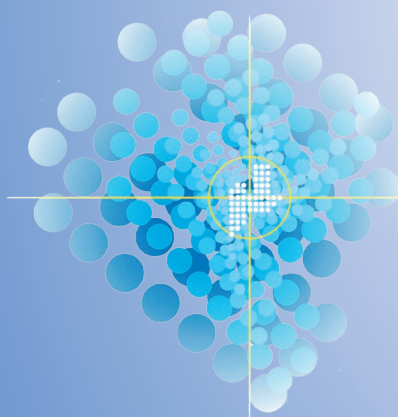


Involving Dutch industry in Big Science



28 & 29 November 2012

Precision Fair 2012

where business and science meet
www.bigscience.nl

The Dutch ILO-Network

The Netherlands are joining and investing in many Big Science programs which are so expensive that only an international collaboration of member states can make these facilities possible. Of course science is doing a lot of important research which leads to major scientific breakthroughs and long term innovation. We all know the examples: satellites, medical diagnostics, Word Wide Web and computers. But there is more. On an even shorter time scale companies can benefit of Big Science in many ways. For instance delivering goods and services to the big facilities creates a stable turnover independently of poor economic growth or even crises. Tendering for science demands the utmost of the competences of highly skilled companies. The extreme technical requirements that science often needs challenges the innovation power of the firms involved. Cooperation of individual scientists and engineers with industry, exchanging and transferring knowledge is important for firms who are able to develop commercially interesting applications out of new science which makes them more competitive on their markets.

Though these examples show some promising opportunities, tendering for Big Science orders is never easy. Big Science needs a large variety of skills and there must be a trustworthy relation with scientists. Large companies can maintain many of these skills, they are used to internationally tendering and can build on long term stable relationships with the scientist and engineers of the facilities. Very small companies can tender occasionally with just one single highly specialised competence but they don't get a stable turnover out of it. Most of the SME-s find it hard to build relations and to combine more than just a few competences. Usually every Big Science facility has an Industrial Liaison Officer in each member state. ILO's are there to assist enterprises in doing business with the large scientific facilities.

Recently the Netherlands Organisation for Scientific Research (NWO) which provides most of the funding for scientific research has formed a network of all Dutch ILO's for Big Science. ILO's play their role by connecting business with Big Science. Joined together ILO's distribute Calls for Tender and they can help firms tendering. This company booklet for instance is distributed amongst scientists and foreign companies to promote Dutch enterprises. ILO's organise many events where science en business meet, communicate efficiently with industry and unite governmental organisations with Big Science and Dutch industry in a so called "Golden Triangle".

November 2012, Rob Klöpping

For more information please contact

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Netherlands Organisation for Scientific Research

www.bigsience4business.com

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Hositrad Team

J.L.J. (Jurgen) Tomassen

H.V.P.C.

Gerard Bruggink

Imtech Vonk

Ben Wargers

INCAA Computers

B. Sijbrandij

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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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www.3dmetalforming.com



3D Worknet

3D- Worknet – The 3D mass customization printing company.

Product information

3D Worknet manufactures parts using the latest additive manufacturing technologies (also known as 3D printing). 3D printed parts are often only used as prototypes, but in an increasing number of applications 3D Worknet supplies fully functional end products. Our very efficient production facility is suited for cost effectively manufacturing small to medium sized series of high quality parts.

The 3D Worknet online portal gives our customers a user friendly method to upload 3D CAD data for quoting and ordering. Please visit www.3dworknet.com or call one of our sales engineers for further information.

References

Philips Consumer Lifestyle – Philips Lighting – KLPD – Robert Bosch Packaging – VUmc FMT – UMC Utrecht – ESA / ESTEC – Plasticum Group and many more

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 **3D
WORKNET**
the mass customization 3D printing company



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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Advanced Solutions Nederland

Advanced Solutions Nederland is a hi-tech design consultancy that specialises in providing custom made DSP (digital signal processing) algorithms and hardware design services for a broad portfolio of sensor measurement applications.

Product information

Our core competence is the development and implementation of advanced signal analysis algorithms for high performance sensor applications. Typical applications include: noise reduction in speech/audio data, automotive radar tracking algorithms (speed cameras, collision avoidance systems), feature extraction, and non-linear system identification.

Whether you require feasibility advice, critical thinking, or a fully integrated product solution, we offer a comprehensive range of managed services at any stage of your product design. Building upon our track record of providing international businesses with working prototypes, we integrate the best technologies and talents in order to convert your concept into reality.

Summary of core competencies

- Real-time DSP algorithms.
- Non-linear signal analysis.
- Simulations.
- Embedded software.
- Low noise, ultra-precise instrumentation and measurement systems.
- Prototypes.
- Proof-of-concept demo systems.

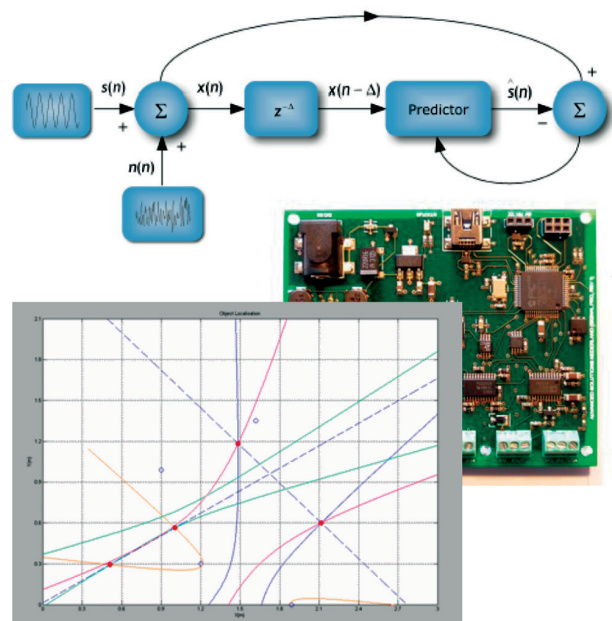
Selected references

Mitsubishi Electric (UK) – Shell (NL) – Etronic (DK) – Hi-tech RF & Microwave solutions (NL) – Gatsometer (NL) – Gnoka (NL) – NeuroRobotics (UK).

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Amstel Engineering BV

With 25 years of experience in innovative mechanical engineering and product development, Amstel Engineering is well known in the world of engineering. We realize projects from A to Z both in our own office as well on customer premises.

Services

Amstel Engineering helps its customers in translating their ideas into smart products and cost-effective solutions that are successful in the market. Due to our tailor made practical and flexible approach, clear processes and implementation of comprehensible decisions, we can make big steps in the realization of your projects.

Amstel Engineering distinguishes itself by the wide knowledge of different disciplines within mechanical engineering. This knowledge is guaranteed by the long-term relationship we have with our customers. Amstel Engineering offers a full range of services, from concept engineering to manufacturing of parts, according to the highest standards that our customers expect from us.

Besides our technical capabilities, we offer a high degree of customer service and aftercare to our customers. We call this the 4th dimension that Amstel Engineering adds to its services, guaranteeing total quality and optimal results.

References

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

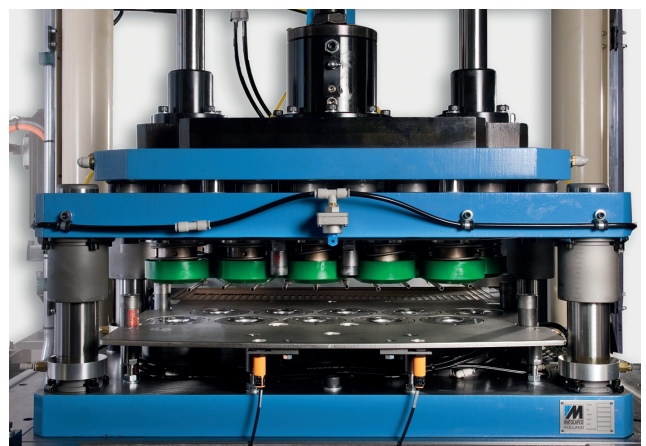
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Amsterdam Scientific Instruments

(ASI) was established in 2011 as a spin out company from NIKHEF, the Dutch research institute for particle physics. Our goal is to bring the technology and expertise developed by NIKHEF and the Medipix collaboration lead by CERN to the market and explore new fields of applications of hybrid pixel detectors of the Medipix family.

Product Information

Our Timepix hybrid pixel detectors can be used in a wide range of applications. The STPX-65k (256 x 256 pixels) and QTPX-262k (512 x 512 pixels) have the capability to discriminate or measure the energy of incoming radiation in each individual pixel.

Timepix can be operated in 3 modes, i.e. counting mode, time-over-threshold (TOT) and time-of-arrival mode. Our detectors can also be used for precise spatially resolved detection of electrons, neutrons and heavy charged particles.

References

Tribogenics (CA, USA) – Nikhef (NL) – AMOLF (NL)

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www.amscins.com



AMSTERDAM
SCIENTIFIC
INSTRUMENTS



Bayards Aluminium Constructions

Bayards Aluminium Constructions is an internationally recognized and qualified company that is renowned for their innovative solutions in aluminium.

