

June 2022

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THE DUTCH ILO-NETWORK

Science and technology have been changing the world significantly in our lifetime. Often in a way we couldn't have imagined. Imagination, curiosity and perseverance are the leading (f)actors on this playground.

Big Science is the domain where scientists and engineers get together and stimulate each other to great heights. Scientific questions demand the utmost of technology to push the frontiers of our knowledge. The answers that are found, expected or unexpected lead to new questions that are often even more challenging. This continuous cycle determines the activities of public research institutes in the Netherlands. These institutes represent an invaluable asset of the Dutch science ecosystem. Ultimately, they also lead the way to innovation for society which we can see in the medical diagnostics sector and many other areas. Industrial partners are in first instance invaluable in the supply chain for Big Science infrastructures to satisfy the increasing demand to develop complex technologies that are required for future experiments or upgrades of existing ones. Secondly, they are fundamental to bringing the innovations from Big Science to the general public.

To both ends, industry is eager to be involved, not primarily for making short term returns on investment, but to exploit the opportunities to increase or improve existing expertise, to be able to introduce new technologies in existing markets, or to penetrate new domestic of foreign markets. This is not without risk, it requires vision and courage to invest, failure is a possibility, but the gain can be high and also failures can provide a means to improve. Government support can help to alleviate the risks, and only then Big Science can thrive, even in a relatively small country as the Netherlands.

The Netherlands have been investing in many Big Science programs already with great success. With the provisional commitment of the Dutch government to contribute just under 900 million to build the Einstein Telescope in the border region between Belgium and Germany near Maastricht, a new big step has been taken to support the innovation potential of a Big science infrastructure.

The ongoing activities in building the ET-pathfinder research and development facility for technology development in Maastricht are highly aimed at involving industry in those developments.

There is a need for a large variety of skills and scientists & engineers from both sides should to get to know one other and find a way to work together to optimise the use of the each other's competences. Scientists know how what is needed to answer their scientific questions and industrial engineers have the capability to design for practical use, installation and cost.

The network of Industrial Liaison Officers (ILOs) can support the companies in their efforts to earn contracts from Big Science facilities. Usually every facility has an ILO in each member state, who can establish and maintain the connection between the facility and national industry. In this role the ILOs also help to create business from the return on Dutch investments in Big Science facilities.

They jointly distribute the information about calls for tender, organise network events and can support the companies in their efforts for tendering.

This brochure shows the technologies that are of key importance for the development of large research infrastructures on the basis of the companies who are or desire to be active on this market. The ILO-net has seen the number of Dutch companies grow in the course of the past decasde, which we consider as a strong signal for the relevance of Big Science for science and innovation. This brochure is completely revised in the spring of 2022.

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www.bigscience.nl

CONTENTS

BIG SCIENCE

| | | Schelde Exotech | 43 |
|---|-----|--|-----------|
| | | Van Halteren Metaal BV | 44 |
| 1 ELECTRICAL, ELECTROMECHANICAL | | | |
| AND RF SYSTEMS | 7 | 2.2 Precision machining (high speed millin | g, |
| Advanced Electromagnetics BV | 9 | turning, electro forming, EDM) | 45 |
| High Voltage Potting and Coating (HVPC) | 10 | Bakker Fijnmetaal | 47 |
| Linear Technology Corporation (LTC) | 11 | FMI High Tech Solutions / FMI Machining | 48 |
| Magnetic Innovations | 12 | Frencken Group Limited-Mechatronics Division | 49 |
| MTSA Technopower | 13 | Hittech Landes | 50 |
| National Instruments | 14 | Kusters & Bosch | 51 |
| Raditeq | 15 | Mevi | 52 |
| Technobis Group | 16 | Nijdra Group | 53 |
| Technolution | 17 | PMP Lichtenvoorde BV | 54 |
| Topic Embedded Products BV | 18 | VDL Enabling Technologies Group | 55 |
| | | Vermeulen Metaal BV | 56 |
| 1.1 Cabling and wiring (power, RF, fiber, | , | | |
| super conducting,) | 19 | 2.3 General machining | 57 |
| Capable BV | 21 | AJB Instruments BV | 59 |
| MCap Cable & Glassfiber assemblies | 22 | Betech Mass Turning | 60 |
| Romal.com | 23 | Bouman Machinefabriek | 61 |
| Steered Technology | 24 | Germefa | 62 |
| | | Geurtsen Machinefabriek | 63 |
| 1.2 Power supplies DC, AC, high frequen | су, | IGS GeboJagema | 64 |
| high current, high voltage | 25 | Tol Plaatwerl | 65 |
| Delta Elektronika BV | 27 | Wilting | 66 |
| Prodrive Technologies | 28 | Witec | 67 |
| Vonk | 29 | | |
| | | 2.4 Geometrical measurement | 69 |
| 1.3 Printed Circuit Boards | 31 | IBS Precision Engineering | 71 |
| Megahard | 33 | Mitutoyo | 72 |
| Neways | 34 | Xpress Precision Engineering BV | 73 |
| Sintecs | 35 | ZEISS Industrial Quality Solutions | 74 |
| Thales Group Competence | 36 | | |
| VDL TBP Electronics | 37 | 2.5 Mechatronics | 75 |
| | | Airbus Defence and Space Netherlands | 77 |
| 2 MECHANICAL | 39 | Demcon Advanced Mechatronics | 78 |
| 2.1 Machining of big parts | 39 | INDOLES Precision BV | 79 |
| Bayards Aluminium Constructions | 41 | PM B.V. | 80 |
| Boessenkool | 42 | Q-sys | 81 |

| 3 BASIC MATERIAL TECHNOLOGIES | 83 | 5 REMOTE HANDLING SYSTEMS (FOR HAZARI |) AND |
|--|-------|---------------------------------------|-------|
| Aalberts Surface Technologies Eindhoven BV | 84 | INACCESSIBLE ENVIRONMENT) | 119 |
| Airborne | 86 | Active Space Technologies | 121 |
| Antonius | 87 | Heemskerk Innovative Technology | 122 |
| Benecom | 88 | Tree C | 123 |
| Bodycote Vacuum Brazing | 89 | | |
| Etchform BV | 90 | 6 DETECTORS AND SENSORS | 125 |
| Futura Composites BV | 91 | Amsterdam Scientific Instruments | 127 |
| Highrise BV | 92 | Cosine Measurement Systems | 128 |
| Innogrind | 93 | Nedinsco | 129 |
| Innplate | 94 | Optics11 | 130 |
| Kersten Kunststof(f) coating | 95 | Peter Haak Produktontwikkeling | 131 |
| Multivalent Plating & Etching BV | 96 | Photonis | 132 |
| Ter Hoek Vonkerosie | 97 | Single Quantum | 133 |
| VDL Fibertech Industries | 98 | Somni Solutions | 134 |
| 3.1 Machining of odd material | | 7 CRYO AND LOW TEMPERTURE | 135 |
| (Ceramics, OFC, maraging- and | | Cryoworld BV | 137 |
| duplex steel, Beryllium) | 99 | DeMaCo Holland BV | 138 |
| Admatec Europe | 101 | Stirling Cryogenics BV | 139 |
| BKB Precision | 102 | | |
| Ceratec Technical Ceramics BV | 103 | 8 (ULTRA) HIGH VACUUM SYSTEMS AND | |
| Formatec | 104 | LEAK DETECTION | 141 |
| Louwershanique | 105 | Hositrad Vacuum Technology | 143 |
| Nebo Special Tooling BV | 106 | Mogema 3.0 | 144 |
| | | Vacutech | 145 |
| 4 MANUFACTURING AND ASSEMBLY | | Vacuüm Specials | 146 |
| TECHNOLOGIES | 107 | Vernooy Vacuum Engineering | 147 |
| 3D Metal Forming | 109 | | |
| Buigstaal Tube Bending | 110 | 9 INSTRUMENTATION & CONTROL | 149 |
| De Valk | 111 | ACQ Engineering | 151 |
| Jeveka | 112 | Actemium EMS | 152 |
| Mat-tech BV | 113 | AR Benelux | 153 |
| Metrik Fasteners BV | 114 | DotX Control Solutions BV | 154 |
| Oceanz | 115 | Hitec Special Measuring Systems | 155 |
| Tebunus Tube Bending | 116 | INCAA Computers | 156 |
| Telmastaal | 117 | Omics2Image | 157 |
| Velmon Maintenance Piping & Construction B | V 118 | S&T | 158 |

| 10 ENGINEERING METHODOLOGIES | 450 | 15 MATERIALS HANDLING: DELICATE AND/OR | |
|--|-----|--|-----|
| AND TOOLS | 159 | GOODS, LIQUIDS AND GASES | 19 |
| ACE development & engineering | 161 | Ecomatters | 199 |
| Amstel Engineering BV | 162 | Harsveld Apparatenbouw BV | 200 |
| BKL | 163 | Hydro-Carbon Separation Systems BV | 20 |
| EKB | 164 | IPS Technology | 202 |
| Entechna Engineering | 165 | Lamers High Tech Systems BV | 20: |
| JPE | 166 | PTB Special Equipment | 204 |
| Lencon | 167 | Smink Group BV | 20! |
| MECAL High-tech/Systems | 168 | | |
| MI-Partners | 169 | 16 EDUCATION/TRAINING/INSTRUCTION | 20 |
| NLR - Royal Netherlands Aerospace Centre | 170 | High Tech Institute | 209 |
| Settels Savenije | 171 | Mikrocentrum | 210 |
| Sioux Technologies | 172 | | |
| Tebulo Engineering BV | 173 | 17 MISCELLANEOUS | 21 |
| TechMasters BV | 174 | ATG Europe | 21: |
| TNO | 175 | Atkins BV | 214 |
| VIRO | 176 | Dec Group | 21! |
| | | Deerns Nederland BV | 210 |
| 11 SAFETY SYSTEMS, LICENSING AND PROTECTION | ON | elQuip | 21 |
| OF HAZARDOUS INSTALLATIONS, ACCESS | | Omneo Systems | 218 |
| CONTROL, FIRE AND GAS DETECTION | 177 | Thomas Thor Associates | 219 |
| New Cosmos -BIE | 179 | | |
| | | MEMBERS ILO-NET | 22 |
| 12 OTHER MAGNETS | 181 | | |
| Wijdeven Inductive Solutions | 183 | INDEX ALPHABETICAL | 223 |
| 13 INFORMATION- AND COMMUNICATION TECHNOLOGIES AND CODAC (CONTROL, | | NOTES | 22 |
| DATA ACCESS AND COMMUNICATION) | 185 | | |
| 4DSP | 187 | | |
| Advanced Solutions Nederland | 188 | | |
| Stream HPC BV | 189 | | |
| Tessella | 190 | | |
| 14 PHOTONIC TECHNOLOGIES | 191 | | |
| Diamond Kimberlit BV | 193 | | |
| LioniX International | 194 | | |
| Sumipro | 195 | | |



| ELECTRICAL, ELECTRO- MECHANICAL AND RF | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|---|--------------|--|---|--|-------|------|----------|------|--------|------------------------|------------------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| SYSTEMS | Company size | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric (HOW) | Large | stal | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Advanced Electro- magnetics BV | | motors; mag- nets; actuators | 0209; 0225; 03 | electro mechanical automation | | | Х | | | Х | Х | | х | х | х | | х | х | Х | Х |
| DARE!! Products BV | М | development; projects | 0250; 0350; 03 | EMC; simulation | | | | | | RF; analog | | | | | | | Х | Х | Х | Х |
| High Voltage Potting and Coating (HVPC) | S | sealing/pack- aging electric components | 03 | sealing, potting and coating; high voltage | | | | | | | | | | х | | | | х | х | |
| Linear Technology Corporation (LTC) | | high perfor- mance analogue ICs | 0301; 0305 | power; RF; data conv; signal proc; sensor network | | | | | | integrated cirquits | embedded | | | | | | Х | х | х | |
| Magnetic Innovations | | customized electromagnetic solutions | 0207; 0209; 0225 | direct drive motors; generators; moving magnet actuators | | | х | | | | | | | х | | | | х | х | |
| MTSA Technopower | S | high power swiches; process equipment | 0210; 03; 02; 09 | turnkey systems; ons- ite service; customer specific | | | х | | | power | | | | | | | | х | х | Х |
| National Instruments | L | graphical tool for system development | 0207; 0350; 040509 | labview; I/O-hard- ware; controllers | | | | | | х | х | | | х | | | х | | | X |
| Technobis Group | S | suppl. high tech instruments and modules | 0207; 05; 06; 08 | turnkey projects; proto; serie; exotic material; fibre | | | х | | х | | | х | | | | | х | х | х | |
| Technolution | | high-end elec- tronic HW&SW applications | 03; 0303 | custumer specific development and engineering | | | | | | high speed data acq | embedded | х | | | | | Х | х | х | |
| Topic Embedded Products BV | S | embedded software & hard- ware products | 0303; 030409; 030406; 039005; 040101; 0401006; 040410;05 | development kits; FPGA-programming; board dev. | | | | | | Х | embedded, HPC | х | х | х | | | х | х | x | |

AE-GROUP: ADVANCED ELECTROMAGNETICS

COMPANY PROFILE

The AE-GROUP has 85 years experience with the manufacturing and distribution of electrical motors and actuators, ranging from greenhouses to military, automotive and aerospace applications. We are a technological center with in-house experienced specialists in all relevant domains (from simulation to manufacturing, from electromagnetics to fluid mechanics and from training to auditing and grant proposals) which take advantage of dedicated analysis and design software tools.

PRODUCTS

- Custom electrical motors and power **electronics:** a broad range from general rotary to linear e-motor, generator or actuator to electric drives or traction applications, from standard frame sizes to custom designed electrical machines and power electronics
- Test-benches for electrical motors and systems: computer controlled test-stands for electrical machines and drive systems (features: adjustable mounting platforms, integrated power analyzer, graphical user interface, various types of sensors, programmable load curves)
- Magnet assemblies and magnetic materials: design, analysis and/or manufacturing of custom magnet elqui assemblies, permanent magnet rotors/translators for electrical machines
- Electrical motor components: off-theshelf or custom made coils and windings,

lamination stacks, permanent magnets, insulation materials, brushes and brush-holders, etc.

SERVICES

• R&D and technical consultancy: the in-house know-how and a close cooperation with selected partners enables us to provide expert consultancy concerning the electromagnetic, mechanical, thermal, power conversion and control aspects of complex electromechanical solutions and mechatronic systems.

BIG SCIENCE

- Measurements: facilities and qualified operators for prototype- or production-level testing of electrical machines and transmission gears covering a broad power range.
- Manufacturing: facilities for the manufacturing of electrical machines, electromechanical actuators, precision machined components for both series and prototype production.

SOFTWARE

• SPEED. MAGNET, and CAMSTAR: exclusive

distributor in the Benelux area



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www.ae-grp.nl

HIGH VOLTAGE POTTING AND COATING (HVPC)

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.

HVPC 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.

HVPC 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

HVPC 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. HVPC 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 - ASMI - FFI - Selex



Henri Schoolderman

General manager

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Turnover: 2,5 M€ | 18 Employees

www.hvpc.nl



LINEAR TECHNOLOGY CORPORATION (LTC)

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for over 35 years. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems.

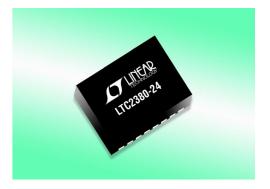
PRODUCT INFORMATION

- Linear Technology Corporation produces products covering:
- Power management
- Data conversion
- Signal conditioning
- RF and interface ICs
- μModule subsystems
- Wireless sensor network

SOLUTIONS

Linear Technology Corporation provides expertise not only on the workings of our parts, but also the larger, often complex problems customers are looking to solve. The Linear Technology Circuit Collection conveniently assembles some of the most popular designs from our data sheets, design notes and application notes. The Linear Technology Blogs offer insights into applications directly from our team of analog gurus – by engineers, for engineers.

BIG SCIENCE





Mr. Tim Viaene

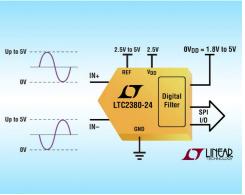
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MAGNETIC INNOVATIONS

Most engineers struggle to find the right direct drive motor technology for their application. We offer our help and expertise to those engineers. We provide them with quality electromagnetic solutions starting from idea up to production and delivery. Helping them every step of the way, so they can build applications with direct drive motors that are highly efficient and reduce the cost of ownership of their systems.

OUR PRODUCT: DIRECT DRIVE MOTORS

At Magnetic Innovations we want to exceed customers' expectations. We focus on bringing high quality direct drive motors into the market with a fair price for our customers. Our main emphasis is on direct drive linear and rotary motors & generators and moving magnet actuators.

Magnetic Innovations standard series of direct drive motors are suitable for a wide range of applications. Advantages of our direct drive motors:

- They are reliable and have a long life span.
- Have a high torque density.
- Do not require transmission.
- Meet the IE4/IE5 efficiency class.
- Have a low carbon footprint.
- Offer higher efficiency while being smaller.

CUSTOM HIGH TORQUE MOTORS

If our standard motor series are not adequate for your application, it is also possible to develop a



Cor van den Heuvel

Sales Manager Magnetic Innovations

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www.magneticinnovations.com

customized motor. We do not believe in a onesize-fits-all mentality. Every customer is unique and so are their applications. That is why we also design electromechanical products tailored to and optimized for the customer application. Based on the customers' requirements, we develop our motors and solutions for their application. This process starts with just a simple e-mail or phone call to our sales department, you can find our contact information below

MARKETS

As Magnetic Innovations we are a global supplier for the Semiconductor, Aerospace, Industrial, automotive and Consumer markets. Working with us, will guarantee high quality standards, reliability and advanced technological know-how. You will get a partner you can build on and trust.

WHAT MAKES US DIFFERENT

To ensure the excellent quality of our products, we have an outstanding team working in our ISO 9001 certified production facilities. They collaborate closely with our R&D department to ensure that we fulfil all customer requirements. At magnetic Innovations we strive for excellence in everything that we do. We are a company that goes that extra mile for her

clients and emphasize strongly on reliability. That is one of the reasons why clients have stayed with us for years.



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

BIG SCIENCE

μ

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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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

Researchers 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

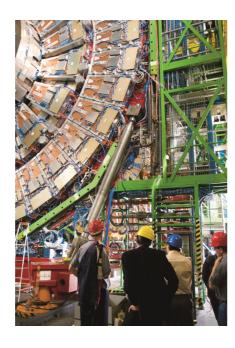
The flexibility and scalability of the platform, supported by a growing eco-system of reusable IP and applications, gives engineers a strong competitive advantage in completing more projects with less time and resources. Thousands of engineers successfully use the NI graphical system design platform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



William Baars

Area Sales Manager

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RADITEQ

Raditeq B.V. is a commercial company based in the Netherlands and internationally active. Raditeq specializes in research and development of EMC/RF measurement equipment.

The company was originally founded May 1st, 1992 under the name RADITEQ The new name Raditeq was officially launched the November 16th, 2020. Raditeq has a strong focus on RF and especially EMC. Since the release of the first product – RadiMation® – in 1995 Raditeq has an acquired a strong position in the EMC marketplace. This position has been further improved with the introduction of its first product the RadiSense® in 1995. After that several products and breakthroughs were introduced in a rapid pace. Products including the RadiPower®, RadiGen® and RadiField®.

KEY VALUES

The name Raditeq is a combination of Radiation, Technology and Quality. These aspects not only makeup the name Raditeq but are also in line with the key values of Raditeg:

- Quality
- Innovation
- Technical knowledge

OUR EXPERTISE LIES IN THE FIELD OF:

- EMC Measurement equipment and software
- RF signal generation



Patrick Dijkstra

Director

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- Analog LASER applications
- Custom made RF filters
- Custom made RF mixers
- Custom made antennas, including custom patch antennas

In our state-of-the-art facilities we can simulate designs, build fast prototypes and perform accurate measurements. As we can perform all project activities in house, we have a very short research and development cycle. Next to the hardware development we have our own embedded software team.

REFERENCES

Over the years Raditeq has performed projects for Dutch Defense, Dutch Government, Chinese Space and many private companies. Our specialized measurement systems are sold worldwide to renowned customers. Recently Raditeq developed a High-Power S-Band Passive Inter Modulation (PIM) and Ku-band Multi Carrier test systems for SatCom applications Raditeq has also supplied a large number of power meters to the particle accelerator XFEL in Germany. In this application the RadiPower® measures RF fields of subatomic particles traveling at the speed of light! Raditeq also has developed the current most accurate electric field probe in the world! The RadiSense® 10 is used all over the world to perform unprecedented E-field measurements!



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 environ-ments, 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



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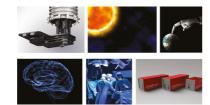
TECHNOBIS FIBRE TECHNOLOGIES

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



TECHNOLUTION

TECHNOLUTION: REDEFINING SOLUTIONS

Ever since we started in 1987, we are driven by curiosity and innovation. Our 250 colleagues thrive on bringing new technologies to practical applications in your domain. We are always working at the edge of what is technologically possible, turning innovative technology into functional, practical solutions.

MULTIDISCIPLINARY DEVELOPMENT

At Technolution, we use a multidisciplinary approach to give you the best possible solution. We will build software, embedded software/hardware, electronics, programmable logic, or any combination of those. Our clients are startups, scale-ups, established enterprises that operate globally and scientific organizations that specialize in semiconductor equipment, optics and imaging, space, med tech and life sciences, among other fields. Our preferred way of working with clients is to cooperate through co-creation and the exchange of technological knowledge, domain knowledge and practical experience.

We offer multidisciplinary support in designing the operation of moving components, as well as the technology for the acquisition, transport, conversion and processing of the data in your system.

T Technolution

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UNIQUE SELLING POINTS

- We provide solutions (electronics, software, building blocks, IP) for high-end equipment.
- We excel at the combination of electronics and software in difficult technological preconditions.
- We have a track record in developing extremely synchronized high speed data acquisition & processing solutions.
- We have a deep understanding of the various domains in the data acquisition & processing chain, including analog electronics, digital electronics, onboard processing and external processing. We combine advanced technology with a thorough application and domain knowledge.

REFERENCES

- Low-latency audio, video & control distribution over standard Ethernet connections for in-hospital medical application
- High-speed data acquisition and control in transmission electron microscopes
- Real-time image data processing and control for electron-beam lithography
- Scanning, Acquisition and Imaging electronics for Multi-beam Scanning
- Electron Microscopes
- Warping harness control electronics
- Some of our clients: ASML, Thermo Fisher Scientific, Phillips, Nearfield Instruments, TNO



BIG SCIENCE

TOPIC EMBEDDED SYSTEMS

For 25 years TOPIC Embedded Systems provides customers worldwide with consultancy and development services, standard products and healthcare solutions in different application domains. With over 150 employees, we are a strong and established company with our headquarters located in Best, The Netherlands.

BUSINESS LINES

- 1. Consultancy: The Netherlands
- 2. Turn-key Projects: Europe and North America
- 3. Farm-out Projects: Europe and North America
- **4.** Embedded Product Development and Sales: Worldwide
- **5.** Healthcare Solutions: Worldwide

EXPERTISE

Our expertise covers software design, board development, FPGA design, mathematical modeling and AI algorithm development. We support our customers with innovative solutions in the embedded domain, on PC platforms and cloud-based infrastructures. Projects executed by TOPIC follow development processes covering specification, design, testing, integration and configuration management according to our ISO13485 certified quality management system.

With our ambition for innovation, sustainable relationships and growth we want to make the world a little better, healthier & smarter every day!

XILINX PREMIER PARTNER

TOPIC is one of the few Xilinx Premier Alliance Partners in the world and the only one in the Benelux. Our partnership with Xilinx started in 2009 and since than we have been working closely together over the last years.





Dirk van den Heuvel

Product manager

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The Netherlands

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www.TopicProducts.com





| CABLING AND WIRING (POWER, RF, FIBER, SUPER | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|--|--------------|--|-----------------------------|--|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| CONDUCTING,) | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | M | etal | | | | | | ٦ | | Te. | | | | | Pro | |
| | Company size | (WIDAI) | Coues | product centric | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| CAPABLE BV | S | cables and connectors | 0205 | unique custom specific development | | | | | | | | | | Х | | Х | Х | Х | | |
| MCap Cable & Glassfiber assemblies | | high-grade copper, fiber cables and modules | 020505 | design/assembly optical; copper combined with tubes | | | | | | х | | | | | Х | | Х | Х | Х | |
| Romal.com | S | wire, cable and connectors supply | 0205 | off the shelf cables; short delivery time from stock | | | | | | | | | | | | | | | | |
| Steered Technology | S | electric and optic interconnection systems | 0205; 030204; 0303; 0804 | development of cable assys; fibers; foils; connectors | | | | | | х | | | | Х | X | | Х | Х | х | X |

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, aeronautics and medical).

Almost 35 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 Cable Connectivity Group, a European leader active in the production, distribution, and assembly of specialty cables and cable connectivity solutions. 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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BIG SCIENCE

2

23

MCAP CABLE & GLASSFIBER ASSEMBLIES

MCAP is the specialist for designing and assembling high-grade copper cables, fiber optic cables and modules, which are used in various industries and markets. From milking robot to electronic pyranometer and professional video camera system to underwater telescope. Together with you, we look for the cable or fiber optic connection that best fits your specific circumstances.

CABLE ASSEMBLING

The optimal cable assembly, focusing on your specific application. With optical fibers, copper or combined with tubes for air, water or oil. We will design it for you or build it according to your drawing. Whatever you want, we make your connection.

SYSTEM MODULES

From loose components to a sub-assembly or an end-product. MCAP builds modules or devices in small to medium quantities where quality and reliability comes first and the delivery time will be no issue. Assemblies you can rely on.

EXTRAORDINARY PROJECT

Nikhef develops a super-telescope that detects neutrino particles from distant astrophysical sources such as supernovae, gamma ray bursts or colliding stars. KM3Net consists of a network of cables and spheres with detectors and has a size of over one cubic kilometer.

SPECIAL CABLES

For KM3Net we helped developing tubes with a combined length of 800 meters with power wires and optical fibers. These tubes of 40 meter are linked together between glass spheres with sensors, so called Digital Optical Modules. The tubes are filled with oil to withstand high pressure at a depth of 3 to 5 km in the Mediterranean Sea.

These kind of challenges we like to enter, because where others say something is impossible, MCAP continues.



Niels van Aperloo

Sales Manager

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ROMAL.COM

Romal is a technical wholesaler from Utrecht in the centre of the Netherlands. Our company was founded in 1932 and remains a family owned business even today. Our focus is on the business to business market. With our broad range of products we target the Broadcast, Data/Telecom, Catv/ Satellite, Security, Coil winding, Isolation, Industrial and Installation markets.

QUALITY

If there's one thing our wide range of products have in common it's quality. We are constantly looking for the best products to fulfil our customer needs and further complete our product range. Therefore we have a strong product range with excellent products and reliable suppliers who stand behind their products a complete 100%.

