
- Odor level indicators
- Residential detectors

Services:
- Maintenance
- Upkeep
- Repair
- Training
- Survey

References

Within the Netherlands: University Twente, University Delft, TNO, University Eindhoven, Smitovens, NXP, Shell, Philips, Fanuc, Yaskawa, Dow, DSM, Glaesum, ECN, Outside the Netherlands: ST Crolles, X-fab, Analog Devices, Helmholz, Fraunhofer, University Sheffield, University Swansea, Toyota, Kawasaki, Zarlink, University Lund, Airliquide, Praxair, L-foundry, University Madrid

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NEW COSMOS - BIE

Omics2Image

We offer you the benefits of cutting edge technology developed by the Biomolecular Imaging Mass Spectrometry group of Prof. dr. Ron Heeren at Amolf.
Our customer-focused team consists of scientists and engineers with a vast global experience. We close the gap between innovation at the frontier of science and ready-to-use products for science and industry.

Product Information

With the IonPix camera molecular images are not constructed in a conventional manner point-by-point, but directly detected in the microscope mode.
Inside a mass spectrometer in a 100-200 micrometer area, molecules are isolated, ionized and accelerated with a particle beam or a laser. The new system leaves the spatial distribution of ions intact while they fly through the mass spectrometer. These ionized molecules are detected at the end of the flight tube, where arrival time and location are recorded. With the conventional detectors, this was quite complicated or it simply proved impossible. The camera is based on a chip detector (Timepix) that has been developed for high-energy physics at CERN, for more information see the Medipix Collaboration. This technology produces all molecular images with a single laser flash. Each pixel in such a molecular picture compares to 500 nanometers of tissue, and in one experiment more than 250,000 spectra are simultaneously collected. This is a major improvement in resolution and measurement speed.

The AMOLF group has deployed this new form of molecular photography among others for breast cancer research.

References

Nikhef, NL – AMOLF, NL– Netherlands Proteomics Centre (NPC), NL– Korean Research Institute of Standards and Science (KRISS), South Korea

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3 Employees

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Q-Sys

"Q-Sys offers a unique service to motion system users. Whether your requirement is for a single system for research or development work or you are looking for a supplier of series production motion platforms, you have found the only partner you need. With its extensive experience in the specification, design and build of motion and positioning equipment, Q-Sys can take your basic outline or well defined specification and produce exactly the system you require, instead of trying to force an off-the-shelf product to fit your needs. The motion systems we produce use the very latest technologies to ensure performance to your exact needs, be it accurate motion control, precise positioning, stability, etc.

Q-Sys systems have applications in many varied industries and in every application there are a number of key measurables that defi ne system performance. These include geometric and positional accuracy, acceleration and velocity and, some times most importantly, system eigenfrequencies and bandwidth. By a combination of detailed design, modern CAD tools and experience, Q-Sys offers systems that precisely meet the requirements of the given application in a cost effective and timely manner.

As a manufacturer of systems rather than components, Q-Sys is able to pull together the very best hardware available, including motors, encoders, bearings, drive amplifiers and multi -axis motion controllers. At all stages of the design and build process, Q-Sys engineers can work as closely with you as you require. From the initial concept discussions, through feasibility study, CAD design and on to system build and test, your involvement is encouraged. This will take the form of regular discussions, design reviews and sign-offs and even witnessed acceptance tests to validate system performance to the quoted specification.

As an added service to customers, Q-Sys is able to off er complete turnkey system solutions. This provides a motion platform configured as part of an overall package, that may include, for example, a laser source for welding, scribing or cutting, a safety or controlled environment enclosure, integration to existing inhouse systems, etc. In these cases the overall system is designed with safety and CE conformity in mind and is delivered, installed and commissioned with full certification. This method ensures your process is up and running far quicker than normal and with minimal impact on your own internal resources.

Finally, Q-Sys offers a comprehensive technical support service for many types of motion systems, ranging from telephone support, through system service and repair, to scheduled preventative maintenance contracts for production systems where availability and reliability are paramount."