Product information

Bayards Aluminium Constructions is an internationally recognized and qualified company that is renowned for their innovative approach to design, fabrication and assembly of complex aluminium products and projects.

Bayards has the expertise, know-how and technology to manufacture hi-tech aluminium products to an unrivalled standard of quality.

Bayards production capabilities are endless, but to name a few:

Welding: We make use of the newest development in welding technology, e.g. Friction Stir Welding (FSW).

Milling: With our CNC 5-axes profile high speed milling machine, we are able to carry out precision milling activities on components with a length up to 18 meters. Furthermore, to facilitate fabrication and assembly processes, we have in our employment highly qualified welders.

References

CERN: production of bottom tray LHC – Stork / Fokker: components for Patriot rocket – Dutch space: parts for new generation Ariane rocket – KEK, Japan: parts for particle accelerator

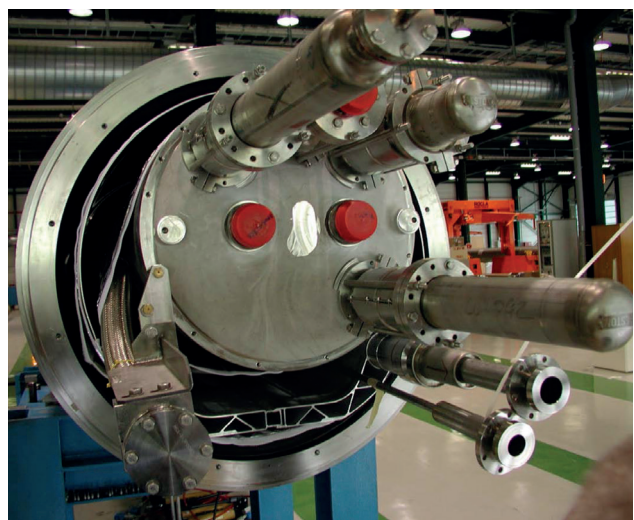
Please visit our website for more information and track records.

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Turnover: 25 M€ | 125 employees

www.bayards.nl
BAYARDS®
solutions in aluminium



Bodycote

Bodycote Vacuum Brazing has been engaged in advanced brazing techniques for about 40 years. During these years an extensive know-how and vast practical experience have been built, unique for the industry. Practically all types of base metal, filler metals and brazing processes are being applied to hundreds of different products. Bodycote Vacuum Brazing has several different types of brazing furnaces available for basic research, product development and production. Bodycote Vacuum Brazing is ISO 9001, ISO 14001 and ISO 50001 certified.

Product Information

In the high temperature brazing process joints are generated in a vacuum atmosphere. The combination of high temperature and reducing atmosphere ensures metal oxides dissociate at the product surface. The process results in very strong joints (90-100% base metal strength) Due to the automated furnace control these joints can be reproduced with a constant high quality.

Bodycote Vacuum Brazing Diemen provides the following services

Vacuum brazing – Special heat treatments in vacuum or reducing atmosphere – Consulting for material selection and design of braze joints

Materials regularly handled

Low and high alloy steels – Tool steel – Cast Iron – Stainless steel – Copper alloys – Titanium alloys – Superalloys – Carbides – Ceramic, composites, graphite

Markets served

Power Generation and Energy – Oil & Gas – Measuring & Control – High precision tooling – Lithography – Aerospace – Pharmaceuticals – Science/research – Plastic Moulding

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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 fibrillation 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. traceability	
Powder coating	Upto 4 meters long	
Hoisting	Hoisting capacity inside the factory is 120 tons	Max. 120 tons

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Turnover: 5 M€ | 40 employees

www.boessenkool.com



Boessenkool
Osse Equipment Manufacturing Group



Revolver Mobile Undulator Carriages for the E.S.R.F. in France. Repeating Parallelism 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!

Ceratec Technical Ceramics BV

Ceratec Technical Ceramics BV has specialized in industrial technical ceramic components since 1983. Ceratec's strength lies in the complete formula of problem analysis, development, prototyping and production. Alongside various processing techniques, special joining techniques are applied for production of composite products made of technical ceramic and metal. The requisite metal-working processes and assembly activities are carried out in-house. We produce both small and larger series. Ceratec develops and manufactures products made of technical ceramics for customer-specific applications.

Production capabilities

Green stage shaping and sintering – OD grinding, max 500mm, max length 1500mm – Honing min 0.6 mm inner diameter – Flat and profile grinding – Centreless grinding min 1mm, max 60mm (tolerance 2 microns) – Lapping with surface roughness of Ra 0.01 μm – Coördinate grinding – Drilling of small holes, min 0,3 mm – 4-axis CNC grinding – CNC OD grinding – CNC turning and milling – Brazing of ceramics and corrosion resistant steel.

Assembly of metal ceramic components

We are a main supplier for various kinds of industries; mechatronics, semiconductor, space & aerospace, medical, automotive, energy, optical, (petro)chemical, R&D, pump industry etc. The ceramic precision products we supply are engineered in house, designed with solid works & cosmos, green shaped & sintered and ground with state-of-the-art (CNC) grinding machines.

Following properties make our ceramic components successful; low density, high stiffness, electrical insulator, suitable for high vacuum, wear resistant, smooth surfaces, corrosion resistant, non-magnetic.

Ceramic on the right spot!

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CryoZone

CryoZone stands for expertise in the field of cryogenic engineering. We deliver custom-made cryogenic solutions that are ready for use as functional hardware. This makes our products and systems ideally suited for OEM system builders.

Product information

CryoZone offers an extensive range of products such as cryogenic circulation fans, liquid gas pumps, heat exchangers for cryocoolers, cryostats, vessels and phase separators. Our expertise extends to everything that involves the control and circulation of cryogenic fluids and gases, such as LN2 and GHe, to cool and heat an application. We handle every aspect of the cryogenic process related to coding, cryogenics, pressure, heat and physical flow.

Products

- Cryogenic fans for He and N2
- Pumps for cryogenic gases
- Cryostats
- Vessels
- Valve boxes

References

TNO, Eindhoven, Netherlands – Cryogenic / high temperature system
Florida State University, Tallahassee, USA – 20K cooling system for HTS

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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

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DEMCON

About DEMCON

DEMCON researches, develops and produces high-tech systems and products for our focus areas of high-tech systems and medical devices. Due to our production capabilities, DEMCON can differentiate our self from other suppliers. Our clients receive not only a blueprint but also a working product or system.

Markets

DEMCON is a high-end supplier of technologies for the high-tech systems and medical devices markets. Within these markets, our focus is primarily on development and production.

DEMCON is highly proficient at applying, technical skills and high level of expertise in order to come up with surprising solutions to complex problems. The knowledge gained in one market enables us to look at problems in other markets in an open and creative manner.

Capabilities

We have employees from a wide range of technical disciplines in every project group and make use of a large number of facilities.

- Mechanical engineering
- Software engineering
- Electronics engineering
- Industrial design
- Physics/optics
- Clean room
- Prototyping
- Production

References

Philips – ASML – FEI – DORC – SIEMENS – TE Connectivity – Bronkhorst

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Turnover: 20 M€ | 140 employees

www.demcon.nl



DotX Control Solutions BV

DotX Control Solutions specialises in high performance control system development and the realisation thereof. It develops control solutions for complex industrial challenges and scientific research projects.

Product information

One of the DotX main products is the DotX Nonlinear Predictive Controller (DNPC); this controller allows extremely accurate control, due to its ability to simulate and optimise complex nonlinear dynamical systems on-line in a stable and fast manner. This controller has applications in various processes (furnace control, temperature control) and mechanical systems (wind turbines).

Specific expertise includes

- Development of high performance control solutions including NMPC, H_{∞} , and ILC
- Control-oriented modelling of complex systems
- Observer design for high performance controllers
- Development of advanced model based fault detection
- Integration of commercial control software systems in real-time environments and simulation environments

References

ECN – Tata Steel – ISPT – 2B Energy – EWT – STX – DSM – VDL Weweler – Mitsubishi

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Turnover: 0.2 M€ | 3 employees

<http://www.dotxcontrol.com>



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 35 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 & thermodynamic 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, VLT, 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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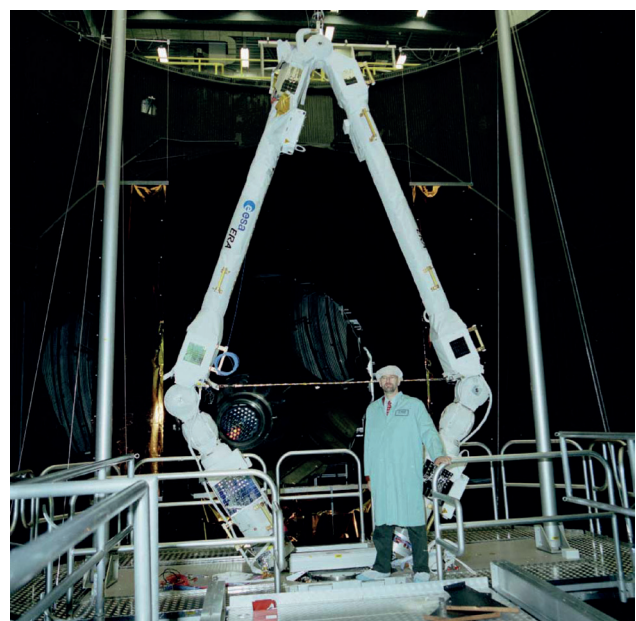
Turnover: 75 M€ | 230 employees

<http://www.dutchspace.nl>



Dutch Space

an EADS Astrium company



ECM Technologies

ECM Technologies is specialized in the development of Electrochemical Machining processes. ECM is a non conventional metal machining technology based on electrolysis.