STOCK AND VISION

We hold more than 2.000 different products on stock to have a quick and reliable order fulfilment time. With our active stock policy we try to keep our stock as current as possible. This also means that we add new products on a regular basis.

Next to quality we see that lead time is becoming more and more important for our customers. It's part of our company vision to have a large stock position. This may not seem as the most logical thing for a business economist but over last 80 years it proved to be an important trademark for Romal. Many of our customers thrive to keep their stock positions as low as possible. This is only possible if they have a reliable partner with a good stock position. Romal is that reliable partner. And in case we don't have stock we can guarantee a quick delivery because of our broad range of suppliers.

PRODUCT MANAGEMENT

Our product manager continues to look for new products or combinations of existing products. This can be cable assemblies but also customer specific cable, which we can deliver in small batches if needed. We also have a number of product specialists who can advise our customer and handle their specific needs professionally.



Bas Koens

Accountmanager

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STEERED TECHNOLOGY

Connecting the dots to make your system work!

steeRED Technology, founded by experienced industry professionals, is an interconnection system development and supply company. We use internal resources as well as the capabilities and resources of our partners to make new developments possible and to maximize productivity for our customers.

OUR TECHNOLOGIES:

- Connectors and other interconnection components.
- Copper cable assemblies
- Foil & Flex based interconnect solutions.
- Fibre Optic cable assemblies and subsystems.
- High Speed copper cable assemblies
- Solutions for verification and characterisation testing.

Our team has over 80 years of experience with developing and selling interconnection systems. In 's-Hertogenbosch we do have our engineering, prototyping and testing capabilities and we also work together with carefully selected partners to have access to those technologies which can make the difference for the value we want to bring to our customers.





Theo Hooft

Business Development

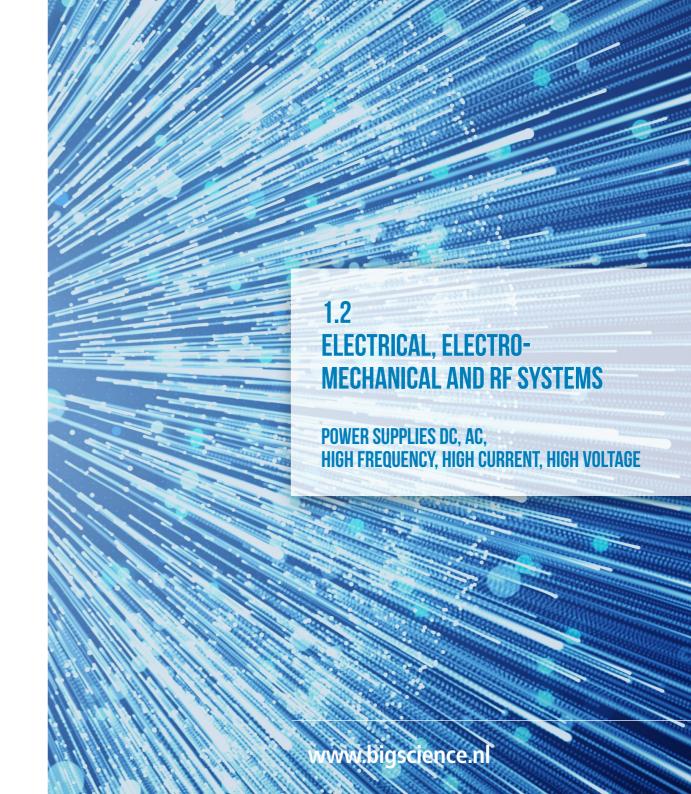
Siloweg 618 5222 BM 's-Hertogenbosch

T: +31(0)73 689 99 69

E: theohooft@steeredtechnology.com

steeredtechnology.com





| POWER SUPPLIES DC, AC, HIGH FREQUENCY, HIGH CURRENT, HIGH VOLTAGE | | Discipline (WHAT) | Speciality (US Procurement codes | P) Technology-/ skill-/ | Me | etal | | | | Area | | Service Pr | S | Ter | Supply | | | | Pro | 1 |
|---|--------------|---|-----------------------------------|---|-------|-------|----------|------|--------|-------------------|--------------------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | Company size | | | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Delta Elektronika BV | S | DC power supplies | 0305 | custom specific development | | | | | | power supplies | | | | | | | х | Х | | Х |
| Vonk | | high power conversion systems; RF | 0305; 0201 | RF; AC and DC tailor made power electronics | | | | | | RF high power | X | | х | х | Х | | х | Х | х | Х |
| Prodrive Technologies | L | powerconver- sion; motion control; vision | 0207; 0210; 0305; 0405; 07 | in house production of all components | | | х | | | power supplies | data processing | | | | х | | х | х | х | X |

DELTA ELEKTRONIKA BV

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



Sales

Vissersdiik 4 4301 ND Zierikzee T: +31 (0)111 41 36 56 E: sales@delta-elektronika.nl www.delta-elektronika.nl 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

BIG SCIENCE

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!



28

PRODRIVE TECHNOLOGIES

CREATING MEANINGFUL TECHNOLOGIES THAT MAKE THE WORLD WORK

Prodrive Technologies designs and manufactures high-tech electronics, software, and mechatronic products and systems. We operate six dedicated R&D programs and three highly automated manufacturing sites as well as sales offices in the Netherlands, U.S., China, Israel, Germany, and Japan.

Producing everything we need in-house helps us to establish smart ways of optimizing, integrating, and robotizing, and gives our products an exceptional price-performance ratio.

Our passion for technology and our goal to improve our business processes center on the customers. This 'DNA' has been crucial to our company since we began operating in 1993 and it's the foundation of our success as well as that of our customers.

RELEVANT TECHNOLOGIES

 Embedded Computing Systems: We supply a range of OTS (off-the-shelf) products including rack servers and industrial PCs, audio-video distribution adapters, panel PCs, telematic getaways, and systems for image processing, system control, and connectivity applications. We also deliver customerspecific configurations for turnkey certified systems.

PRODRIVE TECHNOLOGIES

Erik Zeegers

Chief Commercial Officer

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- Power Conversion: We help customers to transform electrical energy at the maximum possible efficiency, and reliability and at the lowest cost for more than 20 years. Our focus is to provide innovative, next-generation, and disruptive solutions through a wide range of OTS power components, power modules, power systems, and customizations based on our own building blocks.
- Vision & Sensing: We are one of the few Vision & Sensing solution providers with the capability and know-how to provide you with complete optoelectronic solutions. We support various types of applications, amongst others: medicine research, metrology, air quality monitoring, digital pathology, speed enforcement, and material science. We continue to expand and improve our OTS products, such as cameras, position measurement solutions, and air quality sensors.
- Motion & Mechatronics: We manufacture a
 wide range of OTS products, such as drives and
 motion controllers, linear motors, and actuators, as
 well as motion control software. Where required,
 we develop unique, tailored solutions, including
 integrated mechatronic systems and custom drives
 and motors.

MARKETS

Semiconductor, Medical, Life Sciences, Industrial, E-mobility, Energy & Infrastructure.



VONK

Vonk optimizes power conversion systems in a rapidly changing industrial market. Inspired by technological developments, Ampulz is contributing to a sustainable environment.

Our solutions find their way into various applications for:

- Industrial processes
- Nuclear fusion research
- Particle accelerators / synchrotrons
- Electricity distribution grids and Renewable energy

As an independent partner, we provide and maintain systems between grid connection and your primary business process. Solutions are based on standard components and existing "building blocks" tailored to specially designed converters or drive systems. Together with you, we realize savings, higher availability and accuracy at system level, by realizing the best-suited solution with knowledge and experience from your process.

We have 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

When the stakes are high and power conversion is key and complex, invest your trust in Ampulz. Our independent solutions and services are unparalleled throughout the world.

Some of our references for scientific institutes: ESRF – 2.4 MW booster power supply, Quadrupole power converters, Forschungszentrum Jülich – Septum Magnet power supply, HFML Nijmegen (NL) – 20 MW DC Converter System Modular Conversion System and 15 kA power supply for super conducting magnets, ASDEX upgrade IPP Garching (D) – Extension of the Pulsed Power Supply Network of ASDEX, Helmholtz Zentrum Berlin (D) – 8 MW 20 kA Power Converter System, Solvin Antwerp (B) – 1 MW PEM fuel cell conversion system



Erwin Lenten

Manager Sales & Services

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| PRINTED CIRCUIT Boards | | | Speciality (US | SP) | | | | | | Area | | Service | | | Supply | | | | | |
|------------------------------|--------------|---|-------------------------|--|-------|-------|----------|------|--------|-------------------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | | ٦ | 10 | Te | | | | | Pro | |
| | Company size | (******) | codes | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Megahard | | high end electronic PCB serviceprovider | 03; 0303 | 3D-design; prototyping; production; programming | | | | | | including encolsures | FPGA | | | Х | х | | х | х | х | |
| Neways | | one-stop- provider Electronic Manufacturing | 030105; 030210; 0303 | PCBA's; cables; microelectronics and box build applications | | | | | | х | embedded | | | х | | | х | х | Х | |
| Sintecs | | high speed PCB electronic design service | 03; 0303 | modular systems; embedded SW; spec. products | | | | | | FPGA | embedded | | | | Х | | х | х | х | |
| TBP ELECTRONICS | S | electronics manufacturing service (EMS) | 03; 0303; 04 | lifecycle solutions; PCB design; assembly and test | | | | | | PCB large series | Х | | | х | | | | х | х | |
| Thales Group Competence | S | competence center for printed circuit boards | 03; 0303; 04 | design/manufacuring complex RF and mixed signal PCBs | | | | | | PCB small series | embedded | | | х | | X | X | х | X | X |

MEGAHARD

ELECTRONICS DESIGN

We design electronics products for businesses & research institutes. Do you prefer in-house development? No problem! Let us recruit an engineer for you or provide you with a freelance engineer.

TECHNOLOGY DEVELOPMENT CAPABILITIES:

- 3D designs and 3D rendering
- 3D printing/rapid prototyping
- PCB design and prototyping
- Embedded systems programming
- Functional testing
- Engineering advice and consultancy

ENGINEERING SUPPORT CAPABILITIES:

- Technical documentation writing
- Translating technical documentation and software: French, Dutch, English, Spanish, German

BIG SCIENCE

3

• Recruitment of specialized electronics design engineers



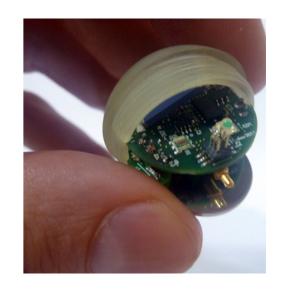
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www.megahard.pro



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NEWAYS

Neways is an international innovator in electronics for smart mobility, connectivity and semicon solutions. With more than 50 years' experience and strong engineering power, Neways is proud to act as technology innovation partner for the most demanding customers in the industry. Neways develops and produces electronics that facilitate major trends around global ESG themes.

Neways was founded 1969 and has operations in Europe, the USA and Asia with a total of 2,600 employees. With over 500 engineers in our company, we are acting as a technology innovation partner for our customers. Design, prototyping, industrial scale-up, world-class cleanrooms and remanufacturing services. In 2021 Neways recorded a net turnover of €469.5 million

With our technologies and manufacturing solutions we help to address the world's environmental and social challenges. We provide enabling solutions for the energy transition, zero-emission transportation, precision agriculture and digital farming, the future of health and more.

We help our customers in achieving their sustainability goals with design for circularity and our life cycle management capabilities. We build sustainable cradle to cradle supply chains for our customers, implementing re-use and re-manufacture as new over the entire lifecycle. In doing so, we focus on green technologies, green market applications and green supply chains.

FACTS & FIGURES

Stock Market: Euronext (NEWAY)

Founded: 1969

Board of Directors: Eric Stodel (CEO), Steven Soederhuizen (COO), Paul de Koning (CFO) **Headquarter:** Son, The Netherlands

Employees: 2600 (2021)

Net Turnover: 469.5 million euro (2021)

Locations: Netherlands, Germany, Czech Republic,

Slovakia, China, USA

neways

Neways Electronics International NV

Executive business development

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www.newayselectronics.com



SINTECS

Sintecs was formed in 2000 as an Electronic Design Service company specialized in high-speed board design and analyses. Since that time, Sintecs has been involved in the development of highend products in several market segments like Industrial, Medical, Telecommunications, Aerospace, Defence, etc. With our projects, we have consistently pushed forward technology boundaries.

Sintecs offers different solutions in the area of System-On-Modules development, Embedded system design and Electronic Design Services. We enable our customers to create better products that increase productivity, improve product quality, improve total cost of ownership (TCO) and provide environmental benefits.

SFRVICES

Signal Integrity analysis

PCB design

Thermal analysis

Power Integrity analysis

Timing analysis

DFM/DFA verification

EMC verification

Library development

EDA design support

Timing analysis

IBIS Resources

ENGINEERING

Product design FPGA Design
Electronic design Type Approval

Embedded software design



Hans Klos

CEO

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PRODUCTS

SES-MX536 SiMC-T20x SES-MX6S/D/Q SiMC-LS20xx SiMC-T10xx SiMC-TCB01

REFERENCES

ASML - Thales - Ten Cate - Bosch

PARTNERS

Mentor Graphics – Freescale/NXP – Samtec – Cadence







BIG SCIENCE

THALES GROUP COMPETENCE

CENTER FOR PRINTED CIRCUIT BOARDS

The Thales Group Competence Center Printed Circuit Boards is a low-volume supplier of high performance and high reliability complex and advanced printed circuit boards for mission critical systems.

The printed circuit board facility in Hengelo has evolved since 1969 as an internal manufacturing department within Thales Netherlands, supporting prototyping, new product introduction and technology developments for radar frontend systems. In 2012 it was appointed Thales Group Competence Center Printed Circuit Boards (GCC PCB) offering a wide range of capabilities specially tailored to the Thales Group needs with emphasis on advanced and complex RF and mixed signal printed circuit boards. Production is performed primarily for a customer base in:

- Avionics
- Space
- Defence
- High Rel Industrial applications

With respect to quality control and assurance the centre holds MIL 55110 and MIL 31032, ISO 14001 and ISO 9001 certifications and is a member of the IPC. Inspection is performed in compliance with IPC class 2 and 3 requirements. The Thales Group internal acceptance criteria: TRT 16 262

THALES

Robin Lemsom

Sales Manager Group Competence Center Printed Circuit Boards

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721 for rigid printed circuit boards and TRT 16 261 983 for microwave printed circuit boards are being implemented as part of the GCC activities. In-house reliability testing and environmental stress screening are available. Product categories and application areas include power modules, analogue boards, HDI, high speed digital multi layers, mixed signal boards, stripline flex and rigid structures, and antenna panels.

Rigid panels size up to 24x(36-48) inches and flexible layers up to a length of 10 m can be manufactured. A wide multilayer material experience ranging from FR4, PI, a large variety of RF materials (Rogers and teflons) and their combinations together with metal core materials like aluminium, BeO and AlSi and copper is present. The PCB center exhibits technical capabilities including laser direct imaging, advanced mechanical drilling and routing equipment in order to fulfil demanding registration requirements. The current lithography processes are upgraded towards state-of-the-art-fine-line capabilities. Interconnection techniques include UV/CO2 dual-source micro via laser drilling, via hole filling and over plating. Additional features like cavities, back drilling, embedded resistors and thermal management are also part of the technology portfolio. Advanced AOI, BBT testing and cross section analysis is used. Available surface finishes are HAL (PbSn), ENIG, ENEPIG, selective electrolytic PbSn, selective electrolytic Ni and hard- or soft Au and their possible combinations.

VDL TBP ELECTRONICS

VDL TBP Electronics is part of VDL Groep, an international industrial family business with its head office in Eindhoven, the Netherlands. As an Electronics Manufacturing Services (EMS) company VDL TBP Electronics offers integrated services in the field of printed circuit board assemblies (PCBAs). Clients benefit from the highest product value and the best value of ownership. This has been realised via design optimisation when it comes to manufacturability, testability, delivery flexibility and costs, and has resulted in maximum production efficiency and maximum quality.

We are involved in the earliest design phase and our effectiveness can be attributed to our early supplier involvement, Design for excellence (DfX), Design for Manufacturing (DfM), Design for Testing (DfT), Design for Logistics (DfL) and Design for Cost (DfC). We are also a specialist in supply chain management, smart industry, test engineering and cabinet construction.

We employee over 140 people and have experience since 1976 in a variety of sectors: semicon & analytics, vision, defence & space, science & health, energy & industry. This means we possess

all necessary certificates with regards to quality, process control, the environment, the medical sector, defence and the aerospace industry. The head office is located at Dirksland and the department test engineering at the Brainport Industries Campus, Eindhoven, the Netherlands.

STRENGTH THROUGH COOPERATION

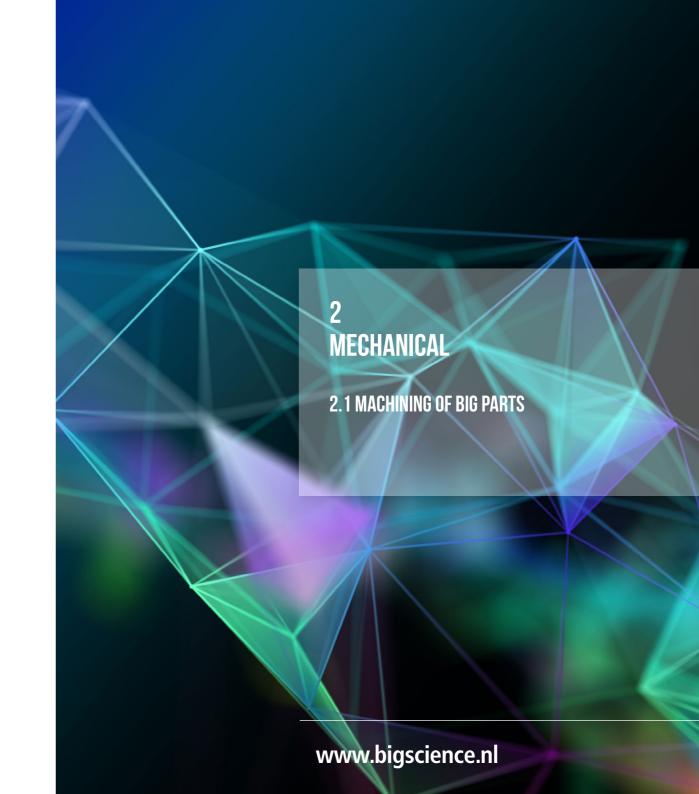


Business Development Executive

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| MACHINING OF BIG PARTS | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|---------------------------------------|--------------|--|------------------------------|---|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | | Discipline | Procurement | Technology-/ | Me | etal | | | | | | | | 7 | | | | | P | |
| | Company size | (WHAT) | codes | skill-/ product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Bayards Aluminium Constructions | М | machining; joining | 050401; 06 | complex aluminium constructions | х | х | | | х | | | | | | | | x | х | х | |
| Schelde Exotech | М | construction; repair of reactors and vessels | 050401; 050402; 060102 | engineering and manufacturing special materials | х | | | | х | | | | | | Х | | | х | х | |
| Van Halteren Metaal BV | М | systemsupplier; machinery; structures | 0504; 0590; 060102 | general precision machining and assembly | х | х | х | | х | | | х | | | х | | x | x | x | |

BAYARDS ALUMINIUM CONSTRUCTIONS

Thanks to 50 years of experience in designing and manufacturing high-quality complex Aluminium structures, Bayards has become one of the most ground-breaking construction companies in Europe, establishing itself as an industry leader while gaining international momentum with each project.

PRODUCT INFORMATION

With our innovative approach to design, fabrication and assembly of complex aluminium products, we have the expertise and the capability of working on projects with very specific requirements. The solutions we offer are tailored specially to our customers needs, engineered and built in accordance with the latest international safety regulations and highest quality standards.

BAYARDS PRODUCTION CAPABILITIES

- High speed profile milling machine
- Friction stir welding machine
- Gantry machine
- High speed milling machine

With our state of the art equipment, the possibilities are limitless.

REFERENCE

A remarkable example of our work is manufacturing components for the Cern's newest generation of practical accelerators (LHC) which are used for fundamental scientific research. This project was ordered by the European Organization for Nuclear Research (CERN - Conseil European pour la Recherche Nucleaire).

It involved precision machining, orbital welding, x-ray, vacuum- and helium leak-testing. Like all our projects, this too was completed to the full satisfaction of our very demanding client.

BIG SCIENCE

Please visit our website for more information and track records.



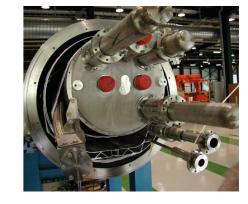
Ing. Dies W.S. Mackintosh

Managing Director

Veerweg 2 2957 ZG Nieuw-Lekkerland T: +31 (0)184 68 30 00 E: dies.mackintosh@bayards.nl

Turnover: 25 M€ | 135 employees

www.bayards.nl



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. Eelco M. Osse

CEO

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www.boessenkool.com

Turnover: 5 M€ | 40 employees



Revolver Mobile Undulator Carriagesfor the E.S.R.F. in Large Welding constructions including the ,France. Repeating Paralellism tolerance between the Large Machining against small tolerances in beams is 0,05 mm over 2,5 meters incl. beam rotation. just one factory!



SCHELDE EXOTECH

HOW WE WORK AND THE INDUSTRIES WE WORK WITH

Schelde Exotech is a highly qualified and reliable manufacturer of industrial equipment. In accordance with strict quality standards, we design, manufacture, test and maintain advanced products that exactly meet our customers' requirements and specifications. Schelde Exotech is active for many high-tech industries.

At Schelde Exotech, every product or series that we produce is a one-off. We can only produce these items in the best possible way in close collaboration with the companies we work for. We feel privileged that many well-known companies have become loyal partners. In every job, our customers are closely involved in the process and can rely on our promises at every stage of production and at every level of the business. Most of our customers are active in the energy, nuclear, chemical and petrochemical, scientific research and particle physics markets.

REFERENCES

RAL, CERN, ASML, BASF, Dow, YARA



Schelde Exotech

Postadres

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Bezoekadres

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VAN HALTEREN TECHNOLOGIES

Van Halteren Metaal BV is part of the Van Halteren Group, an independent family owned business with various facilities in and outside The Netherlands. We aim for multidisciplinary projects where competences as advanced heavy machining, certified welding, assembly and commissioning are a requirement. Since our company was established more than 50 years ago we have build up an extensive track record together with our customers. This experience is put back into every new application by our highly skilled and experienced staff.

MARKETS

VHM serves a large variety of markets: Offshore, Big science, Shipbuilding, Defense, Renewable Energy, Semi-conductors, Vacuum.

COMPETENCES

We manufacture components as well as complete assemblies

- Advanced machining 3-4-5- axis up to 20 meter
- Certified welding, ISO 3834-2, NEN EN 1090-2.
- Project management
- · Assembly, Integration, Testing & Commissioning
- Engineering & development
- · Quality assurance & control
- Electro-mechanical assemblies

EXPERIENCE WITH CERN, HFML, ITER, ESRF, ESA

Magnet housings, MQFXB magnet parts, special tooling, components



Jeroen Kleinlugtenbelt

Sales Manager

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PRODUCTS

- Mechanical components
- Mechatronic assemblies
- UHV components
- Simulator systems
- High voltage switches









| PRECISION MACHINING (HIGH SPEED MILLING, | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|---|--------------|--|-------------------------|---|----|------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| TURNING, ELECTRO Forming, EDM) | Company size | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric (HOW) | Me | stal | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Bakker Fijnmetaal | S | high precision machining; assembly | 0504; 06 | ultra precision parts; small-medium series | | х | х | | Х | | | | | | | | | Х | Х | |
| FMI High Tech Solutions / FMI Machining | L | mechanical parts and systems supplier | 0504; 0590 | general high precision machining | х | х | х | х | х | | | | | | х | | Х | х | х | Х |
| Kusters & Bosch | S | high precision machining; assembly | 0504;06 | precision parts; machining S/L series; assembly | | х | х | | х | | | | | | | | | | х | |
| Landes High End Machining BV | М | high precision machining; assembly | 0504; 050401; 050402 | precision parts; machining S/L series; assembly | х | Х | | | | | | | | | | | | х | х | |
| Mevi Fijnmechanische Industrie | М | mechanical parts and systems supplier | 0504; 0590 | submicron machining engineering motioncontrol | | х | х | | х | | | | | | X | | х | х | х | X |
| Nijdra Group | М | mechanical parts and systems supplier | 0504; 0590 | general high precision machining and engineering | | х | х | х | х | | | | | х | х | | х | х | Х | Х |
| Precision Mechanical Production | S | ultra precision mechanical components | 0504; 050402; 0501 | CAD/CAM; CNC machining of super alloys and titanium | | | | | | | | | | | | | | | х | |
| VDL Enabling Technologies Group | L | system supplier; machinery; structures | 0504; 0590 | development; projects; machining | х | х | х | | х | Х | Х | х | | | х | | х | х | х | х |
| Vermeulen Metaal BV | S | high precision components and assemblies | 0504; 06 | certified welding; sheet metal; precision machining | | х | | | | | | | | | | | | х | х | |

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).

From 1 to 10.000 pcs, parts and assemblies!



















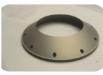


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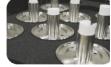


















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www.bakkerfm.nl

49

FMI HIGHTECH SOLUTIONS / FMI MACHINING

FMI HighTech Solutions is part of the FMI Group, with 8 companies, located in the South of the Netherlands. FMI HighTech Solutions designs, produces and assembles complete mechanical and mechatronic devises and complex modules.

COMPETENCES

Vacuum Technology, Motion, Optical, Precision Technology, Transport tooling, Material Handling, Production of High-end parts, 3-D printing, Project Management

PRODUCTS

Production of high-end parts (0,003micron), Highend modules, Tooling equipment. Proto-typing and volume production.

QUALITY

- ISO9001 QMS, ISO13485
- Loyd's certificate Of re-marking
- Full traceable product document management
- Compliance & Risk management
- Advanced Product Management

MARKETS

Aerospace - Analytical - Leisure industry - Medical - Food - Oil & Gas - Semi-conductor - Solar.

REFERENCES

Anteryon - Applikon - ASML - FEI - JenOptik -Thales - Twister - Vekoma





John in 't Groen

Business Development Manager

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www.fmi.nl





FRENCKEN GROUP LIMITED — MECHATRONICS DIVISION

Frencken Mechatronics operates globally with operating sites in Europe, North America and Asia. We develop, manufacture and sustain key mechatronic systems, modules and components for our customers in high tech equipment markets. In everything we do, we focus on delivering the highest value to our customers.

We offer solutions for integrated design, prototyping, new product introduction, manufacturing and supply chain management. Key areas of expertise are in development & engineering, ultra-high precision machining, sheet metal and the assembly of complex mechatronic modules and complete systems.