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Managing Director

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S&T

Science & Technology (S&T) has more than 10 years experience in the development of data analysis software for both engineering- and science data. S&T's expertise is applied in a wide range of domains, including space and earth observation, astronomy, oil and gas industry, navigation, and high-tech machinery.

Product information

The objective of S&T's data processing software is to extract as much information from sensor data as possible. The data processors systems are used to wide range of applications. These applications include (i) the extraction of scientific information from sensors such as Earth Observation sensors for atmospheric research and telescopes for space research, (ii) to derive an accurate estimation of a system's health so that imminent failures are recognized before they actual take place, (iii) to derive the exact positional information using various navigational sensors.
For System Health Management (SHM) applications S&T has developed the Uptime tool. This tool encapsulates the state-of-the-art SHM technology to avoid unnecessary downtime, alarm rate reduction, fault diagnosis, and the prediction of imminent failures.
Our scientific data expertise focuses on the analysis of large science data-sets, data visualisation, simulation, the development of software-pipe-line systems and calibration algorithms. The S&T expertise focuses on the (pre-) processing and visualisation of raw data and the generation of calibration key-data for level 0-1 and 1-2 data processors. In addition we develop user interfaces that allow quick-access to level 2 science and housekeeping data.

References

System health management for the ESA future launcher rocket propulsion – calibration and data-pipeline activities for the LOFAR radio telescope telescope – ITER NL vacuum leak detection and localization – data quality control toolbox (Quadas) used for ground- and space segments for missions such as SWARM, CroyoSat-2, Galileo, Sentinel-1, Sciamachy – on-ground and in-flight calibration activities for various Earth Observation missions such as OMI, GOME, Sciamachy, and Tropomi.

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Turnover: 6 M€ | 80 employees

www.stcorp.nl

s[&]t
dependable solutions

Uptime:
System Health Management of Complex System

Schelde Exotech

Schelde Exotech offers her clients design, fabrication and testing of high quality and complicated equipment. Schelde Exotech offers a wide range of products of Exotic materials like: Nickel Alloys, Copper Alloys, Cladded Steel, Aluminium, Titanium, Tantalum, Zirconium, etc.

Product information

Schelde Exotech has a rich history, based on last century companies: AKF Goes, Schelde Boiler Division and Schelde MT-Products. Schelde Exotech was founded in 1998 and is a member of the VE Group since 2009.
Schelde Exotech is specialized in the design and manufacturing of 'Special Products'.
Special components – Vacuum systems – Heat exchangers – Reactors – Pressure vessels – Airfin coolers – Gasification burners – Super heaters – Repair and maintenance in Exotech facility – Repair and maintenance at client's site/ facility
Schelde Exotech has a fully staffed Design Departement and uses modern design tools like: AutoCad (2D design program); Mechanical Desktop (3D design program); Inventor (3D modeling-design program); PV Elite (ASME Code calculations, PD 5500); Scades (RToD); BabsyWin (EN 13445 Code calculations, AD 2000); Ansys.
Besides special products and services Schelde Exotech is also a reliable partner for repairs and replacement projects. Schelde Exotech has a 24/7 helpdesk when it comes to emergencies. Schelde Exotech will mobilize a repair team at earliest possible convenience, usually available within a few hours.

References

Scientific experiments – Research Institutes / Universities – Nuclear energy – Oil & Gas – Energy – Defence – Particle physics – Chemical and petrochemical industry

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Turnover: € 20.000.000,00 |
100 employees; total capacity 240,000 man-hours

www.exotech.nl

Settels Savenije van Amelsvoort

Research, development and engineering of high tech products and equipment. The core of technology within Settels Savenije van Amelsvoort is mechanical engineering, process modelling and process engineering. Our company has in-depth knowledge of and experience in analyzing, specifying, developing and engineering products, processes and equipment. We are experts in translating the specifications of complex physical processes into working mechanical products. In our Strategic Management consultancy practice, we also audit technology enterprises and/or their departments. We implement and manage (organizational) change to improve their performance.