Product information

ECM Technologies develops electrochemical machining processes for metal products of complex geometry (i.e. Turbine blades) that can hardly or not at all be made by conventional machining processes. The ECM technology is very suitable for products of super alloys even in large series.

Characteristics of the ECM process

- The product after processing is free of burrs.
- No-contact process principle, no mechanical forces.
- The process does not cause thermal or physical strain in the product.
- Unlike other machining techniques, no upper-layer deformation occurs.
- 3-Dimensional products can be processed in one single step.
- High surface quality level attainable ($R_a < 0,02 \mu\text{m}$) depending on material used.
- High dimensional accuracy attainable
- Material strain which loosens during the process will be compensated where possible
- Stainless steels are affected by various conventional machining techniques in the upper-layer, as a result of which local rust formation can occur. This is not the case with ECM
- Using the ECM technique generates more freedom in design for a product
- ECM is a technique with a high machining speed at relatively low costs

References

ECM Technologies has developed ECM processes for companies worldwide in the field of Aerospace, Automotive, Medical, Energy market and for many other different applications.

Hans-Henk Wolters

CEO

PO Box 7527

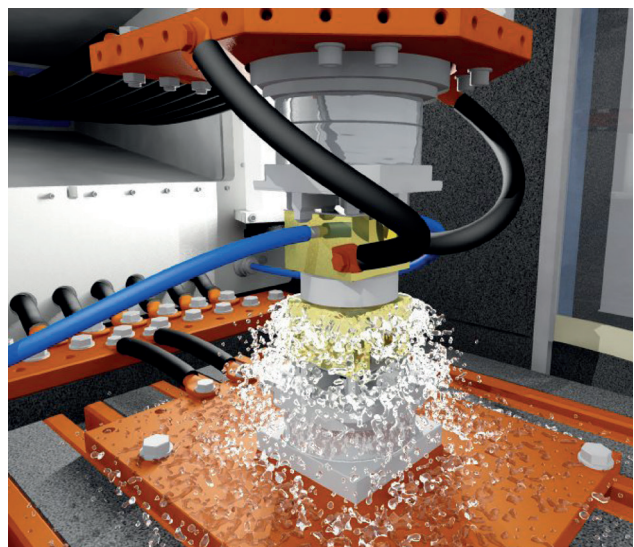
8903 JM Leeuwarden

T: +31 622 379 750

wolters@electrochemicalmachining.com

Turnover: 1.0-1.2 M€ | 5 employees

www.electrochemical-machining.com





EKB is a system integrator for industrial automation projects. EKB provides automation solutions within the process and manufacturing industry with over 200 committed and qualified employees. A high quality system according to CSIA-regulations and thorough project management, makes EKB a reliable partner.

EKB was founded in 1971 and has developed into a nationwide operating and well-reputed industrial automation company located at four places; Beverwijk, Drachten, Bunnik and Someren. EKB is also member of the listed TKH Group, an international operating group of companies in the field of Telecom, Building and Industrial Solutions making an annual turnover of more than 1 billion euro.

EKB is synonymous with product and process automation.

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Commercial Manager

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210 employees

www.ekb.nl



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

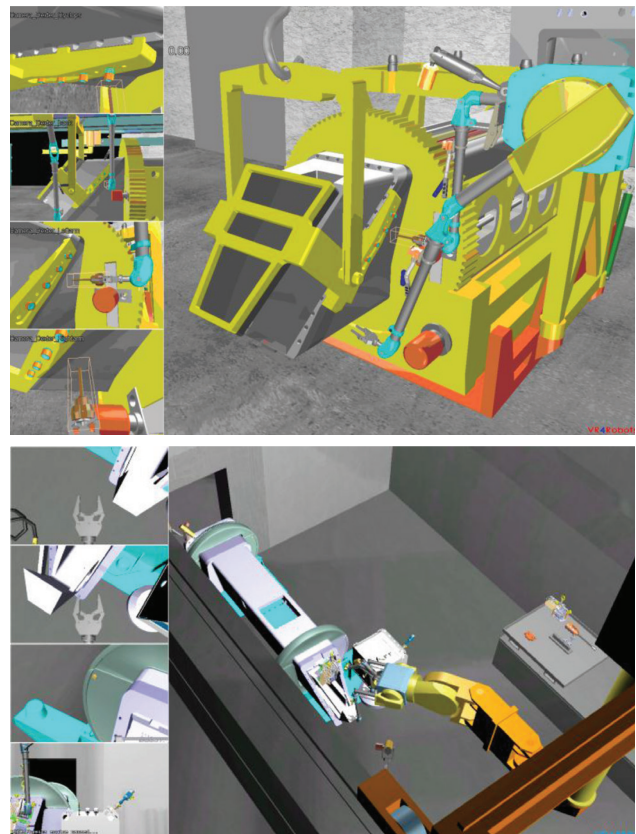
ITER – Dutch Space – FOM Insitute DIFFER – FlexGen – TNO – Oxford Technologies – VDL APTS

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Managing Director

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Turnover: 400.000 € | 7 employees

**www.heemskerk-
innovative.nl**



Heeze Mechanics

Design and Precision Engineering for R&D Institutes since 1966; manufacturing of microwave components i.e waveguides, parts for Clic, parts for long en short Yoke, cartridge plate for RAL and parts for Galaxy.

Product information

- Design and Precision Engineering for R&D Institutes since 1966.
- Manufacturing of Waveguide (FOM), parts for Clic (CERN), parts for long en short YOKE (CERN).
- Cartridge plates for RAL (Rutherford Appleton Laboratory).
- Parts for Galaxy (ESO).

References

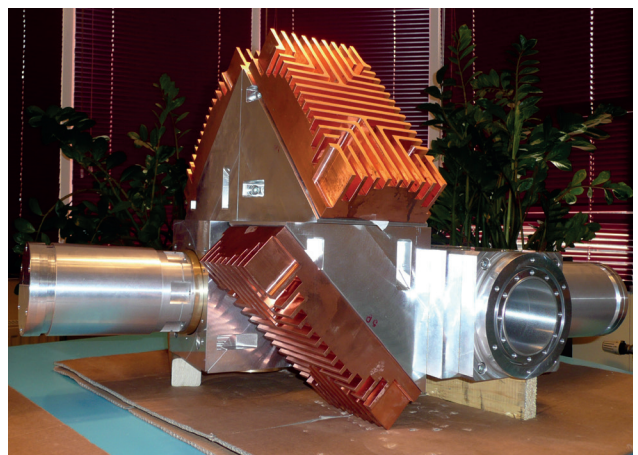
CERN – ESRF – ESO – Rutherford Appleton Laboratory – TNO – OMT solutions – Rimas – Philips Research – FOM

Th. van Tongerlo
Managing Director

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Turnover: 800,000 € | 5 employees

www.heezemechanics.nl



HEINMADE

HEINMADE develops and delivers piezo system solutions ranging from a single bulk piezo to servo controlled multiple axis motion platforms. With our long term experience and extended network, we are able to detect critical aspects, to control and solve these aspects and to provide reliable solutions.

Product information

Through collaboration with Noliac (DK), Nanomotion (Isr) and Piezomechanik (DE), HEINMADE offers a wide portfolio of standard products and system solutions. Over the years HEINMADE has extended this portfolio with developed custom made designs to meet the high demanding requirements of the high tech and medical industry.

Some examples of systems in production are; multiple axis long stroke motions systems, transducers, sensors and active damping systems. Present R&D work is focused on active damping, accurate dispensing and high force high precision stages. HEINMADE supplies basically all piezo related components and (sub-) systems:

- R&D work on piezo components and integrated systems.
- Design, engineering and supply of high precision metal parts like hinge structures, etc.
- (Encaged) Piezo actuators and benders (high and low voltage).
- Piezo motors and steppers.
- Short and long stroke piezo stages (actuator and motor based).
- Drivers and controllers for piezo actuators and motors.
- Active vibration dampers.
- Dispensing systems for low vapour pressure or high viscous substances.

References

Philips Apptech – ASML – ESO – TNO – TU Delft
– TU Eindhoven – TU Twente – VSL (NMI) – FEI

Hein Schellens

Director

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hein.schellens@heinmade.com

Turnover: 1.0 M€ | 7 employees

www.heinmade.com

HEINMA²DE
supplier piezo ceramic solutions



Hitec Special Measuring Systems

Hitec Special Measuring systems bv provides high precision current measuring systems for the research institutes and scientific applications all over the world.

Product information

Hitec Special Measuring systems designs and builds Zero-flux current measuring systems.

Hitec Special Measuring Systems, part of the Hitec Power Protection Group, was the first to introduce a revolutionary high precision current measuring system based on the Zero-flux principle. The bipolar Zero-flux measuring system optimizes the concept of galvanic separated measurement of direct and alternating currents with exceptionally high precision.