VALUE PROPOSITION

- We enable our partners to focus and excel in their core business.
- We support our partners total product life cycle and accelerate time-to-market.
- We provide access to global centers of excellence to accommodate a global market approach.

COMPETENCES AND TECHNOLOGIES

Among a vast range of competencies and technological capabilities, Frencken Mechatronics is highly skilled in accurate positioning, high vacuum, motion control and particle optics. The combination

of our experienced engineers, extensive and state of the art machining, testing and cleaning facilities and cleanrooms enables us to design, produce, clean, assemble and test a wide range of high precision products in line with the highest industry standards and our customer needs.

MARKETS

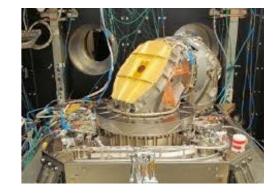
Frencken Mechatronics serves OEMs worldwide in some of the most demanding high tech equipment markets, such as semiconductor, medical and analytical instrumentation.

KEY-WORDS

- · Global footprint
- · Ultra-high precision machining
- Engineering
- Assembly
- Cleaning
- Testing



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HITTECH LANDES

Reliable supply of mechanical parts ready for assembly is the core competence of Hittech Landes. Hittech Landes incorporates 35 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. Hittech Landes was established in 1985 and became a member of the Hittech Groep early 2022 and has demonstrated consistent growth in turnover and technology development over the years. Hittech Landes currently employs approx. 50 employees and is both ISO 9001 and AS-9100D certified.

CAPABILITIES

The capabilities within Hittech 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 Hittech 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 Hittech 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.

RFFFRFNCFS

Fokker Aerostructures - Diehl Aviation - Stork -Pratt & Whitney – VDL ETG –Fresenius – Priva etc.

CERTIFICATION

ISO-9001. AS-9100D



Mr. Sander van der Laan

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KUSTERS & BOSCH

FIJNMECHANISCHE INDUSTRIE BV

We make precision parts and assemblies.

With a small enthusiastic team, a very modern machine park and over 25 years' experience in the making of machined precision parts we aim at a profitable and long lasting relation with our customers.

SPECIALTIES

- Precision (micron area) parts in all sorts of materials and (sub-) assemblies.
- Parts for vacuum applications.
- Series production

CAPABILITIES

- Modern precision 5-axis milling up to 2000x 800x750 mm milling.
- Acclimatised measuring facilities with table size 1200x2000x1000.
- Experienced & enthusiastic team of 35 people.

BIG SCIENCE

5

• Used to work for large organisations.



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BIG SCIENCE 52

MEVI

MEVI MEANS PRECISION WITHOUT COMPROMISE

Accuracy is Mevi's strength. Accuracy in everything from engineering to system supply, module construction, machining and test equipment. We can measure up to an accuracy of 0.6 µm, and drill holes measuring just 0.02mm. That's Mevi for you.

Our expertise is evident in every part of our company, from our extensive range of machinery to our over 100 specifically trained FTE's. It's thanks to all of these resources that Mevi has become a medium-sized partner with the capacity, knowledge and experience of a major player. But also one with the adaptability, determination and personal involvement of a small-scale organization. What this means in practice is that Mevi works extremely accurately, flexibly, and without compromising on quality. What's more, we like to taking on any challenge, regardless of its complexity. Whatever the challenge, we will build it.

MEVI SPECIALISES IN:

- Engineering
- Production
- System supply
- Test equipment
- Automation of 3-R pallet system (in combination with FEHLMANN P95)
- 5-axis range Ø 160 x 160mm
- Speed of 50,000 rpm



Anthony van Zeeland

Engineering Account Manager

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Three machines; countless solutions We will be happy to show you three of the machines that we're most proud of. However, these are only a few examples of all the machinery and technology at our disposal.

FEHLMANN VERSA 825

- 5-axis milling within 5µm
- Range Ø 500 H = 430mm
- EROWA automation system with 6 pallets of 400 x 400mm
- Speed of 20,000 rpm

KERN PYRAMID NANO

- Hydrostatic
- Mills to 1 μm, with repeat accuracy of 0.3μm

LEITZ PMM-C

- Calibrated to 0,6µm
- Range 800 x 1000 x 600mm
- Programmable with PC-DMIS

Interested in finding out how we can help vou? Please contact us to discuss your requirements.







NIJDRA GROUP

ABOUT US

Nijdra Group is a professional supplier of fine mechanical parts and mechatronic modules meant for the high-tech industry. Nijdra Group is a third generation family business (since 1947) and unburdens its clients with co-engineering, production and assembly. Thanks to the wealth of experience in the high-tech industry, we can offer added value in each phase – from development to final product.

CO-ENGINEERING

With co-engineering, we think along with the client in an early stage of design. We use our sector experience to find the most optimal solution for the manufacturability and reproducibility of parts and assemblies.

PRODUCTION

From prototyping to serial production of fine mechanical parts, CNC turning/milling/grinding. This is realised through highly automated and robotised machine factories with little human labour involved (low volume, high complexity, low costs). We also have experience with clean production and the production of oxygen free copper parts.

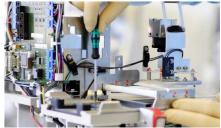
ASSEMBLY

For the OEM clients, the mechatronic modules are completely assembled and tested. All chain concerns are taken away, so that OEM clients can focus on unburdening their end customer.



BIG SCIENCE

53







Robbin van Zanten

Accountmanager

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55

PMP LICHTENVOORDE BV

PMP Lichtenvoorde BV is a flexible and innovative supplier, specialized in manufacturing of ultraprecision mechanical components for the High Tech industry.

COMPETENCES

- Since its foundation in 1998, PMP works proactively with customers in both the product development and the product realization process.
- · Knowledge and Skills at the highest level of;
- developing product- and process strategy
- tool design and development
- CAD/CAM
- CNC machining
- Aukom coordinate measuring technology (3D)
- An installed base of the latest machine tools at the forefront of technology;
- 3-axis (max.2000x800mm) CNC machines
- 5-axis (max. cube 600mm) CNC machines with loading robot
- 3D measuring facility.
- technical climatised production.

- Producing accurate, complex ultra-precision parts, with tolerances in the uM range.
- From prototype, single pieces to small and medium size series.
- Materials; aluminium, titanium and super alloys.
- The active quality assurance policy together with our safeguarded processes and procedures ensure our high quality to be continuously secured.

MARKETS

Semicon – Analytical – Optical – Medical – Defense and Aerospace.

PMP your "Partner in Precision"



Eric Sens

COO

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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: normal conducting (X-band) accelerator, FEL, astronomy, optics communiation, earth observation.

REFERENCES

Semiconductor Equipment: ASML, AMAT, KLA, ONTO, ASMI. Analytical: KLA, Thermo Fisher. Medical: Philips, Elekta. Solar & LED: AMAT, Veeco. Mechanization Projects: P&G, Kellogg's, Bosch. Science & Technology: ESO, ESA, TNO, PSI, CERN, DESY



Cees Coolen

Business Manager Science & Technology
Hans Priem

Business Manager Science & Technology

De Schakel 22, 5651 GH Eindhoven

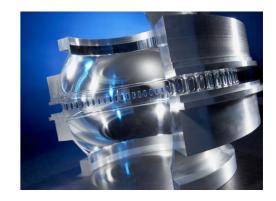
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E: hans.priem@vdletg.com

Turnover 2019 >E700M | 3000 employeeses

www.vdletg.com



VERMEULEN METAAL BV

Vermeulen Metaal BV is your One stop shop for specials

ENGINEERING

- Solid works
- Inventor

MANUFACTURING

- Sheetmetal (all materials)
- CNC milling
- CNC turning
- CNC boring
- Piping (water, gas and chemical)
- Skidbuilding
- Certified welding

ASSEMBLY

- machine building
- machine parts
- on-site installation

REFERENCES

OMT solutions – Cosign – Permobil France – Perfetti van Melle benelux – Solvay chemicals – Viro – Alstom – WML

CERTIFIED

- ISO 3834-2
- ISO 1090-1
- ISO 9001 (under construction)





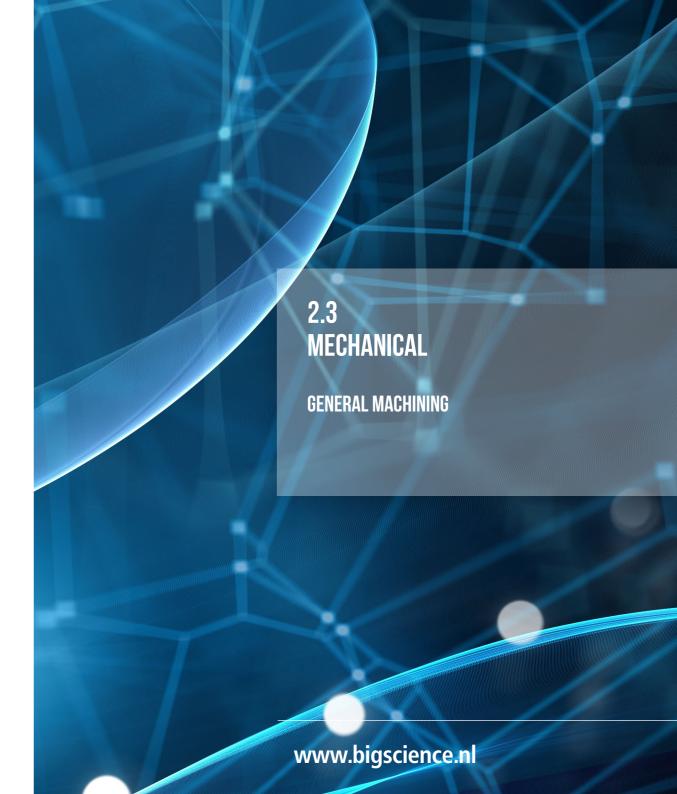


Peter Vermeulen

Director

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| GENERAL Machining | | | Speciality (US | 5P) | | | | | | Area | | Service | | | Supply | | | | | |
|----------------------------|--------------|---|-------------------------|---|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Мє | etal | | | | | | _ | | Te | | | | | Pro | _ |
| | Company size | (Wilhi) | Codes | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| AJB Instruments BV | | machining; assembly | 050404 | high precision components | | х | | | | | | | | | | | | | Х | |
| Betech Mass Turning | S | machining | 05 | large series turning | | х | Х | | | | | | | | | | | | Х | |
| Boessenkool | S | systems; machinery; structures | 0504; 0590 | general machining and assembly | х | х | х | | | | | х | | х | | х | x | x | | |
| Bouman Machinefabriek | | systems; machinery; structures | 0504; 0590 | general machining and assembly | х | х | х | | | | | х | x | | х | | х | х | X | |
| Germefa | | mechanical parts and systems supplier | 0504; 0590 | general high precision machining | х | х | х | х | х | | | | | | х | | х | х | x | х |
| Geurtsen Machinefabriek | М | mechanical parts and systems supplier | 0504; 0590 | high precision machining; 3D Metal printing; welding | | х | | | | | | х | | | х | | х | x | x | х |
| IGS GeboJagema | | machining large and small series | 0504 | high precision and moulds; engineering | Х | Х | | | | | | | | х | | | | х | х | |
| Wilting | S | ultra high vacuum and cryogenic systems | 0504; 06 | high precision manufacturing | | х | | | | | | | | | | | х | х | | |
| Witec | | product development high mix; low volume | 0207; 0209; 0225; 05 | high precision machining, motion control, pilot factory | | | х | | | | | | | х | x | | x | х | X | |

A.J.B. INSTRUMENT BV

Over the past several years AJB has developed itself as a specialised supplier of high precision components and small assemblies to many high tech industries.

Technical and commercial support combined with advanced production facilities allow us to satisfy almost every customer's demand. In our facility we have everything from conventional lathes to 5 axis CNC milling machines with automation and 13 axis CNC lathes. We also offer additional process capabilities of grinding, wire erosion, honing, lapping and a cleanroom assembly facility. An environmentally controlled measuring room with 2 CNC measuring machines ensures the highest accuracy and reproducibility of your product.



IJsbrand Dijkshoorn

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www.ajb.nl



BIG SCIENCE

59

9

BETECH MASS TURNING

The strength of Betech Mass Turning lies in the production of large series of turned goods. Complex micro turning and high precision parts, all in great quantities.

AN EVOLUTION IN INTELLIGENT PRODUCTION!

Located in the Netherlands, Betech is a leading European producer of large series of turned and mill-turned goods. Annually we produce tens of millions of custom made parts in all metals, for all kinds of customers worldwide. As the fully automated and innovative machining expert Betech supplies multiple industries, varying from automotive industry to high tech industry.

- Great Production Capacity
- Quality Documentation
- Short Delivery Times
- Surface Treatments
- Mass Production Expert
- Strategic Partnership

UNMANNED SERIAL PRODUCTION

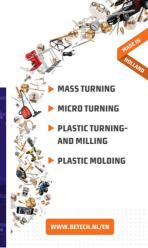
Betech operates 24/7 of which 80% is unmanned with fully automated and especially intelligent production techniques. The machinery consists of over 100 CNC-, mechanical-, and hydraulically controlled lathes, multi-spindles and transfer machines for turning and mill-turning. Our innovative manner of production results in a labor added value of 15 to 20% per product and therefor a highly competitive price level. We are specialists in a specific Ø-range of 0,8 to 69 mm from bars and tubes.



Arjan Schuinder Sales & Marketing

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Betech Group

BOUMAN MACHINEFABRIEK BV

Our well thought-out working methods are recognizable in everything we do.

Machine fabriek Bouman BV is supported by its own Engineering Department, to manufacture complex projects and products. Excellent planning and Project Management through one contact point makes it possible that our cooperation is perfect and trouble free. Pick up thephone and contact Machine fabriek BoumanBV

POSSIBILITIES

- Engineering
- CNC turning and milling
- Welding and sheet metal working (Carbon steel and Stainless steel)
- Assembly special machines and modules

UNISIGN UNIPORT 6000

- 4-5 axis CNC milling + drilling machine
- x-axis : 8000 mm
- y-axis: 2500 mm
- Z-axis: 1000 mm
- table: 8000x2170 mm
- CNC table: Ø 2000 mm
- Free space portal 2500(y) x 1200(z)

THE MATTER IN HAND



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63

GERMEFA

Greater precision provides countless new opportunities, whether noticeable or not. A good example of this is insect robots. For over a decade, scientists have worked on these minuscule robots, and now these robots, which weigh less than a gram, are ready to take to the skies.

The applications are numerous; think of, for example, their possible use in disaster areas.

That the production of these minuscule robots became possible, is due to recent breakthroughs in the fields of manufacture, design and materials. Manufacturing precision played an essential role in this development, needless to say.

The greater the precision and the higher the quality demands, the more we like the challenge at Germefa. We are continually striving to guarantee and further improve this accuracy and quality. This cannot be achieved overnight; we have been working on this process for decades.

Our precision and quality make us the perfect partner for companies in demanding markets, such as the medical/optical industry, aviation and aerospace as well as measurement and control. As part of the stock market listed Aalberts Industries, we can also take over the entire production process for components, by integrally outsourcing other types of processing to our sister companies, for example, heat and surface treatments, deep hole drilling, engineering, casting processes, punching and vacuum brazing. This way, you retain one point of contact, but you benefit from all the processing options and expertise available within Aalberts Industries.

Germefa is also part of the Micro Machining Group, a group of suppliers of complex precision mechanical components and assemblies. See www. micromachininggroup.nl/en/ How can we contribute to your next great advance?

MARKETS

Medical/Optical – Aviation and Aerospace – Oil & Gas, Science – Defence – Automotive – Measurement and Control

CERTIFICATION

ISO-9001-2008, ISO 13485



René de Vries

Sales Manager

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GEURTSEN MACHINEFABRIEK

Combined expertise: at Geurtsen we know better than anyone that complex technical issues call for targeted solutions. That is why we put the concept of 'combined expertise' into practice in every possible way.

SPECIALISTS IN MACHINE CONSTRUCTION

With its own design department, extensive and modern production facilities, and about 125 skilled employees, Geurtsen is able to develop and produce solutions for many technical problems. Our technical service department has about 30 service technicians to provide servicing, maintenance and repair at our customers' locations.

COMPETENCES

- Engineering
- CNC-milling (5-axis)
- CNC-turning
- Construction piping and skids
- Machine building
- Turnkey installation on location
- Service and maintenance
- Industrial supply
- Prototyping
- 3D Metal printing
- ISO 3834-2 certified welding MIG, TIG, Orbital

- NEN-EN 1090 certified constructions
- VCA (SCC) certification
- Organisation: ISO 9001:2015 certificate

MARKETS

- Industry process
- · Industrial supply
- Food, pharma
- Industrial services







Tom Bolink

Technical Accountmanager

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IGS GEBOJAGEMA

IGS GeboJagema, for over 65 years, we have been delivering high precision. Parts and moulds for some of the most successful products and industries. Many of the key players in the industry bring their toughest product challenges to IGS GeboJagema. That's because we provide the solutions they need to help them innovate new products.

Our problem-solving mindset, proven track record in high precision machining experience and meticulously methodical way of working ensures you the highest quality, process control and traceability needed for your products.

WHAT MAKES US DIFFERENT

Proven track record and know-how to help you push the boundaries on high precision parts and create new innovations

• Engineering power that helps you make seemingly impossible components, quickly and cost-effectively

- Design for Manufacturing support to improve the Manufacture ability of your products
- Meticulous process control of quality, validation and traceability to meet the strict standards for high precision parts
- High volume capabilities to produce small series multiple parts at once to meet high volume requirements and leverage economies of scale
- Financial stability as part of a large and solid group, that guarantees secure support during the entire lifetime of your product
- After sales support to offer a full warranty on all our products to guarantee a long productive lifetime.





eye for precision

Jan-Willem den Hollander

Buisiness Development Manager

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TOL PLAATWERK

Tol Plaatwerk is an international company that has been producing and developing sheet metal products for over 70 years. Our core business consists of customized housings and control room furniture. In this domain we aim to develop durable business partnerships, providing products reliably and of the highest quality, connecting with the customer at every stage of the development of a product to achieve the best possible solution.

WHAT MAKES US A GREAT PARTNER

- More than 70 years of experience
- Trustworthy and sustainable partner
- Contributes to the development of your product
- Extremely flexible
- High Quality
- Modern machinery

NEW DEVELOPMENTS AND THE FUTURE DIRECTIONS

Tol Plaatwerk has developed a vision to expand its international operation. Recent projects were done in Germany, England, Belgium, Norway and South

Korea. Increasingly often, Tol Plaatwerk offers a complete package; involvement in the development of a project from the start, collaborating to define the design. In addition, Tol Plaatwerk focuses on automating their manufacturing process and continuously expanding their range of equipment.

REFERENCE CUSTOMERS AND PROJECT EXAMPLES

BIG SCIENCE

ExxonMobil, Shell, Royal Marine & Airforce, Honeywell, Engie, Emerson, Schiphol Airport



Cor Kwakman

Commercial Director

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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 processdriven 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.



Adwin Kannekens

Sales director

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WITEC

Through innovation and cooperation, we enable our clients to distinguish themselves sustainably and to lead the way in their market. We develop, manufacture and sell technologically-innovative products and assemblies, in the fine mechanical technological industry, which are manufactured in repeat production.

Together with our clients, we come up with a fitting solution for technological issues at any level. From simple components to custom-made solutions. We aim to build a long-term relationship with our customers.

TOGETHER WE CREATE THE TECHNOLOGY OF THE FUTURE

Because we are active in different markets. we can apply our acquired knowledge in the manufacture and development of new products. This unique market position makes us the focal point of innovation. By sharing this knowledge with our customers, we help them profit from new opportunities in the market, making Witec a partner during the entire life cycle of a product and/or system.

Constant innovation, optimum processes and modern production facilities enable us to position ourselves as a reliable partner for the long term, with quality and performance at the centre.



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www.witec.nl

Our unique process approach allows us to see each product as a unique representation of a combination of production processes.

We have a worldwide network of suppliers at our disposal which meet all of our quality guidelines. Witec is ISO 9001:2015 and ISO 13485:2016 qualified.

LET'S INNOVATE TOGETHER

Witec development is a service provider in the development of new products that are manufactured industrially.

We seamlessly link 'what to make' to 'how to make', creating value from the very first product idea.

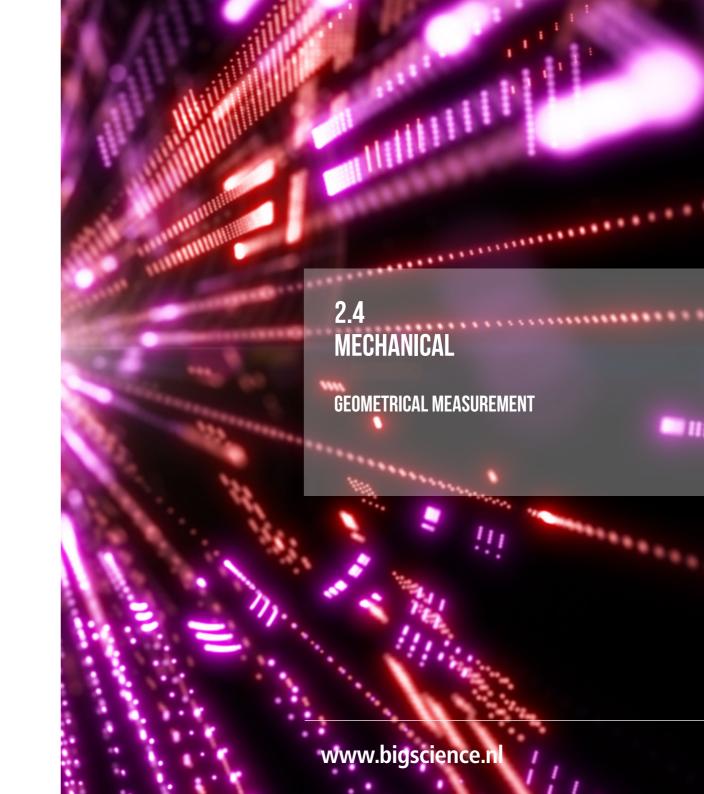
BIG SCIENCE

- Innovation management
- Project management
- Pilot factory

Witec Precision manufactures on micron-accuracy with ultra-clean parts due to our applied processes and high-tech equipment.

- High mix, low volume high precision
- UCV (Ultra clean vacuum)
- Standard dimensional accuracy of the production process \pm 0.03 mm

Witec motion specializes in the development of mass production and assembly of high-tech systems for various applications.



| GEOMETRICAL Measurement | | | Speciality (US | P) | ric l | | | | | | | Service | | | Supply | | | | | | |
|---------------------------------------|--------------|---|---------------------------|---|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|---|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | |]_, | | | | | | | Pr | | |
| | Company size | (WIDAI) | Coues | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement | |
| Carl Zeiss Industrial Metrology | | measuring machines and services | 050306; 0590 | CMM | | | | | | | Х | | х | | | | | | | х | |
| IBS Precision Engineering | | broad systems supplier | 05; 050306; 03; 08 | motion control, metrology | | | Х | | | Х | Х | | х | | Х | | | Х | Х | | |
| Mitutoyo | S | measuring machines and services | 050306; 0590 | CMM | | | | | | | Х | | | | x | | | | | | Х |
| Xpress Precision Engineering BV | S | ultra precision metrology and engineering | 0207; 03; 05900303; 09 | CMM probes; nano CMMs; nano engineering service | | | х | | | | | | | | | | x | | х | х | |

IBS PRECISION ENGINEERING BV

For almost 30 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.

Scientific research often requires new approaches and instruments to match. At IBS we work with the scientific community to engineer and deliver instruments where both measurement and precision are critical. From the world's most accurate coordinate measuring machine (ISARA), to chip placement machines for upgrading the ALICE experiment in CERN's large hadron collider (ALICIA) and motion solutions for the ground breaking ESRF Soft X-ray Spectrometer, we have a track record of firsts.

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.



Dirk Smits

Sales & Marketing Director

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BIG SCIENCE

Mitutoyo's history began with the establishment of a research center to produce Japan's first micrometers in Tokyo's Kamata district by Yehan Numata in 1934.

The founder of Mitutoyo Corporation was born on April 12, 1896 in Hiroshima. He was born into a Buddhist priest's family as the sixth of eight children. His family lineage had been made up of Buddhist priests since the 16th century.

Mitutoyo's philosophy has been 'to contribute to the wellbeing of society through precision measurement technologies.' Under this guiding principle Mitutoyo has expanded into global markets as a comprehensive manufacturer of precision measuring instruments.

PRODUCT RANGE

BIG SCIENCE

Mitutoyo has been a manufacturer and seller of a complete range of precision measuring instruments for many years. As a key player in the global metrology market, Mitutoyo's products range from small hand tools (micrometers, calipers, etc.), to scales, sensors, objective lenses, microscopes, hardness testing machines and large measuring applications, like Form-, Vision and Coordinate Measuring Machines (CMMs).

With these metrology instruments and our data management solutions, we give our customers more insight in what they manufacturer, so that they can control their production processes and improve the quality of their products.

QUALITY. EDUCATION AND RESEARCH

To guarantee the quality of Mitutoyo's products, most of its local Sales and Service Offices have a calibration accreditation. Mitutoyo Benelux has an ISO 17025 accreditation since 1994, under the guidance of the Dutch accreditation council (Raad voor Accreditatie).

Mitutoyo's Institute of Metrology (M.I.M.) ensures that also the metrology knowledge remains upto-date and is available for the market in the form of Education Packs. Additionally Mitutoyo also has research laboratories around the world, of which Mitutoyo's Research Center Europe (MRCE) is located in the Netherlands.

Mitutoyo

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XPRESS PRECISION ENGINEERING BV

Xpress Precision Engineering develops and commercializes ultra-precision metrology solutions. Our core business consists of two product lines.

First, we develop and sell products for precision coordinate metrology. This includes 3D tactile probes, controllers and nano CMMs. Secondly, we offer ultra-precision engineering services where we develop solutions for a wide range of customers, e.g. (metrology) institutes, universities, high-tech industry and manufacturers of metrology equipment. Projects usually are a combination of precision engineering and metrology / sensors / measurements.

ULTRA PRECISION METROLOGY SOLUTIONS

A good example of our capabilities is our TriNano coordinate measuring machine (CMM). The N100 model achieves a repeatability of 2,4 nm and a volumetric 3D uncertainty of 100 nm, making it one of the most accurate 3D metrology tools available. The innovative design results in a cost-efficient and highly stable machine that is capable of high speed scanning measurements. This makes TriNano the first nano CMM that is ready for industrial applications.

Furthermore, we offer various 3D scanning tactile probes. Our flagship probe, the Gannen-XP, has a 2 nm repeatability in any direction and a combined 3D uncertainty of 50nm, which makes it the most accurate 3D probe on the market. Additionally, Gannen probes can measure with spheres as small as 50 micrometer in diameter and can achieve micro Newton probing forces. The latter enables a user to measure even soft materials in true 3D without damaging them. All our probes are compatible with various CMM brands.