At Settels Savenije van Amelsvoort group of companies, we believe in continuous learning, communicating and inspiring. We value creativity and accurately describing and understanding things. To achieve this, we create a strong fundamental basis in our expertise: physics, mechanical engineering and control systems engineering. We encourage persistence in explaining the unknown and questioning unfounded decisions. Based on these fundamentals, we develop innovative technology, transforming ideas into functional products. We help people and organizations in their continuous improvement, enabling what was perhaps presumed to be impossible.

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settels savenije van amelsvoort
TECHNOLOGY - INNOVATION - INSPIRATION

Sumipro

For over 15 years Sumipro supplies high precision optics for customers all over the world. Sumipro advises medical, aerospace and defense industries and designs and produces optical products and systems for them.

Product information

Sumipro realizes custom made solutions for your optical challenges: human contact lenses, optics for night vision systems or reflectors for all kinds of light sources, etc.
Consultancy and design – Sumipro offers innovative solutions in design, engineering and rapid prototyping, choosing the right optical components and creating superior optical systems. Our engineers are specialized in designing aspherical and non rotational-symmetric optic components to achieve systems with high per-formance and less components.
Quality optics – Sumipro develops and manufactures optical components and systems with competitive prices and a very high degree of accuracy. Our inserts have tolerances in focus lengths within 0.1% instead of the typical 1 till 5%.
Mirror optics – Sumipro specializes in aspherical and diffrax surfaces for mirrors. Max. diameter 300 mm, Material: various aluminium alloys,copper, Arcap, or other machinable materials. Applications: Space, Imaging optics and Laser applications.
Specifications for mirrors – Geometries realized: Spherical and aspherical surfaces – Fresnel and diffrax patterns – Off axis mirrors – Parabolas and ellipses.

Form accuracies in general reach PV-values smaller than 350 nm with irregularity beneath 1 fringe (633 nm), depending on material and size.
Coatings – gold, silver, alumimium enhanced or protective (non oxidizing) coatings.
Infra red optics – Sumipro specializes in aspherical and diffrax surfaces for lenses, max. diameters 240 mm, most often realized in germanium, silicon and high purity float zone silicon (HPFZ): Applications:
Night vision – Thermal imaging optics – Space applications
Specifications for IR lenses – Spherical and aspherical surfaces; Fresnel and diffrax patterns; Off axis; Parabolas and ellipses. Form accuracies in general reach PV-values smaller than 350 nm with irregularity beneath 1 fringe (633 nm), depending on material type and size. Roughness values (Ra) typically reach values of 5 nm or less.
Coatings – Lenses are commonly supplied with AR coatings, ranging from 3-5 µm or 8-12 µm or variations. Reflectivity R < 0.5% or even smaller upon request. All IR coatings are compliant with most MIL-specifications. Besides AR we can supply front sides with DLCs

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Turnover: 1.5 M€ | 9 employees

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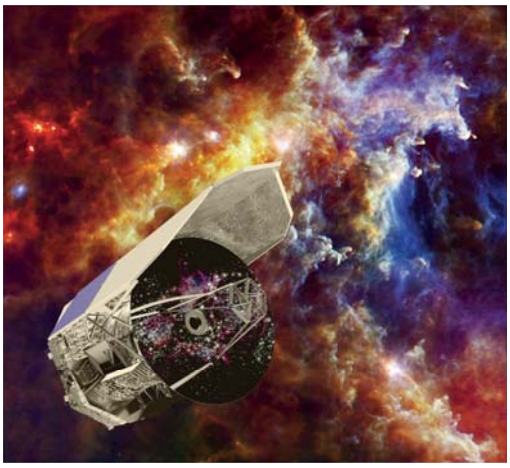
SUMIPRO bv
Submicron lathing