Today thousands of these systems found their way in scientific, HVDC, industrial and medical applications all over the world. Having a reputation of being the ultimate system for measuring electrical currents.

References

CERN – ABB – Siemens – ASML

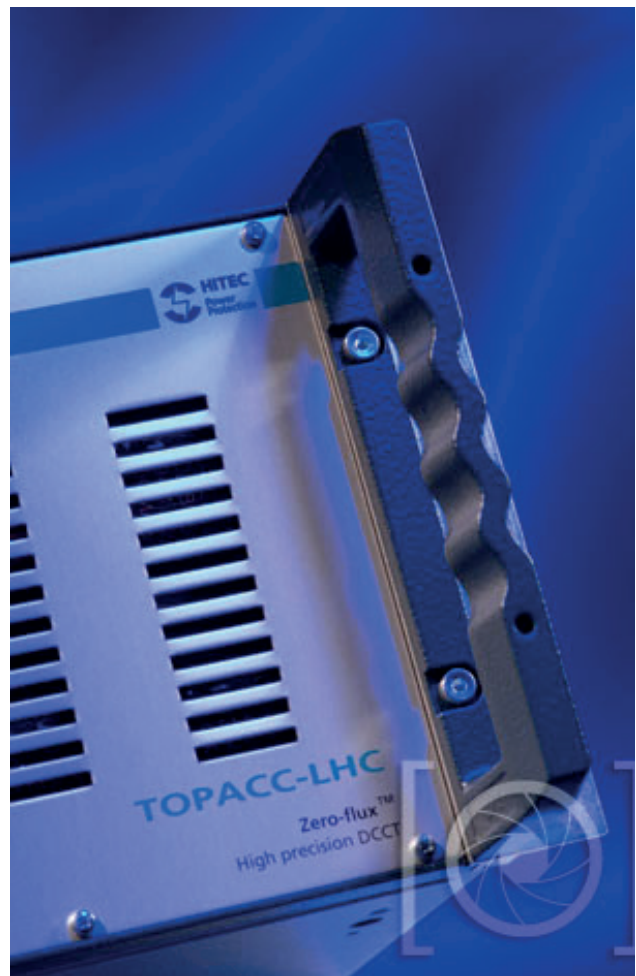
R. Lachminarainsingh

General manager

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Turnover: 3 M€ | 7 employees

www.hitecsms.com



Hositrad Team

The Hositrad Team combines more than 45 years of experience in vacuum and cryogenic technology. We supply standard vacuum part 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,
- are experts in TIG-Laser and Microplasma welding en He. leak testing $<1 \times 10^{-10}$ mbar l/sec.,
- have our own production and an AutoCad design office in Holland and in the Far East,
- make "Custom made specials" according customer drawing in our own workshop,
- supply the following products: CF-KF and ISO vacuum components – Electrical feed throughs – Linear/Rotary Feedthroughs – Edge welded bellows – Isolators – View ports – Fiber Optics – Glass to Metal seals – Manipulators – Ferrofluidics feed throughs – All Metal Valves – Angle Valves – Gate Valves – Ion, Triode and Titansublimation pumps – Cryopumps – Cryostats

Hositrad Vacuum Technology represent:

Ceramtec – Ceramic-to-metal sealing technology. Hermetically sealed electrical & optical components include feedthroughs, multipin connectors, coaxial conenctors, 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.

Thermionics – Manipulators, Valves, E-Guns, Ion Pumps, MBE Systems, Mechanical feedthroughs.

References

CERN, DESY, (XFEL, EMBL, Hasylab Hamburg), Helmholtz 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.

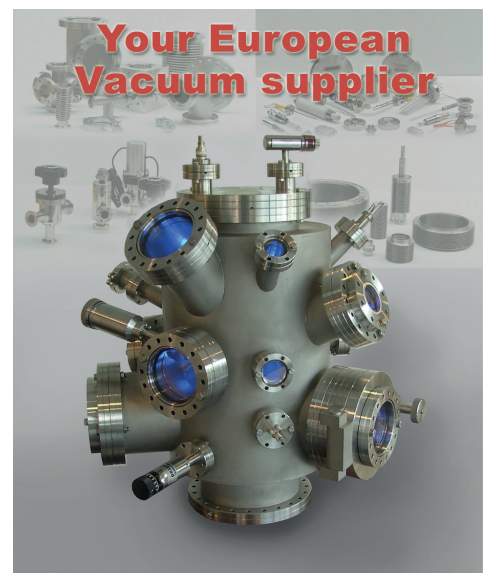
J.L.J. (Jurgen) Tomassen
Director

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3871 MV Hoevelaken
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Turnover: 4 M€ | 10 employees

www.hositrad.nl

VACUUM TECHNOLOGY
Hositrad



H.V.P.C.

H.V.P.C., or High Voltage Potting and Coating, is self-reliant since 2002. We are specialized in winding, assembling, potting, coating and testing of high-tech products. Being experts makes us also the best possible advisors in this field. These products are mainly for the medical- and defense industry, but we also have customers in the aviation industry.

H.V.P.C. is a dynamic production company with few hierarchical lines. These short lines result in quick settlements and a strong workforce. The workforce increased through the years from 8 to 18 enthusiastic employees.

H.V.P.C. sets high demands for its performance. The product quality, service and reliability of the deliveries are among the best in the world. H.V.P.C. logistics uses short channels and therefore purchasing activities are quick, control is good and delivery times are reliable.

Adapting to developments in the market with the help of innovative technologies and shaping an effective organization with flexible processes are characteristic of H.V.P.C. The flexible processes result in the possibilities to produce single pieces or small series.

Products

H.V.P.C. is specialized in single production or small series. H.V.P.C. produces a large variety of products (durable types), both existing as new designs, which can be realized in consultation with the client.

H.V.P.C. is a production company for mainly high-tech inductive components, such as (high voltage) transformers, choke-coils and deflection coils. Also high-tech power supplies and high-tech connectors poured into as well as oil and different synthetic materials (silicones and epoxies).

References

Thales – ASML – FEI – Selex

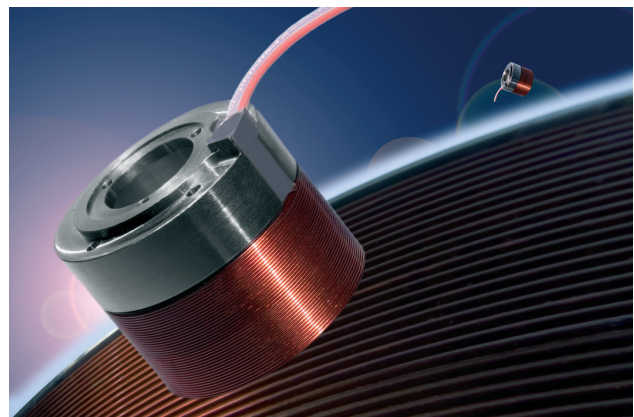
Gerard Bruggink

General Manager

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T: +74 255 54 21

Turnover: 2,5 M€ | 18 Employees

www.hvpc.nl



Imtech Vonk

Imtech Vonk is an international operating technical service provider with focus on Engineering & Contracting.

Product information

Activities within the Power Electronics department are conceptual and detailed design, construction, assembly, factory testing, installation and commissioning of custom made Energy Conversion Systems for Scientific and Industrial applications.

Imtech Vonk has the capabilities to develop custom made Energy Conversion Systems up to the following figures:

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

The products & projects find their way into various applications for

Enrichment processes – Nuclear fusion research – Particle accelerators / synchrotrons – Galvanic industry – Electricity distribution grids – Fuel Cell processes

References

IPP Garching (D), 145 MVA Modular Thyristor Converter 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 Thyristor Converter System – DESY Hamburg (D), Klystron modulator for the XFEL RF station

Ben Wargers

Manager Sales Power Electronics

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Imtech Vonk, part of Imtech N.V.group | 175 employees