ULTRA PRECISION ENGINEERING SERVICES

Xpress provides advanced design and engineering services related to metrology and high-precision positioning for our customers. Customers range from global companies to start-ups and small businesses. We solve your challenge, from initial concept to prototyping, calibration and turn-key delivery.

We are specialized in: metrological design, precision mechatronics, kinematic design, opto-mechanical design and controller design.



Ernst Treffers

Director Business Development

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www.xpresspe.com



ultra precision metrology solutions & engineering services

ZEISS INDUSTRIAL QUALITY SOLUTIONS

ZEISS is an internationally leading technology enterprise operating in the fields of optics and optoelectronics and active in four segments: Semiconductor Manufacturing Technology, Industrial Quality & Research, Medical Technology and Consumer Markets.

ZEISS INDUSTRIAL QUALITY SOLUTIONS

Our product range includes coordinate measuring machines, optical and multisensor systems as well as metrology software for the automotive, aircraft, mechanical engineering, plastics and medical technology industries. Innovative technologies such as 3D X-ray metrology for quality inspection and Industrial Microscopy for material analysis round off the product portfolio.

Contact our experts in our ZEISS Quality Excellence Center in Breda and receive the right support that you need: from training, 3D CT scans, contract metrology, offline programming to measurement services and beyond. You can rely on fast metrology service and expert advice from your quality assurance partner.

ZEISS MEASUREMENT SERVICES AND TRAININGS

Are you facing tough and complex measurement tasks, working on new product series, do not have enough employees, or would you like to receive advice how to optimize your process and increase productivity?

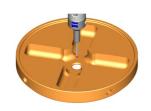
advice how to optimize your process a productivity?



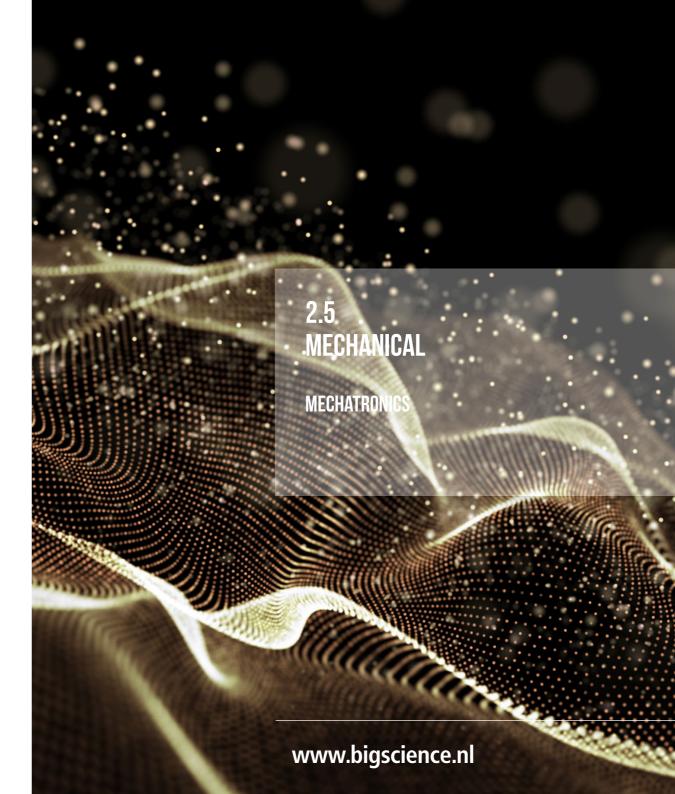
Tom Boogers

Head of Sales & Service Benelux

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| MECHATRONICS | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|--|--------------|---|-----------------------------|---|----|------|----------|------|--------|-------------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | Company size | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric (HOW) | Me | stal | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Airbus Defence and Space Neth- erlands | М | systems engi- neering; space | 0504; 0590; 0350; 04; 06 | system suplier; remote handling | | | х | х | | radiation hard | х | х | х | Y | X | O | x | х | y | X |
| Butraco | S | projects for mechanical development | 05; 06 | prototyping; consultancy; business development | х | х | х | х | х | | | х | х | х | | | х | х | | |
| Demcon Advanced Mecha- tronics | М | broad systems supplier | 05; 03; 08 | engineering; prototyping; manu- facturing | | | х | | | х | Х | x | х | | х | | x | х | х | Х |
| Heinmade | S | piezo actuators; drivers and controls | 0207; 0209; 0210 | custom designed motion control systems | | | х | | | х | Х | | х | x | | | | х | х | |
| INDOLES Precision BV | S | platform for pre- cision-position- ing applications | 05 | meeting users and suppliers for accurate positioning | | | х | | | | | | | х | | | х | | | |
| PM-Group | S | hi-precision stag- es and motion control | 05; 050107; 050404 | precision machining, system supply, engineering | | х | х | | | | | | | | х | | х | х | x | |
| Q-sys | S | motion control and positioning systems | 0207 | custumized engineering and manufacturing | | | х | | | х | Х | | | | х | | х | х | x | |

AIRBUS DEFENCE AND SPACE NETHERLANDS

Airbus Defence and Space Netherlands BV is a supplier of high-tech products and services for the international aerospace industry. Since its founding in 1968, the company has contributed to many challenging space programs and has built-up considerable expertise in space technology in areas such as Earth observation, telecommunications and science. The Dutch organization is part of Airbus Defence and Space, a division of Airbus Group. The portfolio of Airbus Defence and Space Netherlands BV, which employs more than 200 experienced professionals, includes solar arrays, launcher structures and instruments & systems. The company employs more than 200 experienced professionals.

Some examples of relevant achievements for Space and Science are:

- The European Robotic Arm for the ISS is one of the most comprehensive space projects ever executed in the Netherlands. ERA has been developed for ESA by a European consortium, led by Airbus Defence and Space Netherlands. The project provided valuable heritage for remote handling.
- Three major optical spectrometers for measurement of atmospheric gases have been built by Airbus Defence and Space Netherlands, partnering with TNO: Sciamachy on ESA's Envisat and the Ozone Monitoring Instrument on NASA's
- Aura mission have provided state-of-the-art data and key knowlegde of atmospheric processes. Their successor TROPOMI for ESA's Entinel 5 precursor mission is currently being calibrated and prepared for flight early 2016.
- Six optical delay lines were built and delivered to ESO's Very Large Telescope Interferometer in Chile

BIG SCIENCE

The Leiden-based space company is known for its, call it typically Dutch, approach: reliable, solutiondriven, with a clear goal in mind, and always open to international collaboration.



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DEMCON ADVANCED MECHATRONICS

ABOUT DEMCON

Demcon draagt bij aan oplossingen voor hedendaagse maatschappelijke vraagstukken. Of het nou gaat om medische oplossingen, het bijdragen aan veiligheid of het creëren van duurzame oplossingen en hightech innovaties rondom thema's als water en energie; Demcon draagt bij aan een betere wereld.

We zijn een high-end technologieleverancier. Als snelgroeiende system supplier kunnen we de hele behoefte van de klant afdekken, van eerste idee en concept, tot prototyping, industrialisatie en (serie) productie. Opdrachtgevers ondersteunen we met een breed scala aan competenties.

Met mechatronica als het multidisciplinaire specialisme van Demcon, bundelen we de kennis en competenties op verschillende sterke vakgebieden. Samen zijn de disciplines verantwoordelijk voor het bedenken en uitwerken van innovatieve concepten en creatieve oplossingen voor de ontwerpopgave van de klant.

Daarnaast ontwikkelt Demcon ook eigen producten en wordt er middels een innovatieprogramma geïnvesteerd in zowel start-ups als gevestigde bedrijven. Recente investeringen zijn gedaan in medische, water-, veiligheids- en energietechnologie.

In meer dan 25 jaar zijn we uitgegroeid tot de Demcon group met anno 2020 zo'n 750 medewerkers. Locaties zijn er in Best, Delft, Enschede, Groningen, Japan, Münster (D) en Singapore. We hebben wereldwijd klanten, van Nederland en Europa tot Azië en de VS. Onze specialisten en multidisciplinaire teams, gezamenlijk met de ondersteunende diensten binnen Demcon, acteren als één geheel. Demcon is ISO 9001:2015 en ISO 13485:2016 gecertificeerd.

De ambitie van Demcon is om onze positieve impact te blijven vergroten. We ambiëren verder te groeien door nieuwe en uitdagende projecten op te pakken, nieuwe internationale markten te verkennen en de productieexpertise en -capaciteit verder uit te breiden.



Marleen Markvoort

Corporate communications specialist

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www.demcon.nl



INDOLES PRECISION BV

THE ART OF PRECISION POSITIONING

Indoles Precision is a platform for users and suppliers of products for applications where accurate motion and positioning is crucial. We create an environment where a targeted and effective exchange about requirements and solutions is enabled. Since humans are the key factor we focus on helping people out, with state-of-the-art solutions.

FThe company was founded in 2016 with the purpose to bridge the gap in the communication between the manufacturers and users of accurate positioning products, in both research and the OEM equipment industry. Manufacturers typically focus on making top-level products, driven by what the technology allows for (i.e. technology-driven). For the users however, solving their positioning challenge is most important (i.e. application-driven). Indoles Precision helps to build an effective, mutual beneficial and sustainable cooperation with knowhow and care.

WHAT WE CAN DO

Within the range of precision-positioning, piezo technology is one of Indoles Precision's focus areas, with solutions covered by the following product groups:

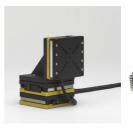
 Piezo-stack actuators and stages, for 1D, 2D, 3D or tip-tilt motion. Their technical advantages are large sensitivity in combination with stiff and compact mechanics, allowing for high motion bandwidths and nanometer accuracies.



Von Weberstraat 47, 3533 EC UTRECHT The Netherlands E: hvwinden@indoles-precision.nl T +31 6 44 13 43 67 www.indoles-precision.nl

- Piezo stick-slip stages, compact stages with piezo stick-slip propulsion. Their main advantages are self-locking, medium stroke (up to 15 mm) and step positioning in the sub-micrometer range. Applications in ultra-high vacuum or the 4-K regime are possible as well.
- Piezo LEGS stages, linearly driven piezo-motor stages. Their main advantages are the relatively high driving force in combination with a centimeter-range stroke and an integrated position encoder. The optional joy-stick operation makes them ideal for research applications, but OEM solutions are also possible.
- Piezo rotary drives, using the travelling-wave principle. The motors are compact, yet have a large torque and therefore are highly suitable for directdrive solutions in limited spaces. This technology also allows easily for non-magnetic and ultra-high vacuum applications.

For larger strokes and forces, (linear)motor and spindle driven solutions also are available, up to turn-key multi axis systems including motion controllers. From idea to production, either one-off or OEM.





COMPANY INTRODUCTION - DISCOVER PRECISION

PM B.V. is the specialist in designing and manufacturing of high precision bearings and customized motion systems. We are providing a complete range of linear bearings, frictionless slides, (piëzo) positioning tables and stages, which guarantees high levels of performances at competitive prices.

Thanks to almost 50+ years history of experience, new findings in research, combined with innovating linear technology, our products meet the highest accuracy and quality demands of today's industry and are successful in use world-wide. As a proud member of the PM-GROUP we are able to realize turn-key projects for our customers starting with design, project management, machining, assembly and after service.

OUR ACTIVITIES

BIG SCIENCE

80

We offer development, design, integration and manufacturing of linear guide, nano-positioning stages and mechatronical [vacuum] modules for several high-tech markets and Synchroton initiatives. The recently introduces miniature slides MSR are the smallest linear slides available and offer high precision and reliability.

REFERENCE PROJECTS

Our experience with particle accelerator projects and synchrotron initiatives started a long time ago. We have good contacts towards the synchrotron activities with Brookhaven National Laboratory(BNL), Diamond Light Source(DLS) and the Paul Scherrer Institute(PSI). For many years PM-BEARINGS delivered complex ceramic bearings and they have

Galileistraat 2 7701 SK Dedemsvaart T: +31 (0)523 61 22 58 E: info@pm.nl www.pmbearings.nl already find a way to institutes as PSI. Furthermore we have a close relation with the Diamond Light Source(DLS) initiative in Great Britain. For DLS we deliver turn-key advanced beam-alignment modules combined with piëzo stage technology and submicron mechatronical integrated modules.

PM-BEARINGS COMPETENCES

Machining of exotic materials (Composites, Glass, Duplex, Hastelloy, Inconel, Nimonics, Invar, AMC, Titanium, Ceramics and Stelliet) – from R&D to Serial production – Electro Chemical Machining (ECM) – FEM Simulation – Algor – CAD/CAM Design – Siemens NX7.5 – High Precision Machinery (submicron range) – Cryo Positioning Stages – Vacuum Positioning Stages – Nano Motion control – Linear technology – Piëzo technology – Nano-Positioning Systems – Mechatronical high precision modules – System Integration – Cleanroom facilities ISO class 5-6 (>1000m2) – Vacuum cleaning – (U)HV and UCV knowledge– Surface Treatment



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,



Henry Over

Managing Director

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www.q-sys.eu

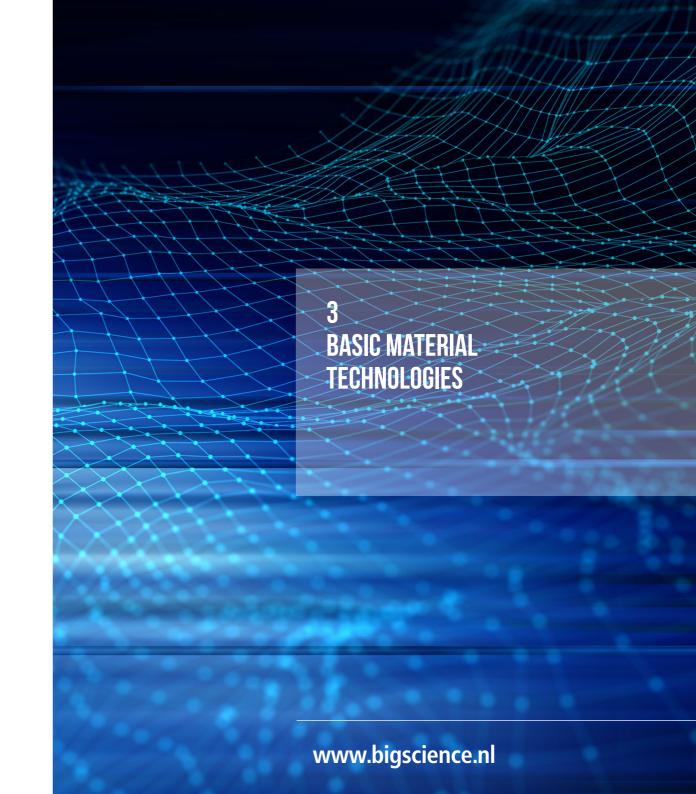
encoders, bearings, drive amplifiers and multi -axis motion controllers. At all stages of the design and build process, Q-Sys engineers can work as closely with you as you require. From the initial concept discussions, through feasibility study, CAD design and on to system build and test, your involvement 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.





| BASIC Material Technologies | | | Speciality (USP) |) | | | | | Ar | ea | | Service | | | Supply | | | | | |
|--|--------------|--|--|---|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|------------------------|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | | Pro | Sy | Tech | | | | | Prod | 100 |
| | Company size | | | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Fechnical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | אר כא ואוכמטעוכוווכוונ |
| Antonius | М | exotic materials; manufacturing; engineering | 050103; 0403; 0404; 9001 | complex 3D shaped products metalforming welding | х | х | | | | | | | | х | | х | | х | Х | |
| Benecom | S | rubber to metal; any material combination | 0502; 060110; 06020307 | cutomized gaskets; molded parts; orings; PTFE; vulcolan | | | | х | х | | | | | | | | | х | х | |
| Bodycote Vacuum Brazing | М | joining of metal parts | 0504; 050304; 06 | vacuum brazing; heat treatment | Х | Х | | Х | Х | | | | | | | | х | х | х | |
| ECM Technologies BV | S | non-conventional precision machining | 050404 | high precision electro chemical machining | Х | Х | | | | | | | | Х | | | х | х | х | |
| Etchform BV | S | non-conventional precision machining | 050404 | high precision etching and electroforming | | Х | | | | | | | | | | | х | х | | |
| Futura Composites BV | М | production of composites | 050204; 05040502 | taylor made composites | | | | | Х | | | | | Х | | | х | х | х | |
| Hauck Heat Treat- ment Eindhoven BV | | non-conventional part treatment | 05040406; 09; 10 | heat treatment; surface CVD/PVD; brazing | | | | | | | | | | | | | | | | |
| Highrise BV | | special design; realisation aluminium applications | 05010104; 0204; 0304; 0404 | feasibility study prod- uct design towards setting production | х | х | | | | | | Х | | х | | | | Х | | |
| Innogrind | | grinding technology and analysis | 05040410; 05900307; 0590 | grinding; grinding burn analysis t echniques; training | х | х | | | | | | | | х | | х | х | | х | |
| INNPLATE | | electrochemical surface technology | 050404 | electro plating; forming; etching; polishing etc | | | | | | | | | | х | | | | х | Х | |
| Kersten Kunststof(f) coating | S | high-value; high- quality coatings to metals 05040410 | thermal; fluid bed; electro- static; powder; rotomoulding | | | | | | | | | | | | | | | | х | |
| Multivalent Plating & Etching BV | S | electro plating and chemical treatment 050404 | etching; plating; cleaning; passivation; packaging | | Х | | х | Х | | | | | | | | | | | х | |
| Ter Hoek Vonkerosie | S | certified supplyer of high precision parts 050404 | EDM and laser microjet machining | Х | х | | | | | | | | | х | | | | х | х | |
| VDL Fibertech Industries | М | composites for high demanding solutions 050204; 05040502 | engineering; large series; small/large sizes | | | | | | | | | | | | | | | х | х | |

AALBERTS SURFACE TECHNOLOGIES EINDHOVEN BV

INTRODUCTION

Aalberts Surface Technologies Eindhoven BV is the specialist in high quality heat- and surface treatments. We distinguishe ourselves by, besides heat treatments, in high temperature brazing and special CVD and PVD coatings. Unique is the in-house developed Stainihard® process!

Aalberts Surface Technologies Eindhoven has various specialized technology engineers, where with we are like no other in a position to guarantee optimal quality. The quality level is emphasized by our various quality certificates ISO 9001, ISO 14001, AS9100 and NADCAP. We treat products for different demanding industries such as aerospace, automotive, medical, semiconductor and additive (3d printing) industries.

WE ARE YOUR PARTNER FOR:

Heat treatments in vacuum and protective atmosphere:

- Hardening & Tempering
- Annealing (stress relieve, solution annealing and aging)

Brazing in vacuum or protective atmosphere:

- Vacuum brazing
- Belt furnace brazing

Surface treatments:

• PVD and CVD coatings



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www.aalberts.com/st

Thermochemical treatments:

- Nitriding
- Nitrocarborizing
- Stainihard®NC

Materials treated:

- · Low and high alloy steels
- Stainless steel Copper alloys
- Titanium alloys Superalloys
- Carbides
- Ceramic
- Composites
- Graphite

BIG SCIENCE

• And various combinations





AIRBORNE

As a preferred supplier we design, develop, qualify and manufacture composite product for the most demanding applications. We develop and build machines with the capability to automate manufacturing of composite structures at competitive price levels for a number of industries worldwide.

Our ambition is to build a leading physical and digital platform in composite automated manufacturing technologies for small to mid-size composite components. Airborne employees more than 100 highly skilled people. Customers include directly and indirectly companies such as Airbus, Thales, GKN Aerospace, Vertex Antennentechnik, ASML and ESA.

NEW SOLUTIONS FOR HIGH-END INDUSTRY

Airborne is a key player in high-end composite parts industry, currently focusing on manufacturing of advanced composites through automation. Current developments at Airborne include

 Development and qualification of automated manufacturing of satellite panel skins;

https://youtu.be/Q70ihZQ60VA

 Development of automated manufacturing of antenna structures;

https://youtu.be/zjn6RSbNWGg

Airborne

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Business Development Manager

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Airborne International
Laan van Ypenburg 70
2497GB The Hague

 Development and automated manufacturing of micro-launcher structures:

https://youtu.be/9Vg2WWU48kM

For both developments, the following is applicable: top notch prepreg material and lean manufacturing processes to ensure that the manufactured components have low weight with high stiffness and are able to withstand high loads, while being affordable. With these unique developments Airborne will remain a key player in the high-end industry.







ANTONIUS

SHAPING THE IMPOSSIBLE We make your design come to life

An experienced fabricator that can design your production process & build your newly developed product.

Your idea will be transferred into a design ready for production. As your partner we will take care of the complete project management, fabrication and assembly of your product.

Over 80 years of craftmanship in shaping metals brought us to the level we are at right now. With our extensive knowledge of materials and production methods, with the best qualified welders in the industry and our special machines we can produce high quality products against all applicable standards. We have an ideal situated production location (40,000m2) with a direct waterside connection, to transport big parts by ship worldwide.

- 9% Nickel (X8ni9)
- Stainless Steels
- Duplex / Superduplex
- Alloys
- Cladded Steels
- Welding
- Forming
- Heat Treatment
- Engineering
- Production

More info: contact us at sales@antonius.nl +31 (0)475 439 000 www.antonius.nl



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BENECOM

We introduce our company, which is already more then 50 years active in supplying, amoung others, the high demanding markets like Aerospace, Energy and medical also more general industry like Sanitary, Pumps, Hvac, and so on.

OUR PRODUCTS

Of course O-rings and Molded parts are within our scope of working, but also we realise, in cooperation, new designs. We have a lot of experience in rubber to metal or other base material combinations.

PRODUCED IN ALL KIND OF MATERIALS

Rubber compounds

SBR, NBR, EPDM, SILICONE, FPM (VITON), KALREZ **Synthetic**

POLYPROPYLENE, POLYAMIDE, HYTREL, POLYETHYLENE.

Gaskets

HD300, KLINGERSIL, FIBRE, NOVAPRESS...

Various

PTFE (TEFLON), FOAM MATERIAL, VULKOLAN..

Proven quality compounds with DVGW, KTW, WRAS, FDA, NSF Certificates.

We have our own KIWA and KOMO compounds with certificates.

International working is standard for us in buying possibilities. Exporting our goods is common business and with our experienced staff we always find a workable solution for your demands.



Mr. R.O.F. Klapwijk

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www.benecom.nl

BODYCOTE VACUUM BRAZING

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 enabling wetting of the braze filler metal over the base material and diffusion. 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

Lithography – Power Generation & Energy – Oil & Gas – Plastic Molding – Measurement & Control – High Precision Tooling – Vacuum Tooling – Aerospace – Pharmaceuticals – Science/Research



Henkjan Buursen

Head of Sales Brazing

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50 employees
www.bodycote.com



ETCHFORM BV

Etchform provides customized solutions for thin metal precision parts for high-tech applications by means of etching & electroforming. Two versatile techniques, combining cost efficiency, flexibility, freedom of design and high quality.

SERVICES

We are globally able to offer complete solutions for one-off to mass production, for both discrete parts and reel to reel in a wide range of materials such as:

- Beryllium copper, brass, copper, new silver, phosphor bronze
- HyMu
- Molybdenum
- Nickel
- Nitionol
- Silver
- Specialty alloys: 7C27Mo2, Alloy 42, Elgiloy, Invar, Kovar
- Stainless steel alloys
- Titanium

Also Supply Chain Management is offered for complimentary operations such as:

- Cleanroom Packaging
- Forming
- Heat Treatments
- Surface Treatments

etchform

Wickeder Group

Jari Blankenburgh

Managing Director

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www.etchform.com

APPLICATIONS

Our customers are found in all high-tech industries such as:

- Aerospace
- Automotive
- Defense
- Electronics
- Engineering
- Imaging
- Medical
- Piezo
- Semiconductors

Some typical applications are:

- Apertures
- · Battery grids
- Combustion plates
- Contact springs
- EMI/RFI shielding
- Deposition masks
- Encoder discs
- Filters & meshes
- Implants
- Shadow masks
- Shims
- Solar cell connectors
- Washers



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



Specialists in fibre reinforced composites

Martino Borgo

Managing Director

Marconistraat 40 1704 RG Heerhugowaard T: +31 (0)72 57 15 88

E: futura@futuracomposites.nl www.futuracomposites.nl



BIG SCIENCE

9

HIGHRISE BV

Highrise Design specializes in the design of aluminium structures. As an independent design agency, we are able to assist you in optimizing the use of aluminium properties for your products and projects.

FROM DESIGN TOWARDS REALIZATION

Our extensive expertise in the field of aluminium is available for a broad range of markets. For example, Offshore Technology, Mechanical Engineering, Infrastructure and Civil Construction. Many years of experience in engineer-to-order projects has led to a reliable project approach. This professional attitude towards the design process proves valuable, both in the different design phases of your projects, as during the actual realization of your aluminium products and structures. Highrise Design can assist you with every step of the way: from a first global feasibility study of an aluminium product design towards setting up an adequate supply chain, including the selection of reliable vendors and capable fabricators.

ACCESS TO KNOWLEDGE AND EXPERIENCE

Steel has for decennia been the material for large loadbearing structures. The knowledge of steel is much broader available than of aluminium. For this reason, it can prove hard for companies to reach an optimal design for their product or projects. As a result, the application of aluminium can become unnecessarily expensive. The proper application of this strong and lightweight materials remains out of reach. Highrise Design aims to provide customers access to their broad knowledge and experience in aluminium. Together we reach the best solution.

INDEPENDENT

Highrise Design knows every possibility for fabrication but does not operate its own workshop. For our independent design agency, the use of aluminium is not a goal in itself, but simply a means: only careful weighing of various possibilities will lead to the most effective solution. Often this solution inevitably surfaces as an integral solution, using various materials in their optimal way. It is the intelligent combination of aluminium, steel and/or composite that results in a winning product.



Albert Hogewoning

Owner

BIG SCIENCE

92

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INNOGRIND

Innogrind applies more than 35 years of grinding technology know-how to solving the challenging problem of grinding burn. Using high-end measurement and analysis techniques such as Barkhausen Noise Analysis and X-ray diffraction, we are able to investigate and understand the dynamics of specific grinding processes. This in turn enables us to improve and optimize these processes.

Furthermore, we have also developed in-house the unique 3D-printed INNOZL™ titanium coolant nozzle. Since its introduction, this nozzle has brought about a worldwide revolution in the reduction and prevention of grinding burn by means of efficient coolant delivery to grinding processes.

For more information on INNOZL™, please visit www.innozl.com

The detection and subsequent prevention of grinding burn: this is the mission of Innogrind, and it has been our driving force since 2009. A force that has brought us to today's service offering for the analysis and optimization of grinding processes. Our success in this field is due in part to our cooperation with strong partners in the industry, such as Stresstech and Hirt-Line, and we also offer solutions based on Barkhausen analysis and X-ray diffraction. In addition, we also provide training for grinding operators. Innogrind also offers a concrete solution for the prevention of grinding burn, with our selfdeveloped INNOZL™ coolant nozzle. Combine the INNOZL™ with a Hirt-Line pipework system, and you have a complete and highly stable 50 bar coolant delivery system for burn-free grinding.