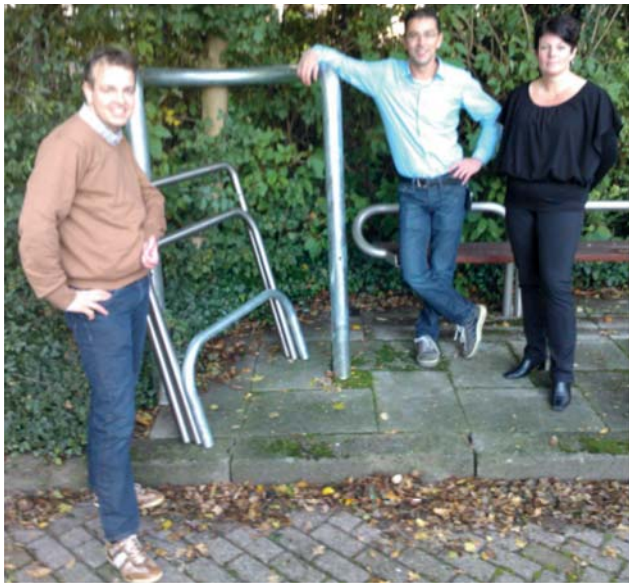


Tebunus Tube Bending

Flexible With Metal vindt u terug in onze gehele organisatie.

Als klant ziet u dat terug in: korte levertijd indien noodzakelijk (veel gangbare materiaalsoorten en afmetingen hebben wij op voorraad) een zeer breed spectrum van materialen welke wij kunnen verwerken waaronder vele kwaliteiten naadloos en gelast koolstof- en roestvaststaal, koper, diverse aluminiumlegeringen en verschillende soorten 'exotische' metaalsoorten diverse andere bewerkingen kunnen in eigen beheer worden uitgevoerd.

Voor u betekent dit dat u één contactpersoon heeft voor uw complete opdracht en dat de uitvoering in betrouwbare handen is. Wij investeren continue in ons machinepark, uitbreiding van onze buiggereedschappen en in de vakbekwaamheid van ons personeel. Zo zorgen wij dat u altijd die kwaliteit krijgt waar u om gevraagd heeft.
Onze specialiteit is bocht met kleine radius wat de ontwerpmogelijkheden vergroot. Een buigradius tot 1 x de diameter van de buis is mogelijk in specifieke pijpsoorten. We buigen buizen en pijpen van 2 tot 114,3 mm diameter in staal en RVS en tot 168 mm diameter in aluminium. Levertijden tot enkele dagen bij kleine partijen behoord tot de mogelijkheden.



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Tebunus
FLEXIBLE WITH METAL

Technobis Group

Technobis Group is a developer and supplier of high-tech instruments and modules for the most dedicated national and international OEM companies.

Core competencies: photonics, mechatronics, assembly and testing

Technobis Mechatronics: Technobis Mechatronics specializes in complete product development projects, from the initial idea to a successful turnkey product, prototype or series product.

The main scope for which we use our technologies and competences are amongst others the complete turnkey delivery of:

- Inspection / measuring systems
  - Probe manipulators
  - Optical inspection systems
- Handling systems
  - Servo driven manipulators
  - Gripper units suitable for harsh environments, remotely operated
  - Vacuum chuck units suitable for harsh environments, remotely operated
- Design and engineering of graphite, carbon reinforced carbon and other ceramic parts used for the handling of products in a harsh environment.
- Life science instruments
  - Crystallization research
  - Confocal fluorescence microscopy

Technobis Fibre Technologies

Technobis Fibre Technologies specializes in the development and supply of total solutions in high-speed, high-resolution and multi-sensor fibre interrogators and sensors.

Optical fibre sensors find widespread use in a multitude of applications due to their small size, light weight, inertness to chemical substances, ability to withstand high temperatures (~900°C) and immunity to electromagnetic interference. As a result, optical fibre sensors are frequently used for applications such as structural health monitoring, condition based maintenance and other specific sensing applications. Technobis Fibre Technologies current interrogator systems allow resolution levels ranging from 1 picometer down to 2 femtometer wavelength shifts, allowing the user to detect nano strains at speeds up to 80 kHz or higher. This is of great benefit in a large number of highly demanding applications. In order to meet growing demand from the market, Technobis Fibre Technologies has initiated a trajectory to develop Photonic Integrated Circuits for the new generation of interrogators capable of meeting at least the same specifications.