Turnover: Imtech N.V. group (EuroNext Stock Exchange company) 4.3 Billion € | 25.000 employees

www.imtech-vonk.nl

Imtech - Vonk



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

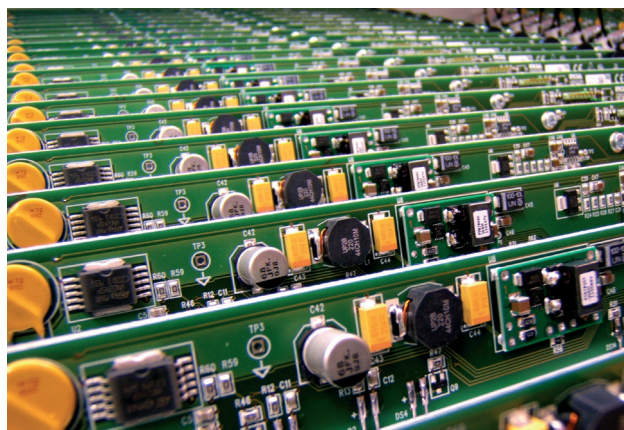
B. Sijbrandij

Project manager

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20 employees

www.incaacomputers.com



Overview of companies

	*	Specialit		Management/ syst eng
		Discipline	Technique	
3D-Metal Forming			Explosive forming	
3D Worknet			3D printing	
Actemium E&A	L			
Advanced Solutions NL	V			
Amstel Engineering BV	M	Mechanical Engineering	3d Design & Drafting	
Amsterdam Scientific Instruments	S		X-ray detector	
Bayards Aluminium Constructions	M			
Bodycote	M		Brazing	
Boessenkool	S			
Ceratec Technical Ceramics BV			Ceramics	
CryoZone	S			
DeMaCo Holland BV	M			
Demcon	M			
DotX Control Solutions BV	V		Control	
Dutch Space	M	Space		x
ECM Technologies	S		ECM	
EKB	M		Ind. Automation	
Heemskerk Innovative Technology	S		Remote handling	
Heeze Mechanics	S		Waveguide	
Heinmade	S		Piezo	
Hitec Special Measuring Systems	S			
Hositrad Team	S			
H.V.P.C.	S		High Voltage Potting and Coating	
Imtech Vonk	L			
INCAA Computers	S			
Irmco BV	V		Acoustics	
Janssen Precision Engineering	S			
KIN Machinebouw				
MI-Partners	S			
MTSA Technopower	S	Nuclear		
National Instruments	L			
Nedinsco		Photonic		
Peter Haak Productontwikkeling	V			
S&T	S			
Schelde Exotech	M			
Single Quantum	V		Single quantum detector	
Stirling Cryogenics	M			
Sumipro	S		Optics	
Tebulo Engineering BV	M		Prod. machinery	
Tebunus Tube Bending			Tube bending	
Technobis Group	S		Fiber	
Tessella	M	Space		
TNO	L	Space	Optics	
Tree C	S		Virtual reality	
Vacuüm Specials	S			
VDL Enabling Technologies Group	L			
Veenstra Glazenborg	S			
Velmon Lastechniek	S		Welding	
Vernooy	M			
Wijdeven Group	M		Trans-formers	

* V= Very small 1 - 5; S = Small 5 – 50; M= Medium 50 – 250; L= Large >250

Development	Engineering	Production	Test	Area						
				Metal		Mechatr.	Cryo	Vacuum	Electronics	Software
				Large	Small					
	x	x		x						
x	x	x	x			x			Digital	x
x	x									
x	x	x	x		x	x				
x	x	x								
x	x	x		x	x					
x	x	x		x	x					
	x	x		x						
x	x	x								
x	x	x					x			
x	x	x					x	x		
x	x	x	x			x				
x	x		x			x				x
x										
x	x									x
x	x	x				x				
x	x	x	x			x				
	x	x	x					x		
x	x	x	x						Power	
x	x	x	x						Anal/Digital	x
x	x	x	x							
x	x	x	x		x	x				
	x	x			x					
x	x	x				x				
	x	x	x			x			power	
	x	x	x							
										Modelling
	x	x		x						
x	x	x	x				x			
x	x	x	x							x
x	x	x				x			An/Dig/ Power	
x	x	x								
x	x	x				x				
	x	x	x							x
x	x	x	x			x				
										Simulation
								x		
	x	x	x	x	x	x				
	x	x	x	x	x					
x	x	x	x							
	x	x	x					x		
x	x	x	x						Power	

Irmco BV

Product information

Visualizing and monitoring of environments using acoustic technology (accurate temperature, humidity, turbulence).

Measuring flow in pipeline systems avoiding pressure drop (no physical obstructions or moving parts).

Involvement – We are involved in acoustic 3D vision in inaccessible spaces.

Expertise – Participating in national and European collaboration programs by experience since 1966.

References

TNO – Philips Research – Brucker Biospin – Rutherford Appleton Laboratories – ESO – CERN – ESRF

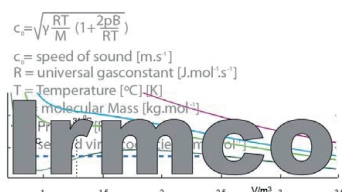
Michael Koot

Spoorstraat 19

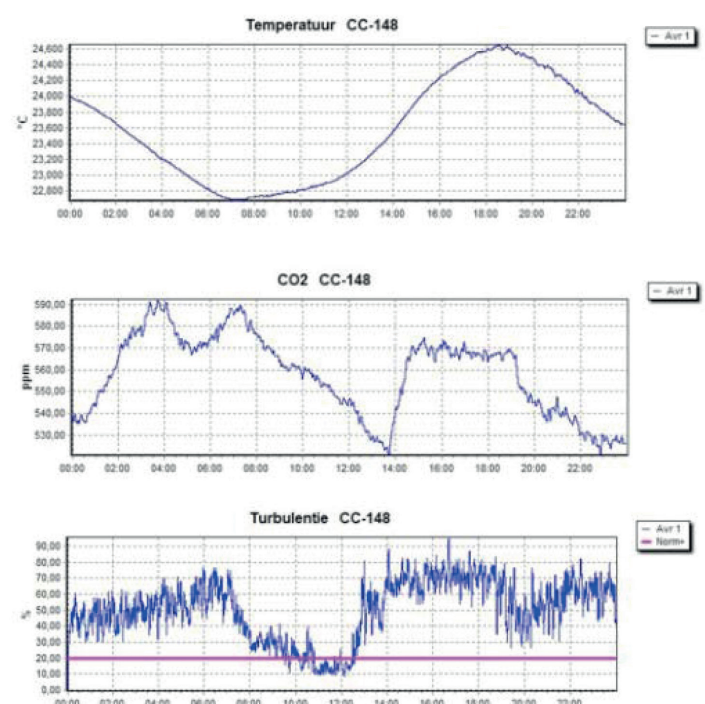
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michael.koot@irmco.nl



meting rutherfordstraat



Janssen Precision Engineering

Precision engineering and mechatronic solutions in ambient, vacuum and cryogenic environment.

Projects, products and services

Equipment for semi-conductor industry, astronomical instruments and research instruments. Accurate positioning and control in vacuum and cryogenic environment.

References

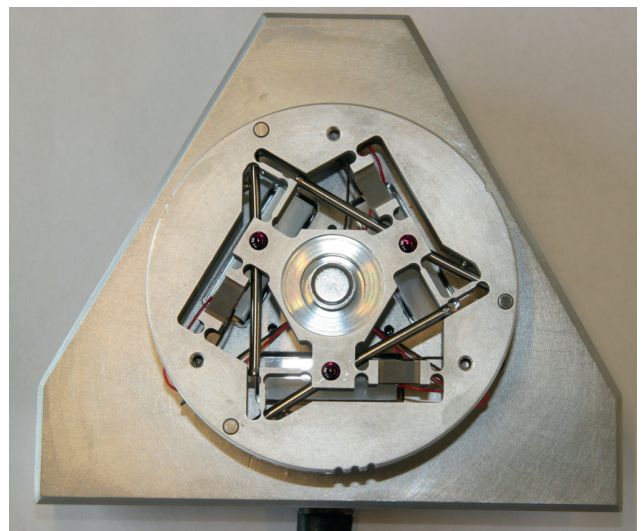
ASML – Instituto Astrofisica de Canarias – Philips – Zeiss

Huub Janssen
General Manager

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T: +31 433 585 777
huub.janssen@jpe.nl

20 employees

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Kin Machinebouw

System supplier to the industry. Long lasting experience combined with craftsmanship. 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, Nuclear, off-shore, food and aviation industry. Supplier of pressure vessels, lifting and towing equipment and amusement rides.

Pim Buters

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www.kin-machinebouw.com



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

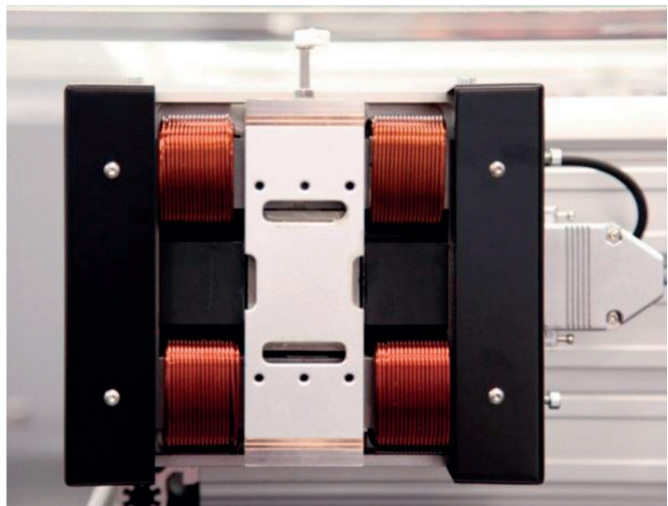
Leo Sanders

Director

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30 Employees

www.MI-Partners.nl



MTSA Technopower

MTSA Technopower designs and builds customer specific equipment, installations and machines. MTSA Technopower has own products which are used for switching high power at short circuit laboratories and atomic fusion. MTSA Technopower offers production capacity (manufacturing and assembly) and on-site service.