INNOGRIND innovations in grinding

Jos van Langh

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M: +31 (0)6 57 33 63 72 E: info@innogrind.nl

www.innozl.com or www.innogrind.nl

SERVICES

Process analysis in grinding

When it comes to the analysis, detection and solution of grinding burn, there is no partner more competent than Innogrind BV. Grinding is an industrial process that generates considerable heat. If this heat is not quickly removed by a suitable cooling process, it can have an adverse effect on the service life of the product. Grinding burn is a common cause of machine or engine component failure. Innogrind offers a total solution to this problem, from detection of the cause, through to specific measures aimed at prevention of thermal damage. For the assessment and optimization of your grinding processes, we offer Barkhausen Noise Analysis and X-ray Diffraction. Moreover, we can provide significant added value to the cooling of your grinding process with the Innogrind-developed INNOZL™ coolant nozzle.

Training

Innogrind provides practice-based grinding training on your premises. Giving simple tools to your staff to improve the ability to solve grinding burn problems. Don't ask your employees to seek the limits; instead, give them the tools they need to go beyond the limits.

Stress technologies

X-Ray Diffraction (XRD) -Barkhausen Noise Analysis (BNA). For questions or enquiries, please contact us by email or phone.



95

INNPLATE

INNOVATIVE AND CREATIVE

We are the specialists in (electro)chemical surface technology: electroplating, etching, electrolytic and chemical polishing, electroforming, anodizing, colouring, chemical treatment, coating and cleaning.

IN OUR 2000 M² OF DEVELOPMENT LABORATORY WE OFFER:

- Contract R & D
- Analysis and tests
- · Consultancy & engineering
- Laboratory production and pilot shop

MARKETS

High Tech Industry – Aerospace – Defence – Solar – Medical – Additive manufacturing – Science

QUALITY

ISO 9001 - AS9100



Robbert de Greef Fred Arendsen

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www.innplate.com



KERSTEN KUNSTSTOF(F)COATING

We have been applying high-value, high-quality plastic coatings to metals since 1967. We use thermal processes to apply these coatings at our production locations in Brummen (NL) and Kahla (D). We apply coatings using fluidized beds, electrostatic powder coating and rotomoulding.

SOLUTIONS

A plastic coating is much more than just a protective layer. The specific properties of a coating determine where applying it is desirable or required. This summery shows you the solutions offered by our various coatings:

- Corrosion protection
- Non-stick properties
- Insulating and conducting coatings
- Flexible coatings
- UV-resistant coatings
- Certified coatings

A VARIETY OF APPLICATIONS AND SECTORS

Kersten Kunststof(f)coating provides solutions in many sectors. Our customers are largely in the drinking water production, process and chemicals, semiconductor, mechanical engineering and pharmaceuticals sectors.

WHAT CAN WE DO FOR YOU?

Every plastic coating has properties that makes it suitable for specific applications. Here is an overview of the coatings that we use:

- Rilsan®
- Halar®
- Xylan®
- PTFE, FEP, PFA and ETFE
- Resicoat®
- Abcite®



Kersten Kunststof(f)coating

Henk van Dijk

Managing director

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www.kersten-bv.nl





97

BIG SCIENCE | 96

MULTIVALENT PLATING & ETCHING

PRECISION ELECTROPLATING AND CHEMICAL TREATMENT

- Fast delivery
- Prototypes and series
- High quality electroplating techniques

NO STANDARD JOB COATER

- We offer high-grade electroplating and chemical treatment for your product or application, according to specs or customised processes:
- (ultrasonic)cleaning, masking, cleanroom packing
- pickling and passivation (AMS-2700, AMS-QQ-P-35, DIN-EN2516)
- electropolishing and chemical polishing (ASTM-B912)
- nickel plating: matte (AMS-2424), bright
- electroless nickel (low-mid-high phosphor; AMS-2404, MIL-C-26074); nickel-PTFE
- copper plating: matte, bright, electroless

- tin plating: matte, bright tin (ASTM-B545; MIL-T-10727)
- zinc-nickel electroplating (DIN-50962)
- precious metal plating: silver, gold (AMS-2422, ASTM-B488-95, ISO-4523), gold-cobalt, palladium, ruthenium. ENIG. PPF
- blackening of copper (UN-D452) and stainless steel (MIL-DTL-13924)
- etching of aluminium, tungsten, molybdenum

MARKETS

High Tech Industry – Aerospace – Medical – Defence – Science

OUAL ITY

ISO 9001 - AS9100





Fred Arendsen Robbert de Greef

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TER HOEK PRECISION SOLUTIONS

INNOVATION OF TOMORROW - INSPIRATION FOR TODAY

Ter Hoek produces precision components for the hightech manufacturing industry. We specialise in advanced processing techniques such as Electrical Discharge Machining, LaserMicroJet (LMJ) and electrochemical precision machining (Precision Electro Chemical Machining or PECM).

FROM A HIGH-QUALITY CUSTOM SOLUTION TO PRECISE SERIES PRODUCTION

We guide customers throughout Europe and beyond to develop highquality custom solutions that we can subsequently produce in series with unparalleled accuracy. This combination of innovative customisation and repeated precision is where we find our passion. Every day, inspired by the innovation of tomorrow.

A LEADER IN WIRE EDM. LMJ AND PECM

For the production of precision components, to the smallest dimensions, Ter Hoek uses the most advanced techniques. We have been a leader in the field of Electrical Discharge Machining for over 25 years with experience in wire EDM, die sinking, EDM drilling, and micro EDM milling. Furthermore, innovations such as LMJ and PECM have opened up a wealth of new possibilities to provide even better, smaller, and more advanced solutions. Ter Hoek keeps an eye on global technological development to ensure continuous innovation of our products.



Willem Jan ter Hoek

Director

Propaanstraat 1 7463 PN Rijssen T: +31 (0)548 54 08 07 E: info@terhoek.com This means our customers can also take that essential next step. The advanced machinery in our air-conditioned production facility provides our team the space and opportunity to do what we do best: deliver innovative and high-quality solutions. Regardless of shape, size, material or number. We use short lead times and a tight organisation.

FROM PRODUCER TO KNOWLEDGE PARTNER

With 32 years of experience, we know the world of precision components like no other. We have become specialists in the fi eld of advanced precision processes. Though we started in 1990 as a technical service provider, our role has since grown to that of troubleshooter, and knowledge partner. The provision of advice and support for the engineering is a standard part of our portfolio of tasks. And we will continue to develop more and more advanced solutions.

PROVEN CRAFTSMANSHIP AND EXPERTISE

Quality is one of the pillars of our organisation. Ter Hoek is ISO9001 and AS9100 certified. That means we work according to the highest standards,

coupling guaranteed quality to ultimate reliability. Because we are dedicated to improve our organisation continuously, we have set up a quality management system that provides a framework of measuring, evaluating, and improving our performance.





VDL FIBERTECH INDUSTRIES

VDL Fibertech Industries is one of the longest existing composite companies in the Netherlands. We are a certified (UL and ISO 13485/19001/14001) supplier of fiber-reinforced thermoset parts by means of RTM, RIM and hot pressing. With more than 45 years of knowledge and industrial experience, we are able to produce innovative, complex and high-quality parts.

We focus on three market segments: high performance, healthtech and transport parts. For these segments, we make products with very high requirements for market leaders in current and nextgen applications.

Our services include: product development, prototype construction, series production, assembly and after sales. By being involved in product development at an early stage, we can guarantee the manufacturability of composite products. With this we ensure a competitive product price that meets customer requirements.

With our modern production facilities, it is possible to produce products from very small to very large (3x5m) dimensions, combined with a typical batch size of a few tens per year to continuous large series.

As a company, we are part of the VDL Groep, which consists of more than 100 companies and around 16,000 employees spread all over the world.

VDL Fibertech Industries



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ENGINEERING

- >45 years experience
- Pro-E CAD software
- FEM analysis
- Prototyping
- DFSS and DFM
- RTM Worx flow analysis

PRODUCTION

- PUR and fibre reinforced thermoset composites
- 10.000 m² production floor
- (VA-)RTM, Hot Pressing and (S-) RIM
- Sizes up to 3x5meters
- 2D stacked fiber cutters
- Robotized gelcoat/paint cabin
- Robotized preforming, contouring, gluing
- Particles free surface solutions

QUALITY

- ISO 13485 19001 and 14001
- 3D CMM
- X-Ray/NDT
- Instron test bench
- 3D laser radar





| MACHINING OF ODD MATERIAL (CERAMICS, OFC, | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|--|--------------|---|--------------------------------|--|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| MARAGING- AND DUPLEX | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric | Me | etal | | | | | | Proje | Syst | Techr | | | | | Produ | Test |
| STEEL, Beryllium) | Company size | | | (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Admatec Europe | | additive manufacturing | 05040503; 05020202 | 3D printing of ceramics | | | | | | | | | | | | | | | Х | |
| BKB Precision | S | plastics machining; assembly | 0502; 050405 | high performance plastics | | х | | | | | | | | | | | | | х | |
| Ceratec Technical Ceramics BV | S | ceramic components | 05020102; 0202; 05040501 | machining; casting of ceramics | | | | | | | | | | | | | х | х | х | |
| Formatec | | ceramic products and parts | 05040503; 05020202 | machining; moulding; bonding of ceramics | | | | | | | | | | | | | х | х | х | |
| Louwershanique | S | ceramic glass-metal UHV feedthroughs | 0502; 06010606; 050405 | machining technical glasses and ceramics | | х | | х | х | | | | | | | | Х | х | X | |
| Nebo Special Tooling BV | | precise machining of hardened and exotic materials | 050404 | milling, profile grinding, die sink and wire EDM | | х | | | | | | | | | | | | | Х | |

ADMATEC EUROPE

CHALLENGING THE INDUSTRY 4.0

With more than 25 years of experience in shaping powder metallurgy we have developed the Admaflex Technology. An indirect 3D printing process to make end-use parts in ceramic or metal. At this point, it is the most reliable and precise technique delivering high quality parts with fine features. With the fast, accurate and versatile 3D printer series - Admaflex 130 and 300 - products can be made for high demanding markets like the process industry, for medical equipment, hightech components and investment casting.

ADVANCED CERAMIC AND METAL 3D PRINTING ON ONE SYSTEM

Featuring the unique capability of 3D printing both advanced ceramics and metals on one system. This technology is ideal for the development and production of functional and aesthetical parts requiring complex geometries, high resolution, fine details, and smooth surface while benefiting from excellent material properties.

PATENTED ADMAFLEX TECHNOLOGY

The 3D printers are designed with the patented Admaflex Technology to effectively handle materials with high viscosity, normally associated with ceramic slurries, enabling high reliability and printing speeds. This innovative technology also facilitates efficient feedstock management by reusing the excess material. A very small amount of slurry is sufficient

to start printing, which makes the system ideal for research and 3D printing of precious materials.

THE BENEFITS

- High throughput
- A clean workplace and no material waste

BIG SCIENCE

3

- · Quick and easy material switch
- Working with a broad viscosity range
- In-process monitoring

MODULAR CONCEPT WITH OPEN SOFTWARE FOR **MAXIMUM FLEXIBILITY**

Moreover, the printers are modular and with an open platform, enabling full customization to your needs and budget, and also providing full control of the printing process as a result of in-process monitoring. It facilitates loading your own or other materials than ceramic or metal on the machine making own material development more flexible.



Loran Mak

Sales Manager

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BKB PRECISION | CORE COMPETENCES

During 40 years, BKB Precision has become a leader in accurate machining of high performance plastic parts. Working together with our clients has made it possible to realize innovative solutions and get an outstanding reputation in the industry. BKB Precision is not only a trusted manufacturing partner, but also offers a broad range of services.

We process technical plastics and high performance plastics such as: PEEK, PEI, POM, PA, PC and many more. BKB Precision is your partner for CNC machining of high performance plastic parts up to micron accuracy. Always improving on our Make & Advise partnership with customers. We are fully aware of the challenges that customers face when it comes to design for cost, design for manufacturing and logistics. BKB is not only your manufacturing partner but also your supplier when it comes to realizing assembly and supply chain needs. Both in first and second tier positions.

Boasting CNC machines of up to 5-axis milling, 7-axis turning-milling and portal machines. We manufacture in a conditioned (temperature and humidity controlled) production hall that runs 24/7 fully automated. In addition, we also provide

cleaning, assembly, welding, gluing, measurement reports and functional testing. BKB Precision takes care of your product!

Together with our customers, we realize challenging solutions. We therefore attach great importance to intensive contact between engineers, clients' buyers and our own people who make the product. From prototypes and single pieces to medium-sized series, we deliver the precision you need worldwide.

BKB PRECISION | MARKETS

We are well known in various high-tech market segments such as semiconductor, medical, food, machinery and chemicals.

BKB PRECISION | REFERENCES

ASML - CERN - Trumpf - Storz Medical - Philips -Thales – VDL-ETG







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Sales Director

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CERATEC TECHNICAL CERAMICS BV

"THE ADDED VALUE OF CERAMICS"

Ceratec Technical Ceramics develops and designs customer applications where components of technical ceramics have added value.

We help our customers to add value to their products and processes by applying our extensive knowledge of ceramics.

Innovation and customer focus are the base of what we do. With more than 35 years of experience, we've built unique knowledge base in how to apply ceramics, and are impartial in choice of ceramic material to best suit the customers application.

YOUR SOLUTIONS: CERAMIC ON THE RIGHT SPOT!

- UHV components with unprecedented stiffness.
- Dry and vacuum running bearing systems and linear guides.
- High temperature resistant components.
- Active or passive radiation influencing components.
- Extremely high heat conducting while electrically insulating.

OUR COMPETENCES:

- Development & engineering
- Customer specific
- Independent material selection
- Highly skilled and experienced engineers
- High precision components
- Up to 1 micron accurate
- Complex component shapes
- Large ceramic parts
- Surface roughness up to Ra 0.01

BIG SCIENCE

103

- Joining techniques and assembly
- Ceramic to metal assemblies
- Ceramic to Ceramic connections



Steven Visser

Director

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FORMATEC

Formatec Ceramics specializes in the development and manufacturing of technical ceramic products and components. With technical ceramics it is possible to produce highly wear-resistant, temperature-resistant, biological- and chemical-resistant products. Products which are used in (high-tech) industry as well as in exclusive consumer goods.

For example, Formatec Ceramics produces ceramic products used in pumps for the chemical industry, where there is a high demand on wear-, temperature- and chemical resistance. We also make components for medical devices with very small dimensions, here technical ceramics can perform as either an electrical and thermal insulator, or as a conductive material. We also make exclusive design products such as watches, telephones, pens and jewellery – all these use ceramic parts made by Formatec Ceramics. Formatec Ceramics has already spent many years researching innovative applications of technical ceramics and constantly improves the Ceramic Injection Moulding process. With injection moulding, products can be made that would simply not have been possible using machining techniques. This is one of the unique characteristics of technical ceramics



Harrie Sneijers, Sales Manager

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FORMATEC

- Can support the redesign of your product in close cooperation with you. We can develop the required moulds, jigs and fixtures.
- Is researching new materials, bonding systems, colours and processes.
- Uses existing geometries from which prototypes can be made by machining. Also available is additive manufacturing (3D printing) for which we use DLP technology. With this method we can produce one off or small series.
- Has a range of advanced high-precision machining tools. We can grind flat surfaces, as well as complex geometries with our 5-axis machine.
 Essential finishing processes are located in a cleanroom environment to ensure the highest of industry standards.
- Offers several surface finishes. From a high-gloss up to a frosted look. For laser engraving or surface decorations we work with a specialized laser company.
- Offers the service of assembly if the ceramic product requires assembly with other components.

Quality is assured at Formatec by our QC team. With the at most care our people conducting measurements with support of advanced measuring devices and/or visual inspection to ensure the required quality is delivered to the customer. Formatec respects the ISO 9001 protocols which

supports our quality goals.



LOUWERSHANIQUE BV

LouwersHanique is a leading customer-driven supplier of high-grade and innovative total solutions in the field of the thermal and mechanical processing of technical ceramics and glass materials. Other activities include bonding and (clean room) assembly of various material combinations based on extensive bonding and integration technologies.

With over 70 years of experience in developing and manufacturing high precision parts and assemblies for systems and subsystems, we offer a full range of services with a focus on low volume - high niche solutions for high-end applications.

One of the main activities is the development and production of customer specific electrical and optical feedthroughs. Our electrical and optical feedthroughs offer hermetic and electrical isolation in Ultra-High Vacuum (UHV) and High-Pressure applications with a lifetime leak-free performance from Cryogenic temperatures up to 500 degrees C°. We apply proprietary glass-to-metal binding technologies to seal pins and other components directly into the metal flange without laser welding or other sealing technologies. As a result, no local thermal stress will occur, and virtual leaks are absent. This enables us to exceed the limitations of existing technologies.

Based on a modular concept, we can integrate low noise Coaxial, High Power/High Voltage optical, and other feedthroughs in Flanges and modules without the

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Carel van de Beek

Sales Manager

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need for laser welding with extremely high integration levels

In-house cleanroom assembly, process control, and state-of-the-art surface finishing and cleaning equipment guarantee flawless surface texture and topography for the most demanding applications. To ensure that all products are leak-tight, LouwersHanique has the lastest testing facilities available such as Helium testing equipment, RGA detection equipment, ultrasonic cleaning and 3D measurement systems (CMM) including white light interferometry for nm accurate surface inspection.

We achieve 100% process and quality control by implementing World-Class Manufacturing practices such as lean manufacturing, JIT, and 5S, resulting in the highest possible QLTC reliability and overall product value.

Our dedicated R&D department we are continuously researching, adopting and testing the latest processing technologies for technical ceramics. With our highly skilled and motivated workforce of over 160 employees we are committed to produce components and solutions of consistent and high quality on time, every time.

LouwersHanique is located in the High-Tech Brainport Region of the Netherlands and is ISO 9001:2015 certified by TÜV.



NEBO SPECIAL TOOLING BV

THE MANUFACTURING SPECIALIST FOR HIGH-END MACHINE PARTS

Nebo Special Tooling BV manufactures high-quality machine parts and high-end mould parts. In addition to complete assemblies, we also manufacture individual mechanical precision components for many industries such as aerospace, medical, semi-conductor (grade 2-4) and defense.

Our specialty lies in very precise machining of hardened and exotic materials: hardened steel, Stavax, Inconel, titanium, etc.

EXPERTISE

We have over 35 years of experience in HSM milling, profile grinding, die sink and wire EDM. We are well aware that with such an experience we can not rest and therefore we continue to invest in the latest techniques, training and production processes.

MAKING A DIFFERENCE FROM A VISION

In recent years we have distinguished ourselves by becoming a specialist in High Speed Milling (HSM) in hardened steel and exotic materials.

The HSM milling has taken over many of the operations such as die sink EDM and polishing.

These HSM operations are carried out at Nebo on the world's most accurate machines by the Japanese brand Yasda.

Nebo Special Tooling has 3 Yasda HSM machines:

- YBM 640 Type-3
- VI40 5-axis simultaneous machining center
- YMC 650 Micro Center (milling within submicron range possible!)

The Yasda machines enable us to mill ultra precisely with very small diameter milling where high tolerance requirements are required. Very smooth surfaces with roughness up to 0.01 Ra are also possible.

INVESTING IN THE FUTURE

Nebo Special Tooling is at home in the hightech Brainport region, but is increasingly finding opportunities and challenges in developing high-end markets such as solar, nano and fuel cell technology. Nebo can be found where the demand for highquality and innovative products is most needed.



Rob Withaar

Account Engineer

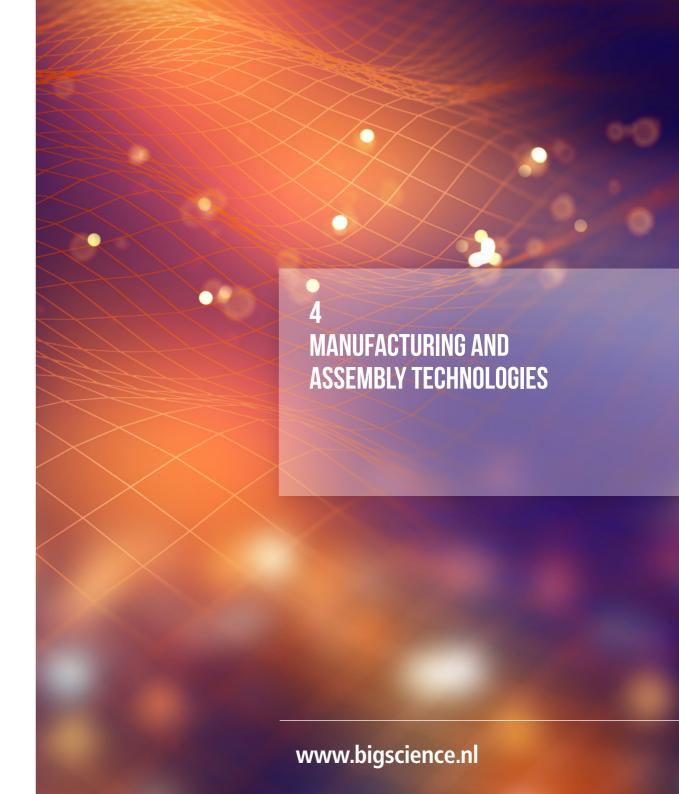
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| MANUFACTU- RING AND ASSEMBLY TECHNOLOGIES | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|--|--------------|---|-----------------------------|---|----------|------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | Company size | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric (HOW) | Me Large | stal | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| 3D Metal Forming | S | metal forming; bonding | 050101; 050103; 0504 | predictive controlled explosion | х | | | | | | | | g | V | | O | 7 | G | V | 7 |
| Buigstaal Tube Bending | | custom bended tubes in exotic materials; piping | 050102 | tube bending; welding; metalforming; finishing | Х | х | | | | | | | | | | | | х | х | |
| De Valk | | mechanical parts supplier | 05 | 3D printing; machin- ing; assembly | | | | | | | | | | | | | | х | х | |
| Jeveka | | tailored fasteners and tools | 050106; 0208; 0303; 0308 | customized and special articlels; standard 24h delivery | | Х | | х | х | | | | х | | | х | х | х | | |
| Mat-tech BV | S | metallurgy; analysis; joining; alloys | 0501; 050405 | brazing large; small series; SEM; Xray | х | х | | | | | | | | х | | | х | х | х | Х |
| Metrik Fasteners | | special fasteners | 050106; 050208 | off the shelf and customized fastners and studbolts | | | | | | | | | | х | | | | х | х | |
| Oceanz | | additive manufacturing | 05040503; 05040408 | certified 3D printing consulting and on demand | | х | | | | | | | | | х | х | Х | х | х | |
| Tebunus Tube Bending | S | custom bended tubes in exotic materials | 050102 | CNC tube bending and welding; small radius | х | | | | | | | | | | | | х | х | х | |
| Telmastaal | | exotic steel and alloys; custom products | 0501 | supply and maching exotic alloys and stainless steel | х | х | | | | | | | | х | | | | | х | |
| Velmon Lastechniek | S | stainless steel pipe sections and joints | 050102 | manufacturing; orbital welding; X-ray; helium test | | | | х | х | | | | | | | | | х | х | |

3D-METAL FORMING

PRODUCT INFORMATION

3D-Metal Forming BV 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 BV 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 BV 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.

BIG SCIENCE

109

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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BUIGSTAAL TUBE BENDING

THE TUBULAR COMPONENT SPECIALIST IN THE NETHERLANDS.

Buigstaal Tube Bending is an ISO9001 certified specialist in tube bending, as well for the assembly of tubular components in Ferro and Non Ferro materials with a diameter from 6.0 mm up to 168.3 mm.

Buigstaal has, in the course of more than 85 years, achieved a top position in both domestic and foreign markets. We supply markets like the automotive industry, industrial compressor manufacturers, shipbuilding and the offshore, nuclear and energy industry.

Besides tube bending Buigstaal can also offer some additional processes like :

- Reducing/expanding a tube's diameter;
- Partial flattening of a tube;
- Tube end forming;
- Drilling or milling of holes;
- · Applying threads and bevel ends;
- Certified welding;
- Piping and construction.

Buigstaal Tube Bending has good contacts with companies specialised in surface treatments. As a result, we can offer treatments including:

- hot-dip galvanisation and electrogalvanisation;
- · wet painting and powder coating;
- · cataphoretic painting;
- pickling and passivation;
- electroless nickel plating.

BUIGSTAAL TUBE BENDING

Marco Appel

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DE VALK

WELCOME TO DE VALK MACHINE FACTORY

The De Valk machine factory is a dynamic organisation established on 1948 in Valkenswaard, close to Eindhoven, the Netherlands. We are specialised in the production of mechanical components in all common steel types, non-ferrous metals and plastics, as well as the full production and assembly of modules and machines.

Furthermore, the de Valk machine factory has the capacity and the expertise to offer a broad range of additional services such as hardening, anodising, nickel plating, sheet metal work and engineering.

3D PRINTING TECHNOLOGY METALS:

De Valk offers engineering and 3D metal printing services and supports its customers in the technical and commercial trade-off between the unique 3D printing feasibilities and the established machining technologies.

3D PRINTING UNIQUE FEATURES ARE:

- Weight reduction by creating hollow stiff structures (internal hollow structures)
- Design of complex and free form internal cooling channels (cooling optimization)

OUR SERVICES INCLUDE:

- Topology optimization and engineering services
- Prototyping both 3D printing (Additive Manufacturing) and machining
- Business case validation

Our machine factory has a fully equipped cleanroom facility that complies with ISO class 7.

BIG SCIENCE

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This website should give you an impression of our company's possibilities and versatility.

Interested in finding out what our company can do for you? Please feel free to get in touch with us.



John Hagelaars

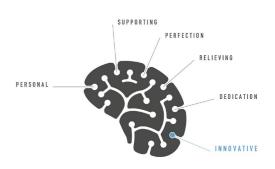
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THINK IN TERMS OF SOLUTIONS

JEVEKA

ALWAYS LOOKING FOR THE MOST SUITABLE CONNECTION

Jeveka has 100,000 products in its program and supplies more than 35,000 fasteners and tools from stock. We call that clarity.

As a technical wholesaler we keep a wide range of products in stock. These are products in the fasteners and tools market. We establish long-term relationships with the manufacturers of our products. We carry many products from renowned brands. In addition, we produce and modify ourselves based on the requirements and wishes of customers, or we supervise that process. Think of a different shape or surface treatment.

Our quality department ensures that our products do what we promise. To this end, each package contains a sticker with a code with which we can trace the products to a specific batch and the corresponding specifications. We call that clarity.



Jeveka

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MAT-TECH BV

Mat-tech BV 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.