References

ASML – Fei – Airbus – Boeing – NLR – Tata Steel – Vistec – Polytec – IHC – RGS development

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Technobis Group

Tessella

Tessella is the international provider of science powered software technology and consulting services. World leading organizations choose our unique blend of science, software engineering and sector expertise to deliver innovative and cost-effective solutions to complex real-world commercial and technical challenges. Our people are high achievers from leading universities and are passionate about delivering value to clients; more than 50% hold PhD qualifications. We are proud that our work makes the world a better place to live in: developing smarter drug trials; preserving the digital heritage of nations across the globe; minimizing risk in oil and gas exploration; controlling the orbit and attitude of satellites; researching fusion energy.

Services

IT Consulting Tessella IT consulting services advise businesses on how best to use information technology to meet their business objectives. We provide a broad range of IT consulting skills that include: business analysis, IT strategy, supplier selection and IT architecture.
Technical Consulting With over 100 PhDs in the company, and a broad experience in academic and industrial research across a wide range of sectors, Tessella constitutes a world class problem solving engine able to bring novel ideas and innovation to your business.
Science Powered Software Development & Systems Integration has been at the heart of what we do for over 25 years. In that time we have designed, built and deployed thousands of successful software systems and IT projects, for hundreds of clients.

References

Tessella customers include: JET fusion research laboratory – ITER – TNO – Deltares – European Space Agency – Dutch Space – Rutherford Appleton Laboratory – Diamond Light Source – AkzoNobel – Unilever – Shell – Koninklijke Bibliotheek

"Tessella's background in science and their professional approach to system design and development means we have been able to significantly increase our overall capacity, efficiency and quality." — Aart Wismeijer, Senior Researcher, High Throughput Experimentation. AkzoNobel

"…Tessella really understands R&D users and processes. This translates into responsive levels of support, and a real appreciation for how each application can be enhanced going forward." — Pete Keeley, Innov8 Programme Manager, Unilever

Dr. Eric Arends
Operations Manager

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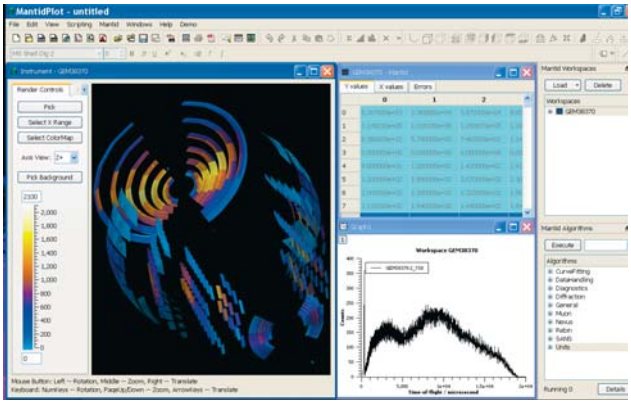
Turnover: €23M | 240 employees

www.tessella.com

Tessella
Technology & Consulting



TNO

It is TNO's mission to help the advanced Dutch industry in innovating. One of the focus areas of TNO is Big Science with activities in ground based astronomy, nuclear fusion, CERN/CLIC as well as in space instrumentation and other projects.

Product information

TNO provides system architecture, multi-disciplinary (pre)design, alignment plans and execution, calibration plans and execution, and control of high-end opto-mechanical instruments and mechanisms. Realization and delivery of these systems is preferable done with industrial partners, certainly for larger instruments and for series production. Thus, TNO hopes to open new markets for these industries.
The instruments that TNO develops are characterized by picometer stability and sub-nanometer positioning accuracy; often operating in extremely hostile environments with long life time; and where necessary with intelligent image interpretation.
TNO's expertise in (adaptive) optics, mechanical engineering, control, image processing and contamination control enables the development of a wide range of complex instruments and mechanisms. Our flexure or magnetic bearing-based mechanisms have low friction and zero hysteresis. We produce quality optics with low wave-front error from a variety of materials including Aluminium, Fused Silica, Silicon Carbide and Molybdenum. We know how to prevent, monitor and remove contaminants, ensuring long life times. And our abilities to process and interpret images are worldwide unrivalled.