Product information

To initiate the atomic fusion process large amounts of energy need to be applied in a controlled manner. MTSA Technopower developed high power switches to make or break a high current at the right moment. Typical products we supply:

Make Switches – Safety Break Switches – Separators – Rogowski measuring systems

This type of equipment is being applied at KEMA, JET and various other short circuit laboratories, e.g. KPT, Toshiba, EETI, KERI and Ormazabal.

In addition MTSA Technopower designs and builds customer specific equipment, installations and machines. Within the nuclear sector we acquired a great deal of experience by taking over KEMA Techniek in 2003 and close relations we maintain with scientific institutes within the Energy Sector like ECN, NRG and TNO. For the nuclear sector we designed and built for instance:

Special remote handling systems for application in radio active environment – High power switch systems – Gas dosing systems – Special machines – Prototype installations – (Spare) Parts and modules/subsystems

Customer specific projects can be divided into the following stages, whereby we can join at any level:

Concept engineering – Basic engineering – Detail engineering – Procurement and manufacturing of parts – Assembly – Testing – Installation and commissioning – Maintenance

Rob van der Sluis

Manager Marketing & Sales

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70 employees

www.mtsa.nl



National Instruments

Committed to Engineers and Scientists - Since 1976, National Instruments has equipped engineers and scientists with tools that accelerate productivity, innovation, and discovery. NI's graphical system design approach provides an integrated software and hardware platform that simplifies development of any system that needs measurement and control. Engineers and scientists use this platform from design to production in multiple industries, advanced research, and academia.

Accelerate Development - Engineers accelerate their development using highly productive NI LabVIEW software that integrates and abstracts the complexity of systems at multiple levels, including unprecedented visualization of system timing. They can lower total systems cost, increase flexibility, and integrate new technology easily using off-the-shelf customizable hardware that meets system needs from low power to high performance.

Innovate Fast - The flexibility and scalability of the platform, supported by a growing ecosystem of reusable IP and applications, gives engineers a strong competitive advantage in completing more projects with less time and resources. Thousands of engineers successfully use the NI graphical system design platform today to innovate, discover, and invent their own solutions – fast.

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Nedinsco

Nedinsco develops, designs and produces a broad range of photonic technology based systems for high-tech applications.

Nedinsco has many years of experience providing customers sophisticated systems consisting a combination of optical, mechanical and electrical technologies. Strategic partnership is a key concept in Nedinsco's approach to contemporary as well as future business.

Capabilities

With our extensive engineering and production knowledge and our state-of-the-art facilities we are providing customers with state-of-the-art and cost effective photonic based systems enabling them to become more successful.

Goal is to deliver qualified serial products and being able to manage the complete lifecycle of the product starting with a basic idea of the customer until the service and aftersales.

Products

Camera systems, spectrometers, photonic sensors, alignment telescopes, sensor platforms, bore sighting and training systems.

Markets

Diagnostics (medical, pharmaceutical, forensic, recycling and food branches), semiconductor and defence.

References

ASML – TNO – Carl Zeiss – Saab Defence and Security – FLIR

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T: +31 77 355 87 77
sales@nedinsco.com

www.nedinsco.com



Peter Haak Produktontwikkeling

High Performance Sensors and Instrumentation

Product information

Our core business is the development of high performance sensors and instrumentation for scientific and industrial applications, with over 20 years experience in this field. Our expertise is primarily based in the analog electronics domain, with an emphasis on low frequency and low power. For projects that may require any external expertise, we work with a broad network of specialists, e.g. in the field of physics, data processing algorithms or ASIC design, in order to provide you with an optimal solution.

We spend substantial resources on evaluating new technologies and constantly engage with professionals from neighbouring fields to be prepared for future inquiries. Regular participation in product definition and testing of “early samples” for leading component manufacturers and exchanging the test results and insights, enables us to go “far beyond the datasheet” and push the limits with confidence.

Due to our efficient way of working we can respond quickly to customer requests, and as such we can offer rapid prototyping and notable flexibility when it comes to last minute changes.

Our solutions are used in the semiconductor industry, in scientific research (ultra-precision current measurement, cryogenic reference thermometry), healthcare (EEG, in-vivo measurements) and other sectors. Typical examples include: thermal sensors with μK stability, magnetic and capacitive sensors for sub- μm positioning, highly sensitive hybrid optical detectors, sensors for mHz range noise cancellation.

Core expertise

- high resolution and low noise circuit design: discrete, IC-based or “composite” designs and hybrid circuits
- solutions for signal integrity in a real life environment: think of $1/f$ noise, popcorn noise, thermal EMF
- extensive knowledge of electronic components, materials and processing, circuits and systems

Services offered

- product development: concepts, analysis, design, prototyping, qualification
- consultancy: component and circuit advice, technology reports, reviews
- training and support with emphasis on implementation

References

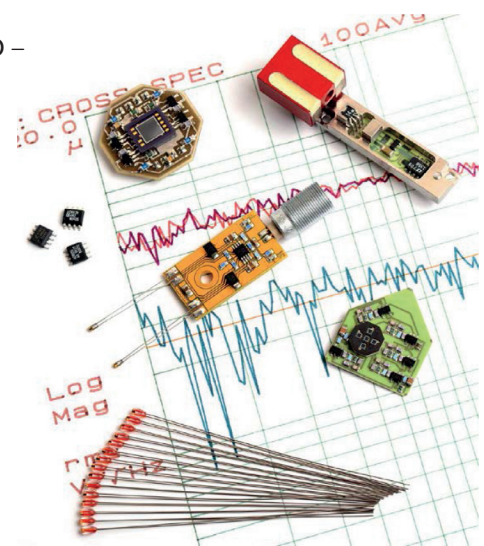
From small enterprises to large companies and institutions, including:
ASML – CERN – Vistec (Leica) – SKF Research – Philips Healthcare – TNO –
Nedap – Heidenhain – NXP – ABB – Shell

Peter Haak

director

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peter haak produktontwikkeling



Our scientific software support is based on understanding customer needs. We provide system health management for mission critical systems, near real-time 3D data visualization in unstructured environments, astronaut decision support tools. Our quality control software and scientific toolkits analyze terabytes of data with pinpoint accuracy.

Product information

Avoid unnecessary downtime of complex systems using the Uptime product family. Uptime encapsulates state-of-the-art System Health Management (SHM) technology to reduce alarm rates, resolve imminent system failures before they affect process performance, reduce repair times, etc. S&T provide full-time, part-time and project-based scientific consultation and creative public relations services. We build the bridge from your scientific goals to quality results. S&T's Uptime product-line encapsulates a whole range of System Health Management techniques to:

Early detect failures

- Generate relevant alarms
- Isolate Cause of Failure
- Protect system from effect of imminent failures
- Guide operators and maintainers
- Predict system health
- Repair faults

Uptime extracts useful system health knowledge by combining sensor data with device information and historical information.

References

ESA future launcher rocket propulsion – LOFAR radio telescope telescope – ITER NL vacuum leak detection and localization

A. Bos

Director

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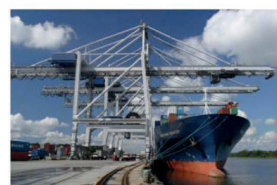
bos@stcorp.nl

Turnover: 2 M€ | 40 employees

www.stcorp.nl



**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



Single Quantum

Single Quantum provides single photon detector systems for the most demanding scientific and industrial applications in the near and mid infrared. We offer reliable and easy to use complete detection systems, based on superconducting nanowire single photon detectors (SNSPD).

About us

Early 2012, Single Quantum was established as a spinoff from the Delft Technological University and scientific research funded by FOM and NWO. For wavelengths in the near and mid infrared, Single Quantum offers the best single photon detectors in terms of detection efficiency, noise levels, time resolution and reliability. We are the first company offering a complete SNSPD system with a built-in cryogenic cooler, which has the advantage of not requiring any external liquid helium supply.

Product specifications

Timing jitter: 60 ps – Dead time: <10ns – Spectral response range: 0.2-2 μm – No afterpulsing, no gating necessary

Quantum efficiency

Wavelength (nm)	Dark count rate (/s)	Quantum Efficiency (%)
800	<100	18
1310	<100	28
1550	<100	10

Applications

- Single quantum dot spectroscopy
- Photon correlation measurements
- CMOS defect analysis
- Optical quantum computing
- LIDAR
- Free space communication
- Time-resolved fluorescence measurements
- Quantum key distribution
- Optical coherence tomography

References

Heriot-Watt University – Hokkaido University – Stockholm University – Bristol University

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www.singlequantum.com



SINGLE QUANTUM



Stirling Cryogenics

Stirling Cryogenics specializes in standalone cryogenerators and closed-loop cooling systems. Research centers, businesses, and industries all over the world rely on our expertise to provide them with a reliable, on site, supply of gases or cooling systems for all kinds of applications.

Product information

Stirling Cryogenics operates at the cutting edge of cryogenic technology.

A recent achievement was the designing and building of a cooling system for the ICARUS project, which is being carried out by the INFN in Italy. This fully selfcontrolled system of ten 4kW cryogenerators was built to cool 400 liters of liquid Argon to exactly 94K with an uptime of 100% for at least 10 years. Stirling Cryogenics is also involved in innovative superconductivity projects such as the European Hydrogenie project, and in several national initiatives in China, South Korea, Russia, and the Netherlands.