PRODUCTION

Mat-tech Production offers the opportunity to outsource your high-tech soldering and brazing and diffusion bonding production, for large series as well as for single pieces. Mat-tech is servicing a wide variety of industries, a.o. semiconductor equipment, medical, lab equipment, machine building, process industry, solar industry and aerospace. We have small and big (vacuum) furnaces available in various set ups. Products can be tested after brazing (leaktesting, x-ray, high voltage testing, etc).

RS

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. We employ specialists with various backgrounds and specialisms. We are often contracted for joining development projects for parts used in harsh environments and unusual material combinations.

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 (BSE and Mapping), Optical Microscopy, X-ray inspection, Meniscograph (Wetting balance) and furnaces for vacuum brazing, inductive soldering, etcetera.



Erik Brom

Commercial Director

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METRIK FASTENERS BV

PASSION FOR FASTENERS: DISTRIBUTOR AND AGENT

Metrik Fasteners is a new player in the field of fastening technology and -distribution. Started as a distributor of standard fasteners, Metrik Fasteners has recently acquired, as part of the expansion of our strategic focus, three agencies of European producers in special fasteners and studbolts. This enables Metrik Fasteners to focus on three main product groups: Standard Fasteners, Special Fasteners and Studbolts.

STANDARD FASTENERS

In close cooperation with the West-European market leader (Germany), Metrik Fasteners offers a wide range of industrial fasteners.

Our stock includes 80.000 items, available in all dimensions and surfaces, both Metric as ANSI!

SPECIAL FASTENERS (AGENCIES)

TS-Verbindungsteile GmbH is a state of the art production plant in special fasteners!

More than 300 different steel sorts are held in stock (Hastelloy, Inconel, Nimonic, 254SMO, Titanium, etc). These products come in more than 100.000 different shapes and sizes: produced according

to DIN/EN/ISO/ANSIO/BS/AS standards, or manufactured according to customer drawings or samples.

TS products are approved and certified by all recognized testing agencies (TÜV, ABS, BV, DB, DNV, GL, KWU LRS AND NV).

Vial Freres is a manufacturer of bolts and nuts in carbon- and stainless steel. Vials specialism is hotforging, anchor rods and heat-exchanger plugs.

STUDBOLTS (AGENCY)

Zobel is a solid partner in the production and distribution of studbolts and jackscrews. We can guarantee short lead-times because our 400 tons of semi-finished and finished products: (A193, A194, A320, A453, etc).

REFERENCES

Siemens - Alstom - SNCF - GFA - Edilon -Bronswerk - Cofely - Heerema - Mokveld Valves - Enecogen - GDF-Suez - Airpack







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OCEANZ

YOUR 3D PRINTING PROFESSIONAL

As an innovator, Oceanz is the specialist and market leader in Additive Manufacturing in the Netherlands. As manufacturer we are your reliable production partner. As a supplier we work on efficient processes, optimal supply chain management and short delivery times with high delivery reliability.

CERTIFIED 3D PRINTING EXPERIENCE

Oceanz already has years of professional 3D printing experience. We are very familiar with the market, peers and professionals, based on many practical business cases in various sectors as Industry, Aerospace, Automotive and Medical. Oceanz is the largest 3D printing Service Center of Northwest Europe and is the first 3D printing company in the Netherlands with an ISO 9001 & ISO 13485 certification

3D PRINTING INNOVATIONS

Oceanz is always looking for new materials, products and techniques. We support our clients in the search for the best use of 3D printing technology and related materials. Developing together with them and we co-create 3D printing innovations that make the difference in every production.

REFERENCES

Nikhef, TNO, Bosch, TU Delft, TU Eindhoven, NLR

BIG SCIENCE



Erik van der Garde

CEO

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TEBUNUS TUBE BENDING

Tebunus stands for Flexible With Metal.

Tebunus Tube Bending can handle all bendable materials, such as carbon, stainless steel, grinded/ polished steels, copper, aluminium and other exotic grades. Tebunus is a powerful business partner. The number of industries in The Netherlands and abroad that call upon our expertise in bending technology and related operations, is still increasing.

Tebunus Tube Trading provides heat exchanger and condenser tubes with an outside diameter of 9.53 up to 50.8 mm. We deliver lengths up to 22 meters of both welded and seamless steel types, such as carbon alloy, nickel alloy, titanium, stainless steel and copper alloys. The chemical and petrochemical industries apply custom made U-tubes (or hairpins) in heat exchangers and condensers, pressure vessels and reaction vessels

Tebunus Tube Trading has many years of experience and offers the requested craftsmanship. Our fully automated CNC (computer numerical control) controlled bending machines guarantee excellent accuracy and optimum durability. We bend according to VGB quality standards; wall thickness and ovality are standardized. Because of our short and efficient communication lines, we deliver high quality on very short notice.

Tebunus Tube Bending BV & Tebunus Tube Trading BV

FLEXIBLE WITH METAL

Mieke Genefaas

Managing Director

Tebunus /

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TELMASTAAL

The strength of Telmastaal and Telmastainless lies in the fact that they complement each other in the way they offer total solutions to each demand concerning steel and metal components.

- Telmastaal provides their customers with high quality steel, precious metals, copper, special alloys. Furthermore Telmastaal provides her clients with professional advice and expertise.
- Telmastainless is the specialist in custom products of high quality stainless steel and nickel based alloys.

We offer a total solution for your application and have lots of experience in material handling thanks to the experienced staff and a large network of producers. Our daily business is to take care of and provide the best possible handling of your assignment.

We supply material to various industries including:

- Automotive
- Energy offshore
- Medical
- Aerospace defence
- Semi-Conductor Industry
- Food Industry
- Packaging Industry
- Solar Industry

For further information please refer to our website for an overview of our complete product range.

TELMASTAAL TELM/ASTAINLESS

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VELMON MAINTENANCE PIPING & CONSTRUCTION BV

Velmon MPC BV is a company for all kind of stainless steel of carbon 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 ø6mm until ø168.3mm. Series from 1 – 1000+, X-rayed, pressure test, helium leak-tests (max. 1x10-9 Pa m³s-¹) and oxygen clean treatment. ISO 9001 and ISO EN3834-2 MIG-welding (GMAW), TIG (GTAW) certificated EN-ISO 9606-1 and EN1418.

REFERENCES

CERN – Tata Steel – TEVA – Eriks – Dutch Cocoa – ECN – Cargill – Spie



Alex Bos

Managing director

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Turnover:

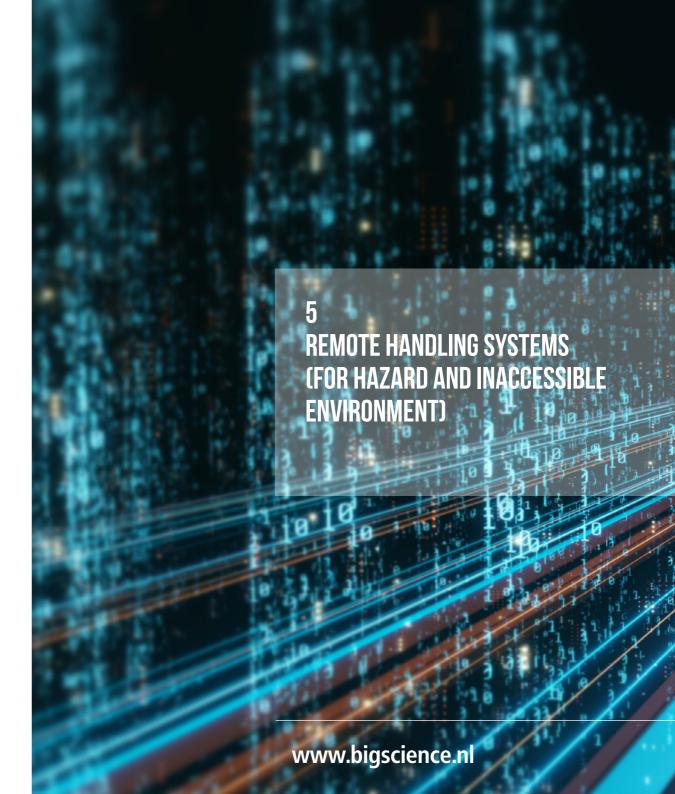
Velmon MPC BV 3,6 M€ | 30 employees

Turnover:

Velmon Group 5 M€ | 40 employees

www.velmon.nl





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| REMOTE HANDLING SYSTEMS (FOR HAZARD AND INACCESSIBLE ENVIRONMENT) | | Discipline (WHAT) | Speciality (US Procurement codes | P) Technology-/ skill-/ | Me | etal | | | | Area | | Service Pro | Sy | | Supply | | | | Proc | Te |
|--|--------------|---|-----------------------------------|--|-------|-------|----------|------|--------|-------------------|------------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | Company size | | | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Active Space Technologies | S | automation; telemetry; space | 03; 0207; 06 | remote handling; thermal insulation | | | | х | Х | radiation hard | Х | Х | х | х | Х | | х | Х | | |
| Heemskerk Innovative Technology | S | remote handling and robots | 110308; 1104; 0207; 1001 | simulation; systems engineering; con- sultancy | | | х | | | Х | Х | | х | х | | | | Х | | |
| Tree C | S | virtual reality for robots; remote handling | 1104;110308; 0207;1001 | virtual reality; 3D simulation | | | | | | | simulation | | | х | | | | | | |

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, electromechanical 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.



António Torres da Costa

Business Development Manager

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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).

BIG SCIENCE

121

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 350oC



122

HEEMSKERK INNOVATIVE TECHNOLOGY

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

EXPERTISE

High-tech systems often consist of several technical disciplines that require cross domain overview for all life cycles of the system. The system engineers in HIT are experienced engineers who have become skilled within different technical domains throughout their careers.

INNOVATION MANAGEMENT:

- Systems Engineering
- Engineering Audit
- Peer Review
- Design Review

REMOTE HANDLING COMPATIBILITY AND **MAINTENANCE ANALYSES**

A Remote Handling Compatibility Analysis (RHCA) determines whether and how to maintain a component. This analysis can be carried out in several stages of a development.

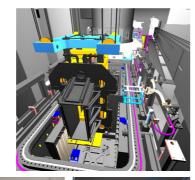
- Determine the maintainability of systems in preparation of formal design reviews
- Validate maintenance plans using Virtual Mockups
- Analyse accessibility for inspection and maintenance
- Improve human safety, ALARA
- Analyse strategies to maintain large and heavy components

COOPERATION

HIT has extensive experience with International collaboration, Consortium formation and Proposals

REFERENCES

ITER IO - F4E - JADA - KoDA - Jacobs - NWO Institute DIFFER - OTL - Vitrociset - Myrrha -PALLAS - TNO - ESS - Fagerstrom - NRG - Airbus DS - VDL APTS





Dr. Ir. C.J.M. Heemskerk

Managing Director

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E: c.heemskerk@heemskerk-innovative.nl

www.heemskerk-innovative.nl





TREE C TECHNOLOGY

Tree C is developer of VR4Robots®, the complete VR toolset for de-risking remote handling operations, a key capability in the safe exploitation of fusion energy. VR4Robots is real time interactive visualization technology offering 3D physics simulation of the complete remote handling process. Tree C's services range from VR4Robots training and support to turn-key simulator delivery.

USE CASES

VR4Robots® offers project de-risking solutions in all stages of the remote handling lifecycle:

Equipment engineering: Validation of concept designs and control systems in VR

Task development: Prepare and test operations in a safe and realistic test environment

RH task execution: VR monitoring and support of live operations

Training: High fidelity training for remote handling operators

VR4ROBOTS® FEATURES

- Efficient CAD2VR workflow for content creation
- Kinematic and AgX physics based Robot simulation
- Digital mockup functionality
- Dynamic measurements
- Collisions and pre-collision warnings
- Point cloud rendering and editing



Drs. Nienke Weder

Director Operations

Da Vincilaan 31 6716 WC Ede (Gld.) T: +31 (0)318 64 87 10 E: info@tree-c.nl

www.tree-c.nl

- Connectable to any external application
- Interfacing with actual control hardware and software
- Cooperate with multiple operators in control room

REFERENCES

VR4Robots users and simulator development projects in nuclear and related industries:

BIG SCIENCE

123

- ITER IO
- Fusion for Energy (F4E)
- DIFFER, NL
- CCFE JET. UK
- QST/ITER Japan
- Veolia Nuclear Solutions (UK) RETIINA program
- UKAEA ESS, RACE
- Institute for Plasma Research, India





(images: Remote Handling Control Room, courtesy of Veolia Nuclear Solutions (UK), JET torus with example robot, courtesy CCFE)



| DETECTORS AND SENSORS | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|--|--------------|--|-----------------------------|--|----|------|----------|------|--------|--------------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | Company size | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric (HOW) | Me | stal | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Amsterdam Scientific Instruments | S | particle and photon detectors | 070103; 0301 | hybid pixel detectors | | | | | | Х | Х | | | | | | х | х | х | |
| Cosine Measure- ment Systems | | measurement | 08; 07; 03 | cameras; optics; sensors; X-ray | | | | | | sensor networks | Х | | | | | | х | | | Х |
| Nedinsco | М | photonic system design and production | 08; 05; 03 | optics; mechanics; electronics; sensors | | | х | | | | | | | х | х | | | х | х | |
| Optics11 | | fiber optic sens- ing for condition monitoring | 080407 | acoustic emission; temperature; strain; acceleration; pressure | | | | | | | | | | х | | | | | х | х |
| Peter Haak Produkt- ontwikkeling | V | high perfor- mance sensors and instruments | 0250; 0290; 0350; 0450 | sensor design and development; training: service | | | Х | | | analogue | Х | | | х | | | х | х | | |
| Photonis | | versatile customized or standard detector tubes | 070402; 0803; 080305 | MCP-PMT; HPD; image intensifiers; streak tubes; cricket | | | | | | | | | х | | Х | х | Х | Х | | |
| Single Quantum | S | single infra red photon detector systems | 0704 | superconducting nanowire single photon detectors | | | | х | | х | Х | | х | х | х | х | х | х | х | х |
| Somni Solutions | | high-end fiber optic sensors and sensor systems | 02; 05; 0802; 0402; 0407 | tailored monitoring applications with fully passive sensors | | | | | | х | х | | | | х | | | Х | Х | |

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, timeover-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

BIG SCIENCE

127



Dr. Hans Roeland Poolman

CEO

Science Park 105 1098 XG Amsterdam T: +31 (0)205 92 20 71 E: Hansrp@amscins.com 10 employees





COSINE MEASUREMENT SYSTEMS

ABOUT COSINE

Cosine develops and builds optical and distributed measurement systems for its customers.

COSINE HAS EXTENSIVE EXPERIENCE IN

- multi-sensor hyperspectral, infrared and 3D imaging measurement systems
- X-ray optics
- distributed sensor networks

The systems of cosine are used in space, on aircraft, on drones, in the field and in the factory.

The cosine team develops transparently in close collaboration with the customer.

APPLICATIONS

BIG SCIENCE

128

- Space & Aerospace: Miniaturized instruments for remote sensing, precision agriculture, water and air quality
- Agri, Food & Pharma: Inline non-destructive quality and safety inspection
- **Safety & Security:** Detection of features not visible to the human eye

OUR CUSTOMERS

Cosine customers range from small high-tech companies to large industries and organizations.

SOLUTIONS READY TO ADOPT

- CONDI® Continuous optical non-destructive inspection systems for inline inspection
- SPO® High-energy optics for space, beam lines and material analysis
- 3D-One® camera systems for multi-camera hyperspectral imaging in the visible and infrared
- a complete product line of miniaturized remote sensing systems for space and aerospace

For more information about our products and services visit our website cosine.nl

cosine measurement systems

Prof. dr. Marco Beijersbergen Managing director

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E: m.beijersbergen@cosine.nl

www.cosine.nl



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.

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



Bob in den Bosch

Manager Marketing & Sales

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www.nedinsco.com





131

OPTICS 11

Optics11 is a high-tech company that offers fiber optic sensing systems for condition monitoring, structural health monitoring and non-destructive testing. The unique expertise in interferometry, FBG interrogation and transducers design allowed the company to develop over the years the world's broadest sensors portfolio in the fiber-optic market. To date Optics11 sensors and systems are deployed in high voltage assets, nuclear facilities, wind turbines, high-speed trains, deep-sea measurements, mines, bridges, border monitoring and R&D.

PRODUCT INFORMATION

Fiber optic sensors outperform electrical sensors in challenging operational environments, such as strong electrical or magnetic fields, high radiation, extreme temperatures or in liquids. Optics11 brings the benefits of fiber optics to industry by delivering complete sensing solutions (sensors, acquisition units, software), enabling monitoring and measurement in any challenging environment.

Optics11 has extensive experience with monitoring Acoustic Emission, Temperature (including cryogenic), Strain, Acceleration, and Pressure. All Optics11 systems embrace innovative measurement techniques that allow to overcome most of the drawbacks and limitations of classic fiber-optic sensing systems such as limited bandwidth, limited sensitivity, and bulky sensor size.



Mario Sorgente

Product Business Developer

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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.

peter haak produktontwikkeling

Peter Haak

Director

Slijpersstraatje 2 5211 NC Den Bosch T: +31 (0)736 90 14 54 E: peter.haak@hetnet.nl 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

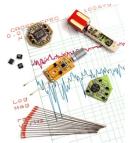
- high resolution and low noise circuit design: discrete, IC-based or "composite" designs and hybrid circuits
- solutions for signal integrity in a real life environment: think of 1/f noise, popcorn noise, thermal EMF
- extensive knowledge of electronic components, materials and processing, circuits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



PHOTONIS

Photonis is a key partner for researchers in experimental physics. We are one of the global leaders offering a very wide range of detectors for charged and neutral particles. Our photo-sensors cover a large part of the spectrum with custom adapted high sensitivities and resolution parameters that can help solve challenging problems for your specific research project. We offer sensors and detectors for almost all physics and analytical research, both for detection and imaging applications, measuring electrons & ions, neutrons & gammas, Cherenkov photons, fluorescence and scintillation light, and laser & plasma emission, for example.

For decades, Photonis has been an essential development partner in providing innovative solutions for space applications. Photonis' support of the exploration missions in space is unparalleled. We have partnered with industry leaders, researchers and space agencies around the world to create innovative custom solutions to focus or collimate X-rays, identify compositions of asteroids and planetary atmospheres, observe behaviours of weather, solar winds and auroras, categorise solar flares and discover distant planets, gamma ray bursts, black holes, and galaxies.

Our R&D, Engineering and Program Management teams work every day on our current product line, as well as innovative new technologies and solutions. These developments are extremely important to ensure that we can offer our customers the best possible products

We cherish all our relationships and customers around the world. To best serve them, our global sales team answers all questions with support from our Business Development team, Back Office team and Marketing and Communications professionals. Thanks to the efforts of our global team, we have sold the CERN professors to the special forces of all NATO countries and participated in several space missions.







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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

At Single Quantum, we confront every challenge with innovation, dedication, and passion. Founded in 2012, our team emerged as true pioneers of single photon detection technology: we were among the first to manufacture and commercialize superconducting nanowire single photon detectors. Since then, our multi-channel Single Quantum Eos photon detection system has been chosen by more than 100 academic and industrial labs all over the world to perform complex optical measurements.

PRODUCT SPECIFICATIONS

Detection efficiency: 90% - Timing jitter: 10 ps – Dead time: <10ns – Spectral response range: 0.2-5 μ m – No afterpulsing, no gating necessary.

QUANTUM EFFICIENCY

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

APPLICATIONS

- Quantum communication/Quantum Key Distribution
- Biomedical imaging
- · CMOS defect analysis
- Optical quantum computing
- LIDAR
- Free space communication
- Time-resolved fluorescence measurements
- Quantum optical experiments
- Optical coherence tomography

SINGLE QUANTUM

Dr. S.N. (Sander) Dorenbos

CEO

Lausbergstraat 17 2628 LA, Delft (mail address only) T: +31 (0)628 13 35 34 E: sander@singlequantum.com 6 employees

www.singlequantum.com

REFERENCES

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



SOMNI SOLUTIONS

Somni Solutions designs and manufactures high-end fiber optic sensors. Among the product portfolio are temperature, pressure, acceleration, displacement, tilt and strain sensors. All sensor are fully passive, there are no electronics inside the sensor. The operating principle of every Somni Sensor is based on fiber optic technology.

PRODUCT INFORMATION

Somni is a qualified supplier of ITER and provides fiber optic sensors design and built as specified by ITER. Sensors are designed and tested to operate under vacuum and high temperature conditions. In addition, the Somni Sensors are customized to operate under extreme radiation conditions in the vicinity of the plasma.

MARKETS

Somni Sensors can be found in a wide variety of applications but are mostly used for Structural Health Monitoring. For example, the new Genova bridge holds 76 Somni Sensors to continuous monitor the structural condition of the bridge...

CAPABILITIES

- Fiber optics
- Physics



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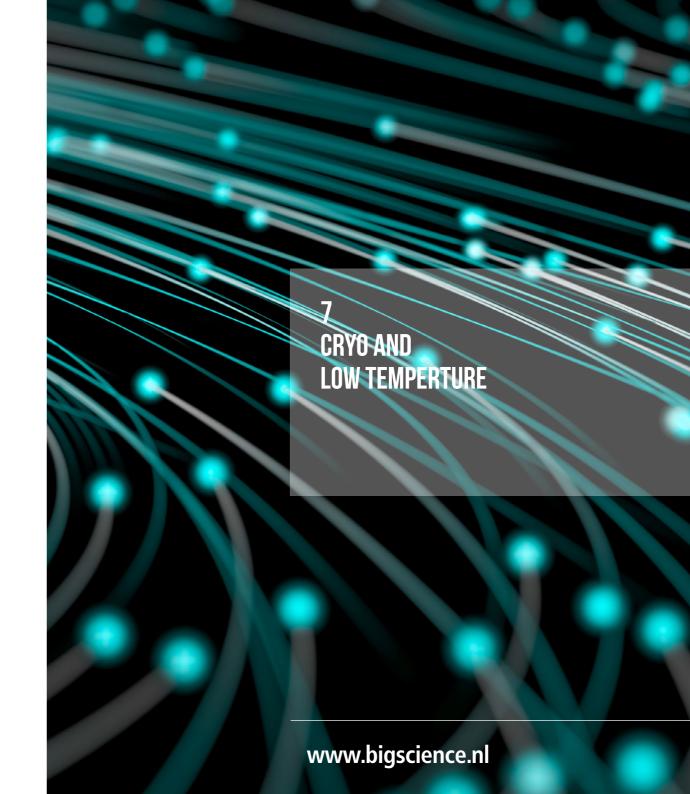
E: remco.nieuwland@somnisolutions.com

www.somnisolutions.com

- Mechanical engineering
- Industrial design
- Prototyping
- Calibration/ verification
- Production
- Sensors







| CRYO AND LOW Temperture | | | Speciality (US | SP) | | | | | | Area | | Service | | | Supply | | | | | |
|----------------------------|--------------|---|-----------------------|--|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | | | | Te. | | | | | P | |
| | Company size | (WIAI) | coues | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Cryoworld BV | S | cryogenics | 0602; 0601 | design; prototyping; series; transferlines | | | | Х | Х | | | | | Х | | | Х | Х | Х | X |
| DeMaCo Holland BV | М | cryogenics and ultra high vacuum | 0602; 0601 | design; prototyping; series; transferlines | х | | | х | х | | | | | | х | | х | х | х | |
| Stirling Cryogenics BV | S | miniature stirling and pulse tube cryocoolers | 06010806; 06020103 | technology and product development for IR market segments | | | | Х | | | | | | | х | х | х | х | Х | X |

CRYOWORLD BV

Cryoworld BV is a manufacturer and designer for cryogenic, vacuum insulated equipment. Our company is based on extensive experience in both theoretical as well as practical field. Our core business is design, production, testing and installation of helium and other custom designed cryogenic equipment.

In our spacious production facility our dedicated engineers and specialists make sure every project meets the highest quality standards. Cryoworld specializes in the development of new cryogenic technologies and delivers projects to renowned companies and scientific institutes worldwide.

CRYOWORLD IS THE INNOVATION SPECIALIST FOR:

- Liquid Helium components and systems (transfers lines, semi flex cryostats, dewars, valve boxes and syphons)
- Liquid Hydrogen components and systems
- Valve boxes liquid nitrogen
- Phase separators
- Special Cryostats
- (Exhaust) gas heaters, also sub-atmospheric
- Vacuum dryer conditioning equipment
- Special cooling systems
- Cryogenic shrinking
- Systems for cryogenic mass production
- LNG equipment and transfer lines
- Cryogenic specials
- Custom built valves
- Vacuum jacketed flexible hoses



Marcel Keezer

Technical Director

Havenweg 11C 1771 RW Wieringerwerf T: +31(0)22 87 43 930 E: m.keezer@cryoworld.com www.cryoworld.com

If you are looking for a company that is willing to solve your cryogenic challenges and is able to develop new technologies, consult Cryoworld BV Our cryogenic specialists have earned their spurs through many years of experience in complex helium-, nitrogen- and special cryogenic systems and known for their advanced and efficient solutions.

OUR CAPABILITIES:

• Process design for cryogenic equipment down to 1.8 K

BIG SCIENCE

137

- Mechanical design of valve boxes
- Structural analysis and seismic loads calculation
- Equipment for component leak testing including helium leak testing at relevant sensitivity (1E-9 mbar I/ s). Level 2 ISO 9712:2012 certified
- Integration of instrumentation and control
- · Innovative design, cryogenic prototyping
- Accurate sensing and controlling of cryogenic processes, level, flow, pressure and temperature
- Experience in design, manufacturing and testing of pressure equipment according to relevant standards (EN-13445, EN-13480 or ASME equivalent)
- Welding inspection and leak testing
- Suitable facilities for carrying out satisfactory welding work for development and manufacturing
- · Manufacturing in clean area for assembly, testing, including facilities for cleaning and vacuum processing to the necessary standards
- ISO 9001:2015 Certified

SOME REFERENCES

Cern – Linde Kryotechnik AG – Air Liquide ALAT – GSI Darmstadt - Triumf - Merck Helmholz Zentrum Berlin -Radboud University (HFML lab) - IPP- ASML- Research Instruments RI

138

DEMACO HOLLAND BV

WHO WE ARE

Demaco is the leading knowledge-driven cryogenic infrastructure partner for industrial gas companies, scientific institutes, and EPC contractors worldwide. Our team of cryogenic specialists, Cryogeniuses, is committed to supporting our partners in their daily effort to transport and condition all liquefied gasses. By advising on, designing, engineering, manufacturing, testing, and installing customer specific vacuum insulated solutions of superior quality we continuously provide the highest yielding infrastructure in the industry.







INSTALLATION



SERVICES

- Cryogenic consultancy
- Cryogenic design according to ASME, EN,
- AD2000, KGS, IGC, and TRCU.
- Procurement of cryogenic components through a selected portfolio of Demaco's qualified suppliers of cryogenic pumps, valves, pressure sensors, control systems, and much more.
- Manufacturing at the highest level
- Installation worldwide
- Full traceability during design, procurement, manufacturing, and testing.
- Maintenance contracts

DEMACO

Rossi Dekker

Sales Manager

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www.demaco-cryogenics.com

PRODUCTS

We offer a wide variety of vacuum insulated products for different cryogens such as helium, nitrogen, hydrogen, argon, methane, and Oxygen.