References

For nuclear fusion, TNO developed endoscopes (CXRS, Lidar), a control system for the plasma, contamination control tools and image processing for *in-situ* repair. For ground based astronomy,
TNO has been playing important roles in the ESO programmes VLTI and E-ELT on delay lines, mirror actuation and laser launchers. TNO has developed tools for extreme precise measurements and control on aspherical optical parts and for rapidly finding particles on wafers. TNO's experience in space is applied in HIFI for Herschel, metrology for Gaia, OMI and soon also TROP-OMI and delay lines for Darwin. Important commercial customers of TNO in the field of high-end optomechanics are ASML and Carl Zeiss.

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Turnover: 494,6 M€ | 4,400 employees

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TNO innovation for life

Van Halteren BV

Company profile

Van Halteren Special Projects (VHSP) is part of the Van Halteren Group which has the following business activities: High Voltage Products, Defence and Industrial Services. The group is and independent family owned business with production facilities in The Netherlands, Poland and India.

VHSP aims for multidisciplinary projects where competences as advanced heavy machining, certified welding, assembly and commissioning are a requirement. Our production facilities in Bunschoten comprises 12.000 Sqm. equipped with state-of-the-art machinery, a modern construction shop and conditioned measuring facilities. Our staff is motivated, skilled and very experienced.

Markets

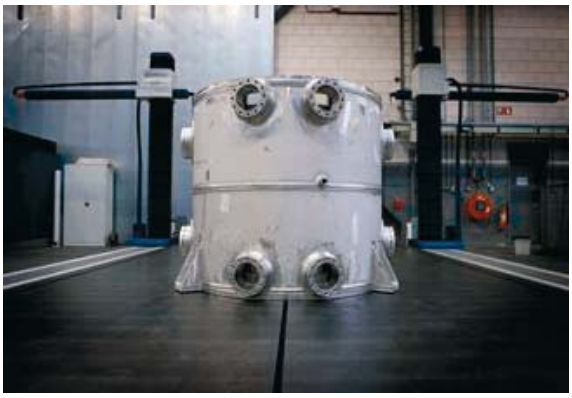
- Offshore
- Oil, gas and mining
- Applied science
- Shipbuilding
- Defence
- Sustainable Energy

Competences

- Advanced heavy maching
- Certified welding
- Project management
- Assembly, Integration & Commissioning
- Engineering
- Measuring up to 6 meter

Products

- Road wheels
- Simulators
- High voltage switches



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VAN HALTEREN

VDL Enabling Technologies Group

VDL Enabling Technologies Group is a globally operating tier one contract manufacturer of parts, mechatronic modules and systems. VDL ETG focuses on long term / strategic partnerships with its customers.

Product information

VDL ETG provides solutions based on its core competences: Precision Technology, Vacuum, Material Handling, Material Positioning, and Industrialization. This throughout the entire product life cycle: basic research, proto typing, ramp-up, volume, and end-of life.

Products

Mono parts, complex high-end modules, complete (mechatronic) systems.

Markets

VDL ETG serves a number of OEM industry key segments: Semiconductor Equipment, Analytical, Medical, Solar, LED, and Science & Technology.

Science & Technology

VDL ETG is specialized in the (co)development and manufacturing of high precision parts, sub-assy's, complex modules. All products require high / ultra precision turning & milling, high-end metrology, bonding, RF testing, and heat & surface treatments. The defined production strategy determines yield, cycle time, and cost of ownership. Our strength is to rapidly translate highly innovative, complex product designs into tangible products ready to enter small series production. Typical key markets within Science & Technology: accelerator, FEL, aerospace, and instruments.