References

ICARUS (INFN), Gran Sasso, Italy – 40 kW controlled temperature liquid Argon cooling system for large scale neutrino – Detector SNLS, Grenoble, France – 20K cooling system for packing of nuclear material R&D Power Engineering – Moscow, Russia – Controlled temperature liquid nitrogen cooling system for HTS pilot plant

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57 employees

www.stirlingcryogenics.com



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 performance 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, aluminium 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.

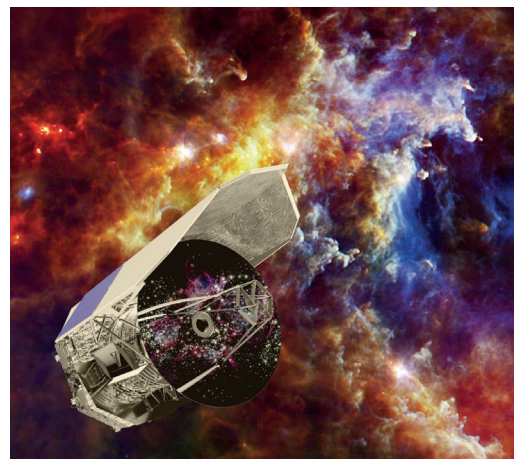
Coatings – Lenses are commonly supplied with AR coatings, ranging from 3-5 μm or 8-12 μm or variations. Reflectivity $R < 0.5\%$ or even smaller upon request. All IR coatings are compliant with most MIL-specifications. Besides AR we can supply front sides with DLCs

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Turnover: 1.5 M€ | 9 employees

www.sumipro.nl



Tebulo Engineering BV

Engineering is the main activity of the Tebulo organization. Of the many projects which have been realized by Tebulo Engineering each year, approximately 80% is primarily engineering for the industry where innovation, development, improvement and creativity are key words.

With our engineering activities we serve the Steel-industry, Chemical and Petrochemical, Food, Public utilities, Energy companies, Nuclear-, Pharmaceutical- and the Automotive industry.

The projects relate mostly front-end engineering projects. However, parts thereof, such as studies, risk assessments, basic and detail engineering are important activities.

The projects are multi- or single disciplinary, where mechanical - and electrical engineering play a primary role. Obviously, civil and structural, Energy distribution (medium - and low voltage) Control technology, Measurement and control and Instrumentation as well as Installation technology have a share in our activities.

Beside our own control philosophy, programs are written for different manufacturer control systems and robots. Within our engineering department Turn-Key projects, where complete mechanization is developed and supplied, are of great importance. Our marking -, strapping – and de-strapping machines, which are supplied worldwide, are also part of our engineering activities.

The project-based approach ensures that projects are completed smoothly, with just ‘timed’ turn to the right disciplines.

Tebulo Engineering stands for:

“Technical experts driven by engineering”.

John van Stek

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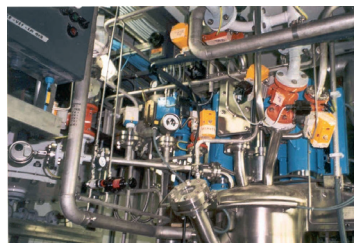
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Technische Experts gedreven
door Engineering



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 pijpsorten. 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 behoort tot de mogelijkheden.

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www.tebunus.nl



F L E X I B L E W I T H M E T A L



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

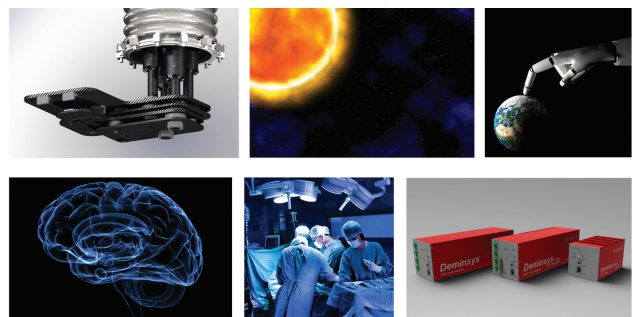
P.L. Kat

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25 employees

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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 – Akzo Nobel – Unilever – Shell – Koninklijke Bibliotheek

Eric Arends

Operations Manager

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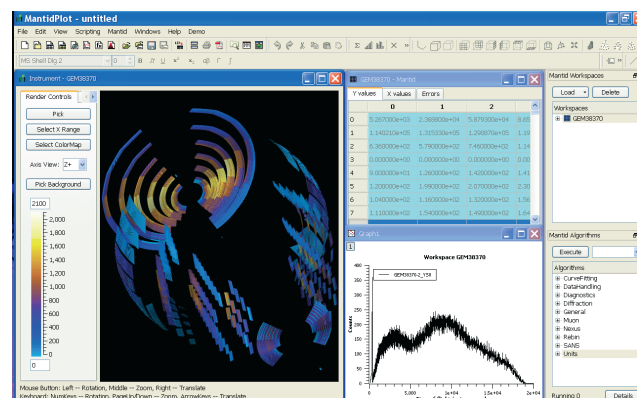
Turnover: €23M | 240 employees

www.tessella.com



"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



TNO connects people and knowledge to create innovations that boost the sustainable competitiveness of industry and wellbeing society.

Product information

High-end Opto-mechanical Instrumentation Instruments and mechanisms for space missions and ground-based astronomy demand the utmost opto-mechanical precision and stability. TNO's unique multidisciplinary design process enables requisite picometer stability and sub-nanometer positioning accuracy.

Our instruments reflect extreme specifications imposed by hostile operation environments and ultra-high accuracy and stability.

TNO's expertise from optics to mechanical engineering, control and electronics 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 and Silicon Carbide.

References

TNO's experience in cryogenics is applied in HIFI for Herschel, metrology for Gaia and delay lines for Darwin.

On space activities TNO has been playing important roles in the ESO programmes VLT and E-ELT, and the ITER programmes. Important commercial customers of TNO in the field of high-end optomechanics are ASML and Zeiss.

B.C.(Ben) Braam MSc.

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Turnover: 494,6 M€ | 4,400 employees

www.tno.nl



Tree C

Tree C Technology B.V. develops 3D simulation technology and builds advanced simulators for training, procedure design- and validation, remote handling and research. We serve a wide range of international clients in the maritime, offshore construction, oil & gas, heavy lifting, dredging, nuclear and related industries as well as a large number of universities.

Product information

The success of R E M O T E H A N D L I N G will be a key factor in the safe exploitation of fusion energy. VR4Robots® offers the best combination of interactive visualization and remote handling technology to prepare and execute the demanding RH-tasks in ITER.

VR4Robots® enables you to define, visualize, animate, simulate and interact with robots and manipulators in a virtual world. The environment may include digital mockup's based on 3D CAD data. Complex 'behaviours' of robots, cameras, animations, movement constraints and collision properties can be added to the environment to improve realism. VR4Robots® is capable of handling the largest full scale mock-up facilities with the aim to prepare, demonstrate and execute remote maintenance, and to develop the remote maintenance operating procedures to facilitate development of components.

References

- DIFFER (Dutch Institute For Fundamental Energy Research), NL
- JET (Joint European Torus), UK
- Oxford Technologies, Ltd., UK
- (image Remote Handling Control Room, courtesy of Oxford Technologies, Ltd.)

Gerard Weder

Managing director

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www.tree-c.nl



VR4Robots

Vacuüm Specials

Vacuüm Specials B.V. is specialised in the implementation, construction, manufacturing of components and subsystems and the realisation of complex projects on a turnkey bases regarding Vacuum technology and Cryogenic Applications.

Vacuüm Specials prefers to work in a "Partnership" relation rather than in a strict Customer - Supplier relation.

Vacuüm Specials B.V. originated from the Vacuüm Specials branch of Leybold B.V. in The Netherlands and obtained independent status from 1 July 1997.

From its establishment in 1975, Vacuüm Specials has delivered – both in Holland and abroad and to the fullest satisfaction of its customers, a variety of projects, resulting in an expertise in the field of vacuum technology and cryogenics applications.

All company processes take place following fixed procedures in accordance with ISO 9001:2000. After having prepared a tender followed by the acceptance of a purchase order, project progress is set out in consultation with the customer in a project planning.

Hereafter engineering takes place, in close cooperation with the customer, using SolidEdge or AutoCAD. Exchange of drawing files and project communication takes place by means of E-mail.

After the drawings have been approved by the customer, production commences where quality monitoring is an ongoing process.

References

Nuclear Gas Industry (pump sets, leak testers, production machines, automatic LN2 fillings systems), ESA/ESTEC and TNO (space simulation cambers, thermal vacuum systems and LN2 filling systems), ASM (special spool pieces and traps), Omicron (Liquid Helium Cryostats for low temperature scanning Probe Microscopes), Oerlikon Leybold Vacuüm (Chambers and special products), Mapper Lithography (chambers and special products) , Zeiss (special products), Linde (LHe transfer lines) and DCA Finland (UHV Chambers up to 1000COF.