- Single and multiple transfer Lines
- Flexible hoses
- Distribution valve boxes
- Interconnections between your facility and the storage tank or liquefier, welded/Johnston couplings
- Cryostats
- Purifiers
- Filters
- Filling stations
- Vacuum insulated valves (196 C)
- Phase separators, degasser, and gas vent

REFERENCES

CERN, DESY, ESA, ESO, DLR, SLAC, Fermilab, Jefferson Lab, Triumf, NSRRC, TuDelf, TUEindhoven, ESRF, KIT, GSI, ITER, PSI,

ISRO, NIKHEF,

Helmholtz. Max-Planck and much more.





STIRLING CRYOGENICS BV

Stirling Cryogenics B.V. is the world's leading manufacturer of Stirling Cryogenerators, basis of all our cryogenic cooling systems. Our Cryogenerators use the Stirling thermodynamic cycle having a long history, highly reliable performance and efficiency. More than 3,500 systems are in operation across the globe, often in extremely demanding conditions.

With our Stirling Cryogenerators, a range of air gases can be liquefied on site such as nitrogen, argon and oxygen, making remote users independent of bulk liquid logistics.

Together with our Turin, Italy based parent company and gas purification technologies specialist Hysytech Srl (www.hysytech.com), we develop systems for purification and liquefaction of green energy carriers like biogas and green hydrogen, producing bio-LNG and LH2.

Next to liquefaction of gases, Stirling Cryogenics designs and builds cryogenic closed loop cooling system for applications where constant cryogenic cooling from 15K - 150K is required. Cryogenic loops can be based on (sub-cooled) LN2 or GHe flow

Typical markets and applications that we serve:

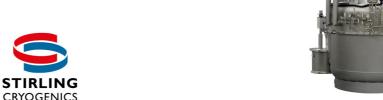
- High Temperature Superconducting devices: cables, magnets, FCL, motors/generators
- Space simulation chambers
- LNG/Bio-gas producers
- Research Institutes and Universities
- Particle detectors and cold neutron sources
- Bio-storage: semen, blood, bone, skin, seeds etc.

BIG SCIENCE

139

• Healthcare

Interested? Then contact us!



Francesco Dioguardi

Sales Manager Customized Systems

Science Park Eindhoven 5003 5692 EB Son

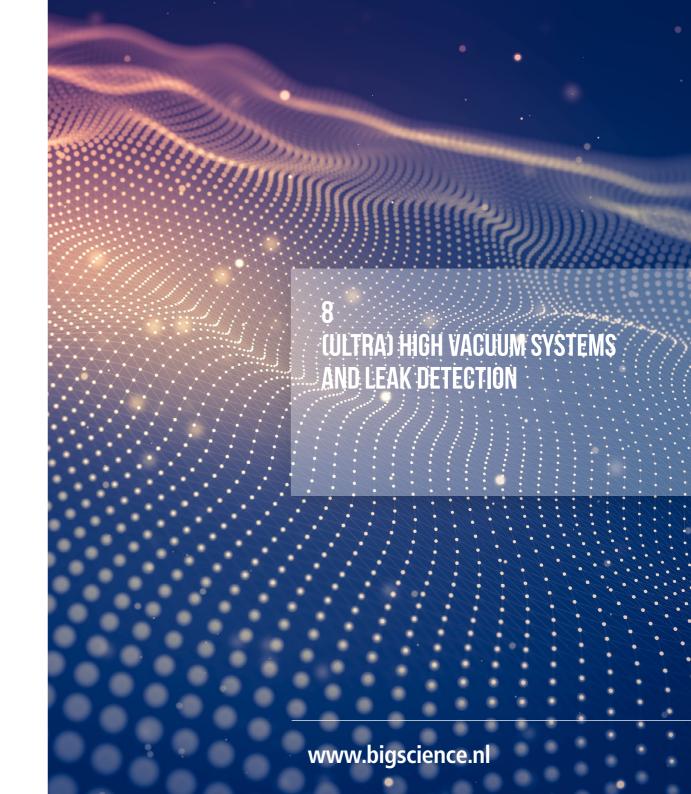
T: +31 (0)40 267 7326

E: f.dioguardi@stirlingcryogenics.eu

www.stirlingcryogenics.eu







| (ULTRA) HIGH Vacuum Systems And Leak | | | Speciality (US | SP) | | | | | | Area | | Service | | | Supply | | | | | |
|---|--------------|--|---------------------|--|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| DETECTION | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | | | S | Te | | | | | Pro | 7 |
| | Company size | (*******/ | | product centric | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Hositrad Vacuum Technology | S | ultra high vacuum and cryogenics | 0601; 0602 | customised systems; standard equipment; repair | | | | х | х | | | | | | х | | | х | х | |
| Mogema 3.0 | М | complex and large vacuum systems | 06; 0504; 050404 | precision machining; assembly; welding | х | | х | | х | | | | | | х | | х | х | х | х |
| Vacutech | | ultra high vacuum and cry- ogenic systems | 0601; 0602 | customised systems; engineering; manufacturing | | | | х | х | | | | | | х | | | Х | х | |
| Vacuüm Specials | S | ultra high vacuum and cryogenic systems | 0601; 0602 | customised systems; engineering; manufacturing | | | | Х | Х | | | | | | Х | | | Х | х | |
| Vernooy Vacuum Engineering | М | ultra high vacuum and cryogenic systems | 0601; 0602 | customised systems; engineering; manufacturing | Х | Х | | | x | | | | | | | | | X | Х | |

HOSITRAD VACUUM TECHNOLOGY

Hositrad Vacuum Technology, Specialized in Vacuum and Cryogenic Technology with more than 55 years of experience. We supply standard vacuum parts CF, KF and ISO components from stock.

PRODUCT INFORMATION

Hositrad Vacuum Technology

Our wealth of experience and advice from our engineering team will help you in the selection, design and production of vacuum equipment to meet your requirements.

- Vacuum Chambers
- Special Manipulators
- Flanges and other Components
- Feedthroughs; Electrical and Mechanical
- Bellow Assemblies
- Ti/Al and SST/Al Bi-Metallic Components

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.
- Henniker Plasma Systems: We offer a wide range of products from low-cost laboratory plasma

- cleaners to custom plasma treatment systems for academia and industry.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
- Atlas Technologies; Bimetal CF Flanges, Face Seal Glands, Transition Couplings, Custom Bimetal Assemblies

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.

BIG SCIENCE

143



J.L.J. (Jurgen) Tomassen

Managing Director

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Turnover: 6 M€ | 18 employees www.hositrad.nl



MOGEMA 3.0

The combination makes the difference

Mogema 3.0 is high-tech expert in welding, machining and vacuum technology. This unique combination of activities is what makes the difference: we are your partner right through from development up to and including delivery of the complete module.

We specialise in complex and large vacuum chambers and vacuum systems. Our expertise in welding, machining and assembly comes into its own for the manufacture of vacuum chambers.

PRODUCTION TECHNIQUES

Precision welding

SCIENCE

144

- Wide choice of materials
- Broad range of sizes over 9000 mm
- Specialized production

Advanced machining

- Extreme accuracy to within hundredths of a mm
- Acclimatized production
- · Enables highly accurate machining

Critical assembly

Meeting every need

Our commitment to innovation and our belief in the importance of ongoing development is reflected in our investment in new techniques and expertise, as well as our partnerships with scientists and involvement in academic projects.

mogema3.0



Sebastiaan Vrensen

Sales Manager

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www.mogema.nl



VACUTECH

Vacutech is a supplier of vacuum and precision technological products and compositions. We produce customer-specific products, welding assemblies and product assemblies for the high-tech industry. Vacutech has a modern machine park through which prototypes and small to medium-sized series are produced. We carry out machining techniques such as turning and milling, but also welding, leak testing, cleaning and measuring at the highest level. You can also engage us for one of these specific processes.

PROCESSING

In order to be experts in vacuum technology, we are able to offer various techniques such as turning, milling, welding and leak testing. We produce products of various sizes. In the area of machining, we have both 3-axis and 5-axis milling machines and turning machines with powered tools.

WELDING

When supplying combined vacuum precision mechanical assemblies, welding technology must be a part of this. With the help of our Tig welding equipment, we weld pipework, vacuum chambers and welding assemblies together carefully and leak-tight. We mainly weld stainless steel, but the welding of more exotic materials such as titanium or Monel is also possible. Tooling developed inhouse is regularly used to achieve the most optimal welding process.



Jeroen van Westing

Manager Director

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CLEANROOM ASSEMBLY

When extremely clean conditions are required, assembly takes place in our certified cleanroom. In the cleanroom we have the facilities to test the composite products and welding compositions for leak tightness. To guarantee quality, each individual product is tested using a helium leak tester. Employees who are active in the cleanroom have vacuum knowledge and are qualified to work in a cleanroom. Behind the assembly area is the area in which our ultrasonic cleaning station is located. Here the products are ultrasonically cleaned and packaged vacuum clean.

Working together the way you prefer Vacutech has everything it requires to carry out your assignment successfully. From design, purchasing, manufacture and assembly right up to functional testing: we can take care of the whole process for you. But you can also call us in for just one of these specific processes and, if necessary, we will bring in the expertise of third parties. It is up to you to decide how we work together.

Our professional skills make the difference!



VACUÜM SPECIALS

Vacuum Specials BV 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.

Vacuum Specials prefers to work in a "Partnership" relation rather then in a strict Customer - Supplier relation

Vacuum Specials BV originated from the Vacuum Specials branch of Leybold BV 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 9001:2008. 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.



Jan Bos

Managing Director

Rosmolenlaan 3 3447 GL Woerden T: + 31 (0)348 43 60 80 E: janbos@vacuumspecials.nl Turnover 2.1M€ | 13 employees www.vacuumspecials.nl

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.

RFFFRFNCFS

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.





VERNOOY VACUUM ENGINEERING

Vernooy is a vacuum systems specialist with a long history in manufacturing vacuum and leak tight chambers and precision parts for in and around vacuum systems. Our vacuum systems are used in many high tech applications all over the world ranging from semiconductor and solar systems to highly specialized (large) research systems like particle accelerators. With our in depth knowledge of vacuum systems we constantly improve our manufacturing procedures to create the best vacuum.

Our expertise are:

MANUFACTURING OF HIGH-TECH PARTS AND WELD ASSEMBLIES.

We have highly skilled employees who understand the importance of clean manufacturing and the effect it has on our end-user processes. In our state of the art cleaning facilities we clean all our products. After cleaning the parts are extremely clean and can be used without additional processing in vacuum and cleanrooms.

ENGINEERING FOR MANUFACTURING

Vernooy Vacuum Engineering manufactures many special shaped weld assemblies for a variety of markets and research institutes. We use our expertise of design for manufacturing to decrease the production time and cost for our customers.



Freek Kronenberg

Managing director

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HIGH TECH MATERIALS WELDING

Our welding capabilities are not limited to stainless steel but also include aluminium and titanium welding. We are constantly improving our skills through internal research programs and optimize the precision in our welded end products.

BIG SCIENCE

147

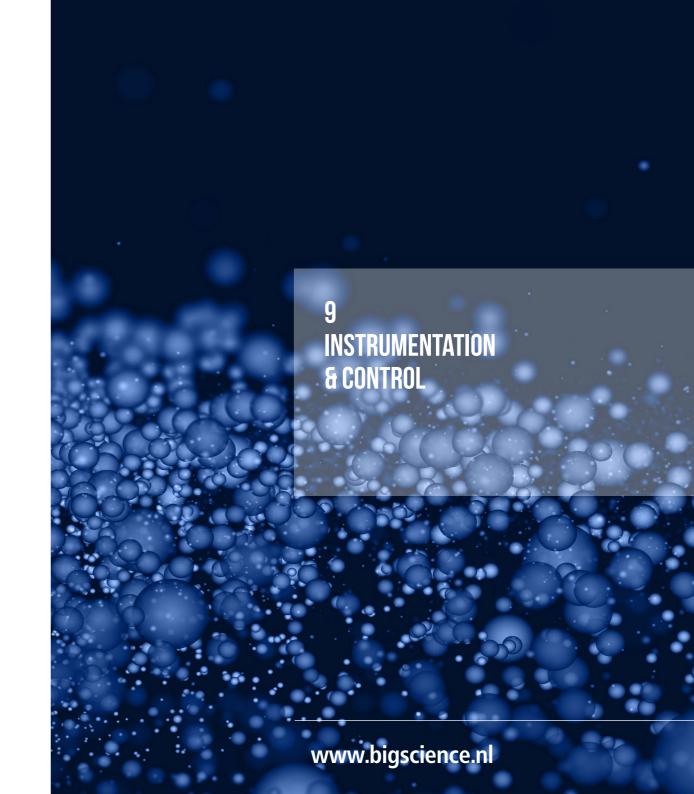
MACHINING

In-house we are capable of machining precision products ranging from cm3 to several m3. We have produced chambers up to 5 m in length and 2.5 m wide for the solar industry but also small tubes for high end electron microscopes. Together with our customers and suppliers we aim for an optimized design both in costs and in lead time.

VACUUM QUALITY AND CONTROL

At Vernooy Vacuum Engineering quality is taken very seriously, all vacuum related parts are leak tested individually. Upon request the individual parts and weld assemblies can be tested at the targeted end vacuum level and RGA test. Weld assemblies are checked with a 3D measurement system.





151

| INSTRUMEN- Tation & Control | | | Speciality (US | P) | Area | | | | | | Service | | | Supply | | | | | | |
|---------------------------------------|--------------|---|-------------------------------|--|-------|-------|----------|------|--------|------------------|-----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | M | etal | | | | | | - - | | Te | | | | | Pa | |
| | Company size | (WHAI) | coues | product centric | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | lest & Measurement |
| ACQ Engineering | S | information technology | 030411; 0207 | electro mechanical automation | | | х | | | ADC; DAC; I/O | embedded | х | х | х | Х | х | Х | х | х | × |
| Actemium E&A | L | information technology | 030411; 02 | electro mechanical; PCB design | | | х | | | Digital | Х | Х | Х | | Х | | Х | х | Х | X |
| AR Benelux | | electronics and radio frequency | 0305; 0350; 0210 | test and measurement | | | | | | х | | | | Х | | | | х | | × |
| DotX Control Solutions BV | V | electronic controls | 020701; 03 | simulation; measuring and control | | | | | | х | х | | | | | | х | х | | |
| Hitec Special Measuring Systems | S | current meas- uring | 0350; 0350105; 03500108 | AC and DC high current measuring | | | | | | | | | | | | | х | х | х | х |
| INCAA Computers | S | electronic equipment; turnkey systems; HPC | 0207; 0305; 035002; 0210 | customised systems; data acquisition; power | | | | | | automation | embedded | | | | Х | | х | х | Х | |
| Omics2Image | V | imaging detectors for analysis | 03500405; 0902 | detectors for mass spectrometery | | | | | | | Х | | | | | х | х | х | х | х |
| S&T | S | data analysis software | 0207; 0350; 04 | simulation; monitoring and analisys system health | | | | | | Х | modelling | | | | х | | Х | х | | х |

ACQ ENGINEERING

AcQ Engineering develops, produces and delivers safe and reliable embedded solutions. At AcQ Engineering, we provide quality for the right price, regardless of whether you are a small company or an aerospace giant.

Our embedded electronics are used in a wide range of applications: aerospace, military, test & measurement, transportation and industrial automation. We are experts in safety critical applications and rugged designs.

AcQ Engineering is able to cover all aspects of a development process and product life cycle:

- requirements capture,
- product design and development,
- testing (incl. environmental),

PRODUCTS AND COMPETENCES

- integration,
- production (if desired),
- support and
- obsolescence management.

If required, we can complete your projects up to the highest safety standards.

REFERENCES

Airbus – Alstom – Fokker - Liebherr – Danieli Corus



Jeffrey van Grunsven

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ACTEMIUM EMS

Actemium EMS is specialist in Controls, Printed Circuit Boards (PCB), Electronic units, Controlpanels, 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, lay-outing, production, assembly and testing of high tech electro / electronics systems and PCB's (printed circuit boards).

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

OUR CAPABILITIES SUMMARIZED

• PCBA (printed circuit boards assembly) Own inline P&P, PCBA production for proto and serial production.



Elroy van der Schoot

Account manager

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Turnover: (M) € 2.8 billion | 2200 Employees

www.actemium.nl / www.actemium.com

- Prototyping Engineering, Electronic design include Embedded software
- Module, units and Panel Construction (prototypes and serial).
- (Power) Control Cabinets, Own panel shop for building control cabinets include UL panel shop.
- · Machine control, Mechatronics Measuring and testing systems.
- Cleanroom, CE certification, Supply Chain Management, QMS, After Sales (repair and spare)

PROJECT REFERENCE FEDA

Actemium built four full Control Cabinets include Modules and PCBA's 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%).

RFFFRFNCF

Philips - ASML - NXP - Bosch - Canon - Kema - TNO - Vialis - Moba - ASM - Tennet- S4energy -van der Lande industries - Mars - VDL group -Siemens - PANalytical - Nexperia - UKAEA and EFDA.



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
- FMC
- RF/Microwave
- General T&M
- Custom Solutions













BIG SCIENCE

153



Mark Baars

Operations Manager

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DOTX CONTROL SOLUTIONS BV

DotX Control Solutions specialises in high performance control system development and the realisation thereof. Dotx Control Solutions has all the necessary expertise to make your product or production system into a success. Our strength lies in the unique combination of high-quality competences like software, mechanics, mechatronics, electronics, mathware and testing.

CORE COMPETENCES. EXPERTISE

High performance control design and tuning of both electromechanical and process control systems, prototype building, mathematical modelling.

PRODUCT INFORMATION

One of our main products is the PID Tuner (www.pid-tuner.com); this is software to tune PID controllers of any make in a systematic way, using system identification to create a model, and model based optimal tuning. The user does not need to be a control expert. This software is used worldwide, mainly in high performance control cases. Its application is not limited to slow processes, but it applies to any system, MIMO included.

MAIN MARKETS

Wind turbine industry, Process industry.

REFERENCES/CLIENTS

Pepsico – Tata Steel – EWT – Lagerwey BV – Idemia – RHI Magnesita - Polpharma - Nouryon – Dishman - VDL Weweler – Mitsubishi – LM Wind Power – Synergy Systems BV



DOTX CONTROL SOLUTIONS

Dr. Ir. J. Schuurmans

Director

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Turnover: 0.2 M€ | 3 employees

www.dotxcontrol.com

HITEC SPECIAL MEASURING SYSTEMS

Hitec Special Measuring systems by develops and manufactures off-the-shelf and customer specific current measuring systems for AC and DC currents up to 50kA with scientific class accuracy and stability.

PRODUCT INFORMATION

Hitec Special Measuring System, part of the Hitec Power Protection Group, has a long and impressive history in developing and manufacturing of tailor made current measuring system for AC and DC currents.

Hitec was the first to introduce a revolutionary high precision current measuring system based on the Zero-flux principle.

The Zero-Flux principle enables galvanic isolated measurement of AC and DC currents with supreme accuracy, linearity and stability.

Many thousands of our systems have already been applied in High Voltage DC, Scientific and industrial applications.

REFERENCES

Science:

All major scientific research centers

High Voltage applications:

Most of the High Voltage Direct Current links

Industry:

Power metering/data logging, lithographic systems for semiconductor industry and medical imaging



R. Lachminarainsingh

General manager

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www.hitecsms.com



157

INCAA COMPUTERS

INCAA Computers is a well-established company with over 45 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.

RFFFRFNCFS

Our client base includes a wide selection of international organisations and companies:

CERN – Sincrotrone Trieste – GSI – UKAEA – MIT –

F7 Juelich – Alstom – ASMI



Bart Sijbrandij

Project manager

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20 employees

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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 lonPix camera molecular images are not constructed in a conventional manner point-bypoint, 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



Dr. H.R. Poolman

CEO

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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



A. Bos

Director

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Turnover: 6 M€ | 80 employees

www.stcorp.nl

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-pipeline 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.





Uptime: System Health Management of Complex System







| ENGINEERING METHODOLO- GIES AND TOOLS | | | Speciality (U | SP) | | | | | | Area | | Service | | | Supply | | | | | |
|--|--------------|--|-----------------------------------|---|-------|-------|----------|------|--------|-------------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|----------------------|
| | | Discipline | Procurement | Technology-/ | Me | etal | | | | | | | | | | | | | P | |
| | Company size | (WHAT) | codes | skill-/ product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | lest & ivieasurement |
| ACE ingenieurs & adviesbureau | | mechanical engi- neering service | 0590 | R&D systems; engi- neering | | | х | | | | | х | х | Х | | Х | х | х | | |
| Amstel Engineering BV | М | mechanical engi- neering service | 0590; 06 | system suplier; 3d design and drafting | | | Х | Х | х | | | | | х | Х | | х | х | Х | х |
| BKL Engineering | | mechanical engi- neering service | 0590; 1102; 1104 | handling tools; test rigs | | | х | | | х | х | | | | х | | | х | Х | Х |
| ЕКВ | | production and process automation | 0207 | system integration | | | х | | | х | х | | х | Х | Х | | х | х | | |
| Entechna Engi- neering | | general engineering service | 05; 02; 0590 | R&D systems; FEM, engineering, production | | | х | | | х | х | | | Х | х | | х | х | Х | |
| JPE | S | precision mecha- tronics in vacuum; cryo | 0590; 0690; 0601; 0602 | precision eng; FEM; simulation; production | | х | х | х | х | | embedded | | | х | х | х | х | х | х | |
| Lencon | S | mechanical engineering | 0590 | opto-mechanical; FEM and simulation | | | х | | | | | | | | | | х | х | | |
| MECAL High-tech/ Systems | S | precision machines for semiconductor factories | 0590 | vibration isolation; support frames; ceiling mounted | | | х | | | | embedded | х | х | | | х | х | х | х | |
| MI-Partners | S | innovative and mechatronic solutions | 0590 | simulation; vibration iso- lation; optics; modeling | | | х | | | | embedded | х | х | | | х | х | х | х | |
| NLR - Royal Neth- erlands Aerospace Centre | L | systems expertise centre | 03; 04; 05; 06; 07; 08; 09; 10 | research infrastructure and facilities | | | х | | х | х | х | х | х | х | х | х | х | х | х | Х |
| Settels Savenije | S | supply and R&D of high end systems | 0590; 0207; 1305; 1214 | engineering; simulation; modelling; mechafysics | | | х | | х | х | х | | х | х | х | Х | х | х | Х | х |
| Sioux Technologies | | development complex high-tech systems | 02; 03; 08 | software; mechatronics; mathware; electronics; optics; assembly | | | х | | | х | х | | х | | х | | | х | х | |
| Tebulo Engineering BV | М | multi disciplinary mecha; electric projects | 02; 0207; 03; 05; 09 | engineering; production | | | х | | | an; dig; power | х | х | | | х | | х | х | х | |
| TechMasters BV | S | industrial products, tooling, mechansa- tion | 02; 0207 | development; engineer- ing; subcontracting | | | х | | х | | | х | | | | | х | Х | | |
| TNO | L | general innovation partners | 03; 04; 05; 06; 07; 08; 09; 10 | optics; mechanics; electronics; nuclear | Х | Х | Х | х | х | х | Х | х | х | х | Х | Х | х | х | Х | х |
| VIRO | L | multidisciplinary mecha; electric projects | 02; 0207; 03; 05; 09 | systems engineering; FEM analysis; projects | | | х | | | | | x | х | | | | х | х | | |

ACE DEVELOPMENT & ENGINEERING

PASSION FOR TECHNOLOGY AND INNOVATION

ACE is ingenious. That means we work with inspiring, intelligent and passionate craftsmen. Every day our specialists combine their thorough knowledge with the ability to analyse from a different perspective.

Ingenious means analyzing, developing, designing and realizing, with our customers' success as a starting point. It's the added value of individual competence, supported by a professional organization with vast expertise and experience. It also means believing and investing in a close collaboration in the chain and co-engineering with future constructing partners.

A completely transparent design process and an organization that connects to the needs and principles of our customers form the foundation of our company. That is why our services enable our customers to increase their competitive edge. Analysis and research, engineering at our premisses but also turn-key projects. We also provide individual specialists or if necessary complete engineering teams in addition to your own resources.

OUR SERVICES ARE GROUPED IN FOUR MARKET ORIENTED BUSINESS UNITS:

- product development
- industrial automation
- hightech systems
- construction technology
- automotive engineering

The engineers within these units know the market. They are up-to-date as far as technological development is concerned and have a thorough and specific knowledge in their field.

The culture of ACE has its roots in a constant thirst for innovation. However, always pragmatic and without losing sight of important parameters as costs and planning. That force has been recognised already for 35 years. By industry leaders but also by starting innovators and research organizations.

The long lasting relations with our customers confirm our vision on collaboration, creativity, professionalism and effectiveness. Be ingenious!



Tim Veltman

Senior accountmanager

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www.ace.eu

162

163

AMSTEL ENGINEERING BV

In business for more 30 years, Amstel Engineering offers advanced Mechanical Engineering and Design services to customers to help them in developing complex mechanical designs and products. Our customers call on our expertise for the entire design cycle; from problem identification to a validated product.

ENGINEERING ON ALL LEVELS

Amstel Engineering's capabilities in providing solutions throughout the product development life cycle using conceptual design, industrial and mechanical engineering, CAD modelling and detailing, to simulation, analysis and prototyping, product testing and manufacturing. This makes Amstel Engineering a unique one-stop solutions provider for Engineering and Design Services. Clients can outsource their engineering work to Amstel Engineering, allowing them to focus on their core competences.

Amstel Engineering is flexible in the assignment scope as well as in its approach. Apart from turn-key solutions, we can also focus on a critical component of a machine or product to (re)design or evaluate. This can be done for reasons such as reducing cost, reducing time-to-market, increasing load capacity or extending the life span.



Aart van 't Veld

Managing Director

Joan Muyskenweg 22 1096 CJ Amsterdam T: +31 (0)206 68 06 06 E: Aart.vant.Veld@amstel-engineering.nl We are part of the Neitraco Group, a group consisting of 8 companies spread across the Benelux. Every company has its own specialization, allowing us as a group to tackle every engineering challenge in-house.

DEDICATED AND FLEXIBLE STAFF

We are staffed by professional engineers and designers with extensive experience and expertise in design and engineering in a range of industries. We focus on delivering technically accurate and scientifically sound solutions based on our training and industry knowledge. We understand that our clients sometimes wants to have its engineers in-house. That is why our engineers can also work on-site.

REFERENCES

We have a proven track record of providing complete design and Engineering solutions for customers in sectors like Aerospace, Automotive, Rail, Scientific Research, Material Handling, Food Processing and Retail. These are some of the clients & partners we are proud to have worked with:

ASML – ECN – Nikhef – ASI – ESA – Airbus

Defence & Space – Sun Test Sytems – Vacuüm Specials – TNO – NRG

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.