References

Semiconductor Equipment: ASML, AMAT, KLA Tencor, CymerAnalytical: KLA Tencor, FEI – **Medical**: Philips, Elekta, Waters – **Solar & LED**: AMAT, Veeco – **Mechanization Projects:** P&G, Kellogg's, Bosch – **Science & Technology**: ESO, ESA, ESRF, TNO, PSI, CERN

Hans Priem

Business Manager Science & Technology

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Turnover 2011 E500M | 1750 employees

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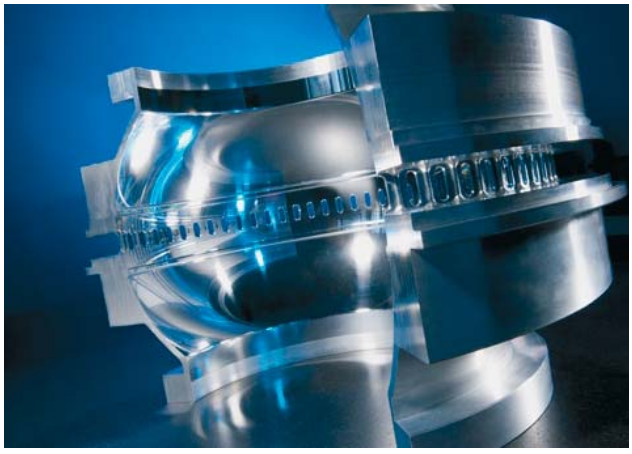

Vernooy

Vernooy is a distinguished specialist in vacuum technology and in developing and manufacturing vacuum parts and equipment.

Product information

Vernooy is specialized in vacuum engineering - process control, from design to final execution. Products are made according to customer's specifications or according to designs by Vernooy's engineers. For more than 60 years, VERNOOY Vacuum Engineering has developed and fabricated high quality vacuum- and vacuum related components for research, semiconductor, display and solar industry.

Vernooy has a balanced and sophisticated machine shop with CNC lathe and milling machines, in combination with TIG- welding and robotic welding. It offers the following capabilities:
– Milling up to 6000mm × 1600mm × 2000mm – Turning swing of 1500mm × 2000mm length – TIG Welding by hand en robot – Vacuum Leak testing – Clean room packing

All activities are executed by highly trained vacuum engineers. Flexibility and quick response are held in high esteem in the company. As a consequence of the great experience in designing, manufacturing, vacuum testing, clean room building and packaging of various vacuum components, Vernooy can be your valuable partner.

References

Vernooy realized and completed the delivery of most of the mechanical parts for Magnum-PSI for the FOM-institute DIFFER (the Netherlands). They are completely produced by Vernooy Vacuum Engineering.

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Turnover Vernooy: 4 M€ | 23 employees
Turnover Triumph Group: 20 M€ | 120 employees

www.vernooybv.nl

VIRO

VIRO for full scale engineering solutions

VIRO is a Dutch, private owned international engineering company with +600 FTE and offices in the Netherlands, Germany and Austria. We develop complex high-tech machinery and (chemical) plants for major international companies.

Specific expertise

- Mechanical engineering
- Engineering analysis
- Multi-disciplinary projects
- Project management
- Systems engineering

Design tools: Catia (V4 and V5), Inventor, Unigraphix NX, Pro/E, AutoCAD, and others