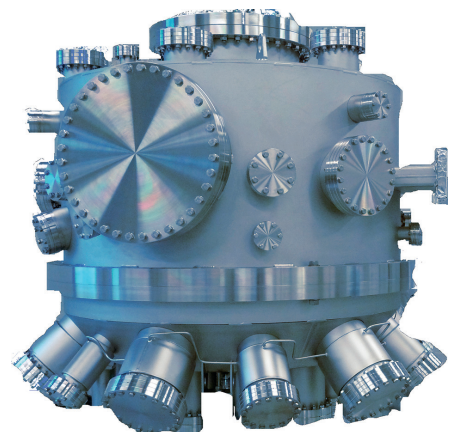
Jan Bos

Managing Director

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Turnover 4.9M€ | 23 employees

www.vacuumspecials.nl



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, prototyping, 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, Cymer **Analytical:** 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

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Turnover 2011 E500M | 1750 employees

www.vdletg.com



Veenstra Glazenborg

Manufacturer of high precision mechanical equipment. Experience in milling and turning of high grade alloys and pure materials.

Product information

- Sampling probes for natural gas composition measurements (underground application)
- Die cutters for hygiene industry (HSS powder + Tungsten carbide)
- High pressure valves 10000PSI for upstream applications Highlights
- Engineering rotating equipment and production tooling
- 5 axis milling max weight 1200 kg, Machining off solid CAD/CAM
- Milling and turning max weight 5 ton, dimensions 1.00x2.50m
- 4 axis wire eroding and High speed milling max 45000-1 min
- Grinding dept. for moulds and cutting dies
- Certificates: ISO9001:2008 ; G0304 RtoD ; NEN3834

References

SCA – GasUnie – Draka – Philips – Shell – Kernfysisch Versneller Instituut

Femme Nauta

Director of sales

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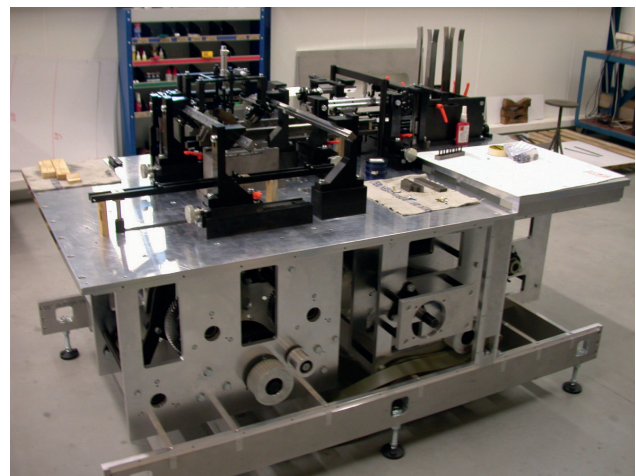
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Turnover: 4.6 M€ | 38 employees

www.veenstra-glazenborg.nl



Veenstra-Glazenborg



Velmon Lastechniek

Velmon Lastechniek BV is a company for all kind of stainless steel tubes solutions. Many years of experience with cryogen-, food- and pharmacy industries. Assembly and welding in workshop and on site!

Product information

Manufacturing and orbital welding of stainless steel pipe sections and pipe joints. Orbital welding with closed chamber and open weld head, range from $\varnothing 6\text{mm}$ until $\varnothing 168.3\text{mm}$. Series from 1 – 1000+, X-rayed, pressure test, helium leak-tests (max. $1 \times 10^{-9} \text{ Pa m}^3\text{s}^{-1}$) and oxygen clean treatment. ISO 9001 and ISO EN3834 (under construction) MIG-welding (GMAW), TIG (GTAW) certificated EN287-1 and EN1418.

References

CERN – Corus steel – TEVA Pharmachemie – Trelleborg – Klinger-Picoff – Kenz-Figee – Tekoma – Cofely

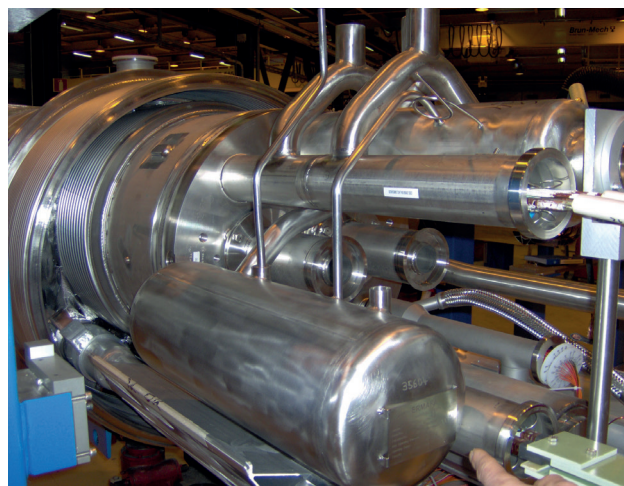
Marc Bosman (IWT)

Managing director

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Turnover: Velmon Lastechniek BV 1,3 M€ | 10 employees
Turnover: Velmon Group 4,5 M€ | 38 employees

www.velmon.nl



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.

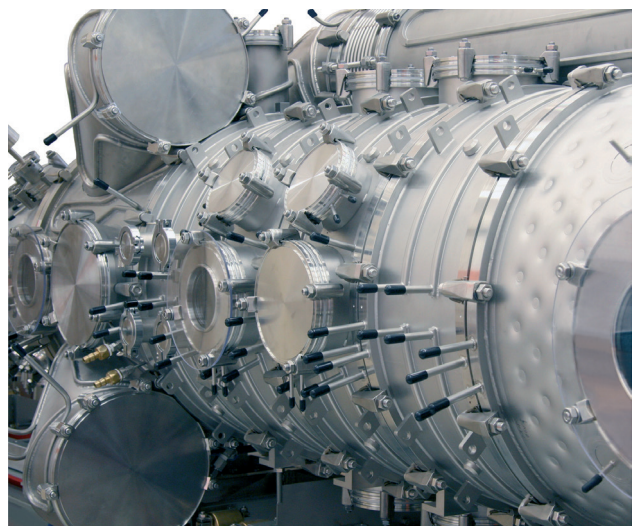
Fred Verkerk

Managing director

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

www.vernooybv.nl



Wijdeven Group

Wijdeven Group is a leading Dutch company in developing, engineering and manufacturing cutting-edge magnetic fields for both motion and power generation for high-end applications.

Product information

Wijdeven Group provides innovative complete magnetic solutions building on more than 70 years of know-how and expertises in the field of advanced magnetic technologies.

Wijdeven Group develops and manufactures motion and power magnetic components, (sub-)assemblies and systems that include various coils, permanent magnets and passive components like transformers and inductors.

Wijdeven Group is a global company with her headquarters located in Oirschot (the Netherlands) and a joint venture in China, offering leadership both in costreduction and technology. In doing so we strive to provide exceptional values for our customers.

Wijdeven group is a quality company with green mindset for our environment, with both ISO9001 and TS16949 certified.

References

ASML – Philips – NXP – GE security – Thales – Honeywell – BOSCH – XEROX

Rene van den Heuvel

Account Manager – Business Unit Motion

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Turnover: 20 M€ | 110 employees

www.wijdeven.com



ILO's for Big Science

Name ILO / Affiliation	Email	Facility / organisation	Theme
Piet van Otterloo , Former Dutch Scientific Director, Consultant ITER-NL	otterloo@introweb.nl		General Counsel on behalf of businesses (NL hightech SME).
Toon Verhoeven (FOM-DIFFER/ITER NL)	A.G.A.Verhoeven@differ.nl	ITER (F4E) – FR JET (EFDA) – UK Asdex-U – DE Wendelstein-7X – DE IFMIF (IEA)	Fusion facilities
Rob Klöpping (FOM-Nikhef)	klopping@nikhef.nl	CERN – CH ESRF – CH ESS – SE ILL – FR EMBL – DE DESY – DE Neutrino Telescopes	Accelerator, neutron and X-ray facilities
Wilfried Boland (NOVA + ESO)	boland@strw.leidenuniv.nl	E-ELT ALMA	Optical telescopes
Emiel van der Graaf (KVI)	vandergaaf@kvi.nl	ZFEL – NL, Groningen XFEL – DE	Free electron laser facilities
Ronald Halfwerk (ASTRON)	Halfwerk@astron.nl	LOFAR – NL SKA	Radio Telescopes
Gerard Cornet (SRON en NSO)	G.Cornet@sron.nl	ESA ruimtemissies	Space observation satellites
Joost Carpay (NSO)	j.carpay@spaceoffice.nl	NSO	Space
Rik Linssen (RID)	r.j.linssen@tudelft.nl	RID TU Delft	Oyster, ionizing radiation related research, nuclear reactor
Alex Schoenmakers a.i. (NRG)	schoenmakers@nrg.eu	Pallas	Pallas reactor, medical isotope production and energy
Martin van Breukelen (HFML)	M.vanBreukelen@science.ru.nl	HFML – NL, Nijmegen EMFL – NL, FR, DE	Magnets with ultrahigh fields
Marck Smit (NIOZ)	Marck.Smit@nioz.nl		Coastal and Marine Research (including deep sea research and technology)

NOTES

This image shows a full page of blank, lined paper. It features approximately 30 evenly spaced horizontal blue lines across its entire surface. The paper is otherwise completely empty, with no margins, text, or other markings.



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