BKI

ABOUT US

BKL develops customized mechanical and mechatronical solutions for customers in hightech markets. Especially solutions that increase safety and effectivity. With almost 40 years of experience we concentrate on long-term partnerships. BKL is part of Anvil Industries and operates from its locations the Netherlands, Czech Republic, the United States of America.

PRODUCTS

- Handling tools: Hoisting, lifting and transport equipment
- System modules & special machines

SERVICES

Customers can outsource complete projects at BKL and the support afterwards. Hereto, they can rely on our core-services:

- Engineering: Mechanical and mechatronical design
- Production and certification: Both prototype and serial production
- Services and Inspections: Tool life-cycle management also on-site and world-wide

SAFETY EXPERT

We have extensive experience in applying the machine directive. On request of our customers we can be held CE responsible for the tools they use. Furthermore, we are internationally ISO/IEC 17020 accredited to perform safety related inspections on specific hoisting and lifting tools.

REFERENCES

ASML, Thermo Fisher Scientific, Philips and many others



Sander Aarden

Technical Account Manager

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EKB

ABOUT US

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 make EKB a reliable partner.

EKB was founded in 1971 and has developed into a nationwide operating and well-reputed automation company with five branches in the Neterlands. 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.

CORE COMPETENCES

EKB has extensive expertise in the following competences:

- Panel Building
- Motor Control Centers (TABULA)
- Robotics / Cobots
- Machine Vision

- Motion & Control
- PLC-SCADA
- High Performance HMI / Alarm Management
- MES-OEE
- Project Management
- Turn Key Automation Projects

MAIN MARKETS

EKB is active in the following markets:

- Food
- Metal
- Chemistry
- Energy
- Marine & Offshore
- Machine Building



Marcel van Deursen

Commercial Manager

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ENTECHNA ENGINEERING

Entechna has been serving the high tech industry and academia with high-quality solutions in the field of mechatronics and mechanical engineering since 2010. Our extensive background in academic level Design Principles and experience with optical and electromagnetic systems allows us to quickly reduce complex problems to their essence. From here on we generate creative and innovative solutions without wasting time on symptom solving or losing sight of practicality and cost.

Our projects range from fast feasibility studies to extensive concept-to-prototype developments and turn-key instruments. A common theme is the large technical complexity which suits our role as lead engineer or system engineer perfectly. Additionally, we have experience with documentation and manufacturing aspects of big-science projects and complex industrial machines.

To summarize: if you need mere manpower, we may not be your best choice. However, if you need brainpower, give us a call!

A SELECTION OF OUR CUSTOMERS:

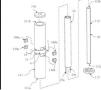
SRON – TNO (ESO) – Trioptics GmbH – Demcon – VDL (ESO) – Mecon – VSL – Eindhoven University of Technology – Abbott – High Tech Institute and several semicon equipment companies.















Dr. ir. Roger Hamelinck Dr. ir. Chris Werner

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167

JPE

JPE is a leading center of expertise in precision engineering. We develop electro-mechanical systems for challenging high precision applications in high-tech machinery and scientific instrumentation.

COMPANY PROFILE

Within our company we distinguish two main activities: High Tech Engineering and Cryo & Nano Products.

Within our High ech Engineering (HTE) department, we develop and realize innovative solutions for your precision application.

Our developments find their way in high tech systems for large OEM's and scientific instruments for science research. Within our Cryo & Nano Products (CNP) department, we develop cutting edge positioning products with nanometric accuracy for vacuum and cryogenic environment.

The company was founded by Huub Janssen in 1991 and nowadays with more than 25 engineers we serve customers all over the world.

COMPETENCES

- precision engineering
- mechatronics
- nanometer positioning
- positioning in vacuum and cryogenic environment

LENCON

COMPANY PROFILE

At Lencon we design, develop and produce products for both start-ups and multinationals. At Lencon we believe in creating technological progress. This way our customers not only stay one step ahead of the competition, but they also develop meaningful products.

We accelerate the process of technological progress and product development. With our own integrated design process, we know how to give focus and direction, so that we achieve pioneering solutions and meaningful products. We are a team of experienced multidisciplinary designers and engineers with a broad experience in various branches.

CORE COMPETENCE

- · Product development,
- Engineering for smart cost reductions,
- · Reliability optimization,
- Precision and mechanical engineering.

MARKETS

- · Laboratory,
- Medical & care,
- Semiconductor industry,
- Defence.
- · Space research.

REFERENCES

Amongst others: Hittech Multin, Ultimaker, Airborne, Lely, Thyssenkrupp, TNO.



Huub Janssen

Founder & CEO

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Johannes Backer

Business Developer

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MECAL HIGH-TECH / SYSTEMS

MECAL develops and builds process improving and enabling solutions and products for manufacturers of precision machines and factory owners in the semiconductor industry. One of our technologies, HummingbirdTM active vibration isolation, is applied in research applications, microsurgical microscopes, electron microscopes and semiconductor production equipment.

ACTIVE VIBRATION ISOLATION

Active Vibration Isolation HummingbirdTM provides extremely low transmission of disturbances at low frequencies. It consists of sensors, a motion controller and actuators and operates as shown in the adjacent schematic.

HummingbirdTM starts isolating at a vibration frequency of 0,5 Hz reaching a factor of 10 suppression at 1 Hz in both vertical and horizontal direction. This world class performance at low frequencies is realized by the application of a unique and patented flexure mechanism. These vibration sensitive applications demand our low-noise sensor technology, enabling vibration levels as low as one tenth of VC-G. HummingbirdTM does not require a stiff floor as used for vibration isolation based on piezoelectric technology.

SUPPORT FRAMES

MECAL support frames based on active vibration isolation technology are used for vibration isolation of scanning electron microscopes and other high

MECAL – High-tech / Systems advancing technologies



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precision machines. These support frames provide both high vibration isolation at low frequencies and stiffness that is required for precision machines with heavy stages and automatic loading units. MECAL support frames are cleanroom compatible and equipped with shielding to eliminate even the smallest magnetic field variation.

CEILING MOUNTED PLATFORMS

The ceiling-mounted active vibration isolated platform serves as a filter between the ceiling and the microscope and isolates your technology that is connected to the ceiling from all building vibrations, even at the lowest frequencies. MECAL's ceilingmounted active vibration isolated platform provides microscope users with a stable and clear microscope image in any building and environment.

When you are interested and want to know more about our vibration isolation technologies please contact us via info@mecal-hts.com.





MI-PARTNERS

PARTNERS IN MECHATRONIC INNOVATION

MI-Partners is active in research and development of high-end mechatronic products and systems for science ans industry. We offer our expertise in mechatronics and help our customers achieve technology breakthroughs.

We are specialized in concept generation and validation for ultra-fast, extremely accurate or complex positioning systems like stages, manipulators, robots and handlers. By early involvement in pre-development we can provide the complete trajectory up to design, realization and testing with a first time right result. We have a staff of 40 highly educated engineers with considerable experience. As we are working for customers in a wide variety of markets, we can benefit from our experience in all these different areas, and as such help our customers with fresh, innovative and cost effective solutions.

- Precision engineering
- Metrology
- · Dynamics and control
- · Thermal dynamics
- Predictive modeling (dynamic/thermal/ electromagnetic)
- Error budgeting
- Vibration isolation
- Air bearing design
- Actuator design
- Design for cryogenics/vacuum/contamination

BIG SCIENCE

169

- Magnetically levitated systems
- Optomechatronics
- Embedded control software and electronics



Ronald Timmermans

Sales Director

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NLR - ROYAL NETHERLANDS AEROSPACE CENTRE

RAD FOR SPACE

Royal NLR is a leading international research centre for sustainable, safe, efficient and effective aerospace solutions. NLR operates as an unaffiliated centre for applied research and offers innovative solutions and technical expertise, creating a strong competitive position for the industry.

The combination of in-depth insights into customers' needs, multidisciplinary expertise and state-of-the-art research facilities makes rapid innovation possible. Both domestically and abroad, Royal NLR plays a pivotal role between science, the commercial sector and governmental authorities, bridging the gap between fundamental research and practical applications.

NLR's activities span the full spectrum of Research, Development, Testing & Evaluation (RDT & E). Given NLR's specialist knowledge and state-of-the-art facilities, companies turn to NLR for support in the development of their products and services from initial concepts to space qualified products. Royal NLR is one of the largest technological institutes in the Netherlands.

A SELECTION OF NLR'S SPACE SPECIALTIES:

- Big Data Analytics & Al
- On-board payload data processing
- Space electronics
- Collaborative Satellite Technologies



May Kerstens

Business Development Manager Space

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www.nlr.org/space

- Micro RF Instruments
- Smart Antennas
- Electromagnetic compatibility
- Thermal management
- Structures & Materials
- (Micro) Launchers
- Testing & Qualification

RESEARCH INFRASTRUCTURE AND FACILITIES

NLR has available a wide range of test facilities with which it can test, verify and validate products. This includes environmental and structural testing, wind tunnel testing and (zero-gravity) flight testing. On the application side NLR has a long heritage in earth observation and satellite navigation. It is primarily focussed on applications in air traffic and defence, but also serves application domains like smart farming, critical infrastructures, and public safety & security.

- EMC Facility
- Vibration and Shock and Test Facility
- Thermal management facilities
- Structures Mechanical and Environmental Testing Facility
- Zero/low-G flight testing



SETTELS SAVENIJE

Settels Savenije is a company of over 140 professionals serving an international customer base in various high-tech markets. For these customers we invent, design, manufacture, assemble and test high-tech equipment, products and tools. The team is located at our unique and inspiring location at Strijp-T in Eindhoven.

DEVELOPMENT & ENGINEERING

Our research, development and engineering activities are covered by 5 expertise groups.

Our expertise ranges from physics, mechanics, mechatronics, sensors to software and control.

The unique combinations of skills and capabilities allows us to provide practical solutions for complex technical challenges which our customers are facing. Our ability to build proto's, FuMo's and proof-of concept models inhouse supports the short time to market of innovations of our customers and Design for Manufacturing of the products we design for them.

SYSTEM ASSEMBLY AND SUPPLY CHAIN

Our development and engineering activities are closely integrated with manufacturing, testing and assembly. We use a supply chain of various qualified strategic suppliers. Our assembly area includes a 600 m² ISO-6 cleanroom. Settlels Savenije offers

unique solutions for the design, realisation and qualification of parts and modules according to the highest cleanliness standards in the industry supported by inhouse Residual Gas Analysis (RGA) capabilities for products up to 2 x 2 meters.

PRECISION PARTS

Settels Savenije Precision Parts manufactures complex high accuracy metal parts & modules for application in many crucial functions in high tech equipment in a brand-new factory. Production concentrates on high precision machining of parts and modules which in most cases are applied in critical functions of our customers' high tech products. Our fully automated machinery guarantees a process controlled and cost-efficient production.

BIG SCIENCE

171



John Settels

Director

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SIOUX TECHNOLOGIES

WE BRING HIGH-TECH TO LIFE

Sioux Technologies has all the expertise in house to develop and assemble complex high-tech systems, often on the edge of what is technologically possible. Sioux's strengths lie in the unique combination of advanced competences in software, mechatronics, mathware, electronics, optics and assembly.

COMPANY PROFILE

This brings a multi-disciplinary approach in system engineering that still fits within the business case. With over 700 development engineers, Sioux supports or forms the R&D department of leading high-tech companies and ground-breaking startups. Sioux is keen to take responsibility: from creating ideas in the conceptual phase up to series production. Sioux adds value to its customers and helps them build innovative solutions that can contribute to a society that is smarter, safer, more sustainable, healthier and more fun.

MARKETS

BIG SCIENCE

172

Semiconductor, Analytical & Laboratory Equipment, Medical & Pharmaceutical, Image & Printing.



Edwin Langerak

Senior Project Developer

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Revenue 2020: 80M – 750 employees

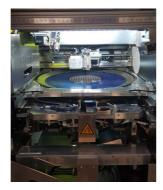
www.sioux.eu

COMPETENCES

- **Mechatronics:** System Engineering, Drive & Control, Physics & Optical Design
- Mechanics: Production Engineering, FEM Analysis & Simulation, Flow & Thermal Analysis, Structural Dynamics, Accurate positioning.
- Electronics: Electro Technical Design & Engineering, High-Speed Digitization, Low Voltage – Low Power Electronics, Mixed Signal & Embedded Electronics.
- Application Software: Data Analytics Infrastructure, Cloud, UX, Testing.
- System Control Software: System Level Behaviour Modelling, Smart Motion Control Solutions, Medical Regulatory & Functional Safety, Reusable SW Infrastructure, Self-Diagnostics, System Analysis & Simulation, IoT Development, UX.
- Mathware: Image Processing & Analysis,
 Computational Physics, Scientific Computing,
 Science for Data Analytics, Optimization, AI & ML.
- Assembly: DfX, WCM, SCM, NPI, Lean.

REFERENCES

ASML – Kulicka & Soffa – Philips – Siemens – Thermo Fisher Scientific



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 Steelindustry, Chemical and Petrochemical, Food, Public utilities, Energy companies, Nuclear-, Pharmaceuticaland 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

Werving & selectie/business development

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www.tebulo.com









TECHMASTERS BV

ABOUT TECHMASTERS BV

With many years of experience in the fields of development & engineering of industrial products, test-/ calibration equipment and mechanization/ tooling, TechMasters has been appeared a valueable partner for the industry.

OUR COMPANY

We are pur sang mechanical/ mechatronical developers/ engineers with a broad experience. We can act from idea up to and including delivery but also for assistance/ sub contracting in projects like (re)design, (value)engineering.

CORE COMPETENCES

- Precision technology
- Fine mechanics

BIG SCIENCE

174

- Vacuum & Medical technology
- Robotics & Mechatronics

MARKETS

- Analytical & Medical
- Science & Technology
- Semicon
- Research institutes
- Aerospace

REFERENCES

VSL/NMi - Shell - MAPPER - KROHNE -ESA/ESTEC - Fokker - TNO



Aad van Loon

CEO/dga

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www.techmasters.nl



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 highend 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 subnanometer 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.



Bart Snijders

Business Development

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Turnover: 494,6 M€ | 4,400 employees

www.tno.nl



VIRO

VIRO is an open and progressive engineering firm: we help our clients to successfully combine technology, ambition, innovation, and performance. We specialise in product engineering, mechanical engineering and industrial projects. Our focus in these areas is on engineering and project management.

Using a powerful combination of expertise and experience, we help our clients to push back boundaries and improve performance. From our offices in the Netherlands, Belgium and Germany our 850 employees work for clients worldwide in various markets.

OUR CORE BUSINESS

- Product engineering
- Mechanical engineering
- Industrial projects

SPECIFIC EXPERTISE

- Systems engineering
- Robotics, mechatronics & vision
- Industrial intelligence
- Cable routing

Martin Dibbets



the performance of technology

Director Netherlands/Belgium

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Arnhem, Echt, Groningen, Hengelo, Oss, Vlaardingen, Zwolle, Herentals (B), Aalen (D), München (D)

Osnabrück (D)

www.viro-group.com

OUR MARKETS

- Mechanical engineering | Semiconductor industry | Automotive
- Processing industry | Energy | Industrial and nonresidential construction
- Food | Offshore industry | Amusement attractions | Aerospace | Defense

REFERENCES

Multiple leading companies in the semicon







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| SAFETY SYSTEMS, LICENSING AND PROTECTION | | | Speciality (US | P) | Supply Service Area | |
|---|--------------|--|----------------------|--|--|--|
| OF HAZARDOUS INSTALLATIONS, ACCESS CONTROL, FIRE AND GAS DETECTION | Company size | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric (HOW) | Test & Measurement Production / Assembly Engineering Development R&D System Supplier Technical Consultancy Systems Engineering Project Management Software Software Software Software Vacuum Cryo Mechatr. Small Large | |
| New Cosmos -BIE | М | gas detector systems; safety; alarming | 09; 10 | gas detection; dedicated sensors; site service | x x x x | |

NEW COSMOS — BIE

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

Started in Europe over 35 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 65 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 65 years of experience
- Reliability
- Unique sensor selectivity
- Long sensor life time
- Extended range of sensors for different gasses

PRODUCT RANGE:

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

SOLUTIONS FOR THE FOLLOWING MARKETS:

- New Energy Markets
- Oil & Gas Exploration
- Chemical & Petrochemical
- Automotive Industry
- Laboratories
- · Semiconductor Residential

SERVICES:

Maintenance

- Upkeep
- Repair
- Training
- Survey

REFERENCES





BIG SCIENCE

179

Within the Netherlands: University Twente -University Delft – TNO – University Eindhoven

- Smart Photonics NXP Shell Philips Fanuc
- Yaskawa Dow DSM Thermo Fisher ECN.

Outside the Netherlands: ST Crolles - X-fab -

Analog Devices - Nexperia - Plessey Semiconductor

- Infineon Villach ON Semiconductor University
- Sheffield University Swansea Toyota Kawasaki - Fraunhofer - University Madrid - University Cardiff

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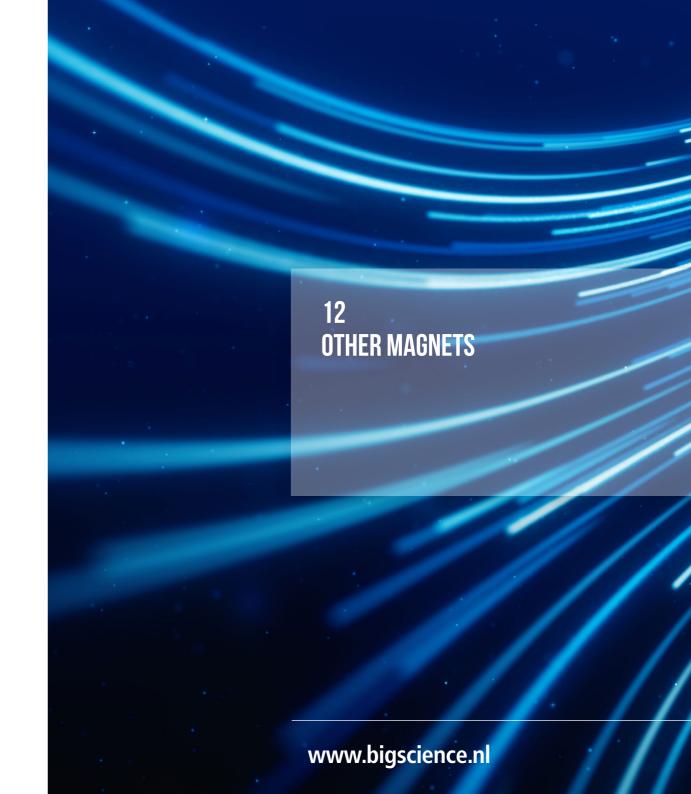


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| OTHER Magnets | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | | |
|------------------------------------|--------------|--|-------------------|---|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|---|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | |]_, | | Te | | | | | Pη | | |
| | Company size | (WHAI) | Coues | product centric (HOW) | Large | Small | Mechatr. | Сгуо | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement | |
| Goudsmit Magnetics Supplies | | magnets and magnetic systems | 02250105 | permanent magnets | | | | | | | | | х | х | х | | | х | x | х | Х |
| Wijdeven Inductive Solutions | М | high end magnets for motion and power | 0225 | development; coilwinding; permanent magnets | | | | | | | | | | | | | | х | Х | | |

WIJDEVEN INDUCTIVE SOLUTIONS

KUK WIJDEVEN

Winding technology, customer-specific and quality are the key words for our customers when they think of Wijdeven.

KUK WIJDEVEN

As a subsidiary of KUK Electronic AG, Wijdeven develops and produces custom specific transformers, coils and electromagnetic components for the high-tech industry for decades.

We offer short communication lines, a short time-to-market of prototypes and a broad experience of our employees in the field of winding techniques. Thanks to our fully automated production units, we are also able to supply large serial volumes (+ 1Mpcs) worldwide.

Our specialisms are the winding of **orthocyclic coils** with a high copper fill factor and h**igh-frequency transformers** and **coils**. To complete the inductive portfolio we supply **low-frequency transformers** up to 3 MVA as well as **medical safety transformer cabinets**.

PRODUCTION KUK WIJDEVEN

KUK Wijdeven produces coils and transformers worldwide. More than 40 highly motivated employees are divided into two ISO 9001 certified sites;

- In Ter Apel (GR) is the production facility, quality- and finance department
- In Oirschot (NB): R&D department, sales department and the 'proto shop'.

If the customer needs prototypes KUK-Wijdeven will be able to produce them with rapid prototyping.

BIG SCIENCE

183

KUK GROUP

Every year, the KUK Group winds more than 200 million coils, assembles more than 1 million printed circuit boardsand produces around 250.000 modules for customers all over the world.



René van den Heuvel

Sales Director

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| INFORMATION- AND COMMUNI- CATION TECHNOLOGIES AND CODAC | | Discipline | Speciality (US | P) Technology-/ | Me | etal | | | | Area | | Service | | | Supply | | | | | | |
|---|--------------|---|-------------------------|---|-------|------|----------|------|--------|------------------------|---------------------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|---|
| (CONTROL, DATA ACCESS AND COMMUNI- CATION) | Company size | (WHAT) | codes | skill-/ product centric (HOW) | Large | | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement | |
| 4DSP BV | | information technology | 049001; 040509; 0304 | analogue and digital electric | | | | | | FPGA; DSP; data acq | embedded | | | | | | | | | | |
| Advanced Solu- tions NL | V | information technology | 0405; 040509; 0350 | electronics design; simulation | | | х | | | DSP; signal analysis | embedded | | | | Х | | | х | х | | Х |
| Stream HPC BV | S | software for GPGPU computing; R&D | 0401; 0405; 040502 | code optimisation; low level programming | | | | | | | OpenCL/ MP; CUDA | | | | х | | х | х | х | | |
| Tessella | М | science powered software technology | 04 | consulting; IT architecture; design and build | | | | | | | Х | | | | х | | | | х | х | |

LEADER IN DATA ACQUISITION AND SIGNAL PROCESSING SOLUTIONS

4DSP is an innovative company specialized in the design and production of FPGA products, high speed digitizers and turnkey systems for the most demanding applications. Located in the Netherlands, 4DSP is ideally suited to partnering with European companies in order to deliver solutions for the most challenging applications.

PRODUCTS

- FPGA COTS Boards: Based on Xilinx Virtex and Kintex family FPGAs; in PCIe, VPX, XMC and FMX form factors
- FMC Modules: I/O and coprocessor boards: Analog inputs and output with up to 5.6 GHz sampling rate and up to 16 channels, radio transceivers, optical transceivers, clock sources and Digital Signal Processors (DSPs).
- FPGA IP: FFTs, digital filters, DDC, Serial FPDP and PCIe with DMA.
- Systems: Complete systems that can be either used as turnkey solutions or development platforms.
- Custom Solutions, Support and Consultancy

APPLICATIONS

4DSP delivers high-performance DSP solutions for the specific requirements of Military, Aerospace, Biomedical, Chemical Science, Telecommunication and Research applications such as Image Processing, Software Defined Radio (SDR), RADAR, SONAR, Airborne Surveillance, Medical Imaging and Fiber Optics Sensing.

REFERENCES

4DSP serves hundreds of customers across multiple industries including NASA – Boeing – BAE Systems - Lockheed Martin - Pratt & Whitney - Anite Telecom – Philips – CERN – RUAG Space, NLR, SRON - PSI - Siemens - Bosch - Fraunhofer and many more.



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www.4dsp.com











BIG SCIENCE

187

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

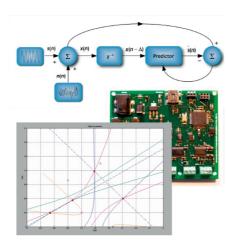
Mitsubishi Electric (UK) – Shell (NL) – Etronic (DK) - Hi-tech RF & Microwave solutions (NL) -Gatsometer (NL) - Gnoka (NL) - NeuroRobotics (UK).



Dr. Sanjeev Sarpal

Director

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STREAM HPC BV

HIGH PERFORMANCE SCIENTIFIC SOFTWARE DEVELOPMENT

Both building Scientific Software and HPC Software are an art of engineering. We combine both.

Stream HPC is an international software development company based in the Amsterdam that specializes in building fast software using the power of GPUs and clusters. Our team consists of developers who have years of experience in building complex models into fast software. We have a long track-record of 10 years and many recurring customers.

EXAMPLES OF OUR EXPERIENCE:

- Large collision experiments
- Real-time Big Data processing
- Specialised linear algebra libraries
- Quantum chemistry/physics simulations
- Image and video processing

OFFERED SERVICES:

• OpenCL, CUDA, OpenMP and MPI programming

BIG SCIENCE

189

- Generic super-computer programming
- Improving existing code
- Low-level programming
- Documenting black boxed software



Vincent Hindriksen

Managing Director

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www.streamhpc.com



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.



Dr. Eric Arends

Operations Manager

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E: eric.ericarends.com; info@tessella.com

Turnover: €23M | 240 employees www.tessella.com

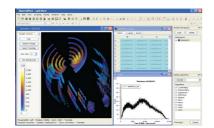
Science Powered Software Development & Systems Integration has been at the heart of what we do for over 25 years. In that time we have designed, built and deployed thousands of successful software systems and IT projects, for hundreds of clients.

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





| PHOTONIC TECHNOLOGIES | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | | |
|--------------------------|--------------|--|---------------------|---|-------|-------|----------|------|------------|-----------------------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|---|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | | _ | | Te | | | | | P | _ | |
| | Company size | (WIAI) | Coues | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement | |
| Diamond Kimberlit BV | М | Optical fiber Technology | 08040403; 080201 | fiber-optics interconnecting parts | | х | х | х | Feedtrough | | | | | | | | | Х | Х | х | X |
| LioniX International | | photonics; MEMS; microfluidics and technology | 030105; 0803 | customized microsystem solutions in scalable volumes | | | | | | PIC; MEMS; opto-fluidics | embedded | | Х | | Х | X | | Х | Х | X | |
| Sumipro | S | high precision optic systems and components | 0801 | design and consultancy; precision machining; coating | | | | | | | | | | | X | | | Х | X | X | |

DIAMOND KIMBERLIT BV

THE COMPANY

DIAMOND is a worldwide leader in supplying high precision fiber optic solutions and has been serving successfully several markets for over 30 years. Also, Diamond is known as a dynamic and innovative company, able to develop reliable, customized components and equipment, in response to the increasingly demanding customer requirements.

TECHNOLOGIES

Diamond provides a wide range of products based on sophisticated technology and its strong know-how acquired over many years. Manufacturing special fiber-optic interconnecting parts is our core business, a specialization that allows us to meet the most different kinds of customer's needs.

MANUFACTURING DEPTH

Diamond has a well-established competence in processing high-quality ceramic, metal and plastic components, right from the raw material to the finished product. This system allows the various manufacturing processes to be controlled and enables us to guarantee that each single component meets all the quality, reliability and performance standards which