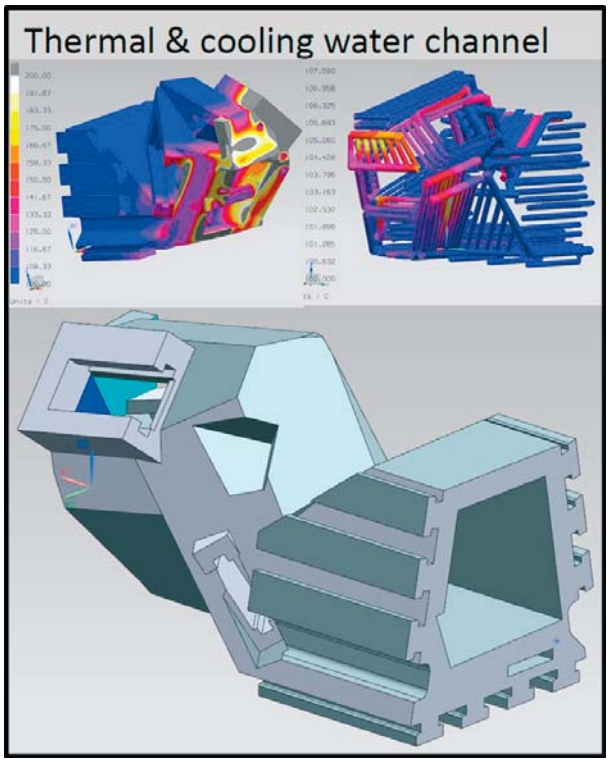
Analysis tools: MSC.Patran& MSC.Nastran, FEMAP, ANSYS, I-Deas, NX advanced Flow and Simulations, and others

Customers include: ASML, NXP, DAF, Airbus, MAPPER, Astron for which we design anything ranging from modules to complete machines including project management.

Quality: NEN-EN-ISO 9001:2008 and VCA++

Reference projects

- ITER NL concept design front dynamic shield module (see image)
- Vacuum chamber design (> 2 m^3) for a semiconductor company
- Various high precision verification / test / integration machines and tools including procedures for assembly; verification and operation.
- Development of "Glass". This system is used as a laser beacon to correct atmospheric interference on the WHT (William Herschel Telescope)
- Many other high tech and multi-disciplinary projects



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VIRO
the performance of technology

Wilting

Wilting is your international partner for the industrialisation and production of high-quality precision components, assemblies, and assembled components. Wilting has been a supplier in the high-tech industry for over 30 years. Our customers are European OEMs that compete globally, Universities and knowledge institutions.

Based on our vast experience in machining Wilting developed into **"Specialists in Manufacturability"**. Therefore, we want to be involved during the engineering phase of your products. In order to be committed during the industrialisation and production of your high precision complex components and/or modules. This enables our customers to focus on innovation & development, and sales & service.

Wilting's Core competences

- **Specialists in high-precision components**
  Outsourcing the production of your high-precision components to Wilting means quality assurance during production and competitive prices due to 24-7 low-manned production.
- **Specialists in assembly and supply chain management**
  Have Wilting take care of your assemblies and supply chain management and you will experience flexibility thanks to project-driven or process-driven assembly (if required in a well-equipped cleanroom).
- **Specialists in value chain management**
  Let Wilting take responsibility of your assembled parts (parts that require a series of different production technologies like milling, welding, brazing, cleaning, etc) and you will benefit from unique innovative solutions through cooperation with a strong network of compatible partners. Furthermore Wilting will engineer an optimal production chain due to a multidisciplinary approach in the process design.

Markets

Semicon Equipment, University and science, Aerospace, Food processing equipment.

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ILO's for Big Science

Name ILO / Affiliation	Email	Facility / organisation	Theme
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Toon Verhoeven (FOM-DIFFER/ITER NL)	A.G.A.Verhoeven@differ.nl	ITER (F4E) – FR ESS – SE JET (EFDA) – UK Asdex-U – DE Wendelstein-7X – DE IFMIF (IEA)	Fusion facilities
Rob Klöpping (FOM-Nikhef)	klopping@nikhef.nl	CERN – CH ESRF – CH ILL – FR EMBL – DE DESY – DE Neutrino Telescopen	Accelerator, neutron and X-ray facilities
Wilfried Boland (NOVA + ESO)	boland@strw.leidenuniv.nl	E-ELT ALMA	Optical telescopes
Emiel van der Graaf (KVI)	vandergraaf@kvi.nl	ZFEL – NL, Groningen XFEL – DE	Free electron laser facilities
Ronald Halfwerk (ASTRON)	Halfwerk@astron.nl	LOFAR – NL SKA	Radio Telescopes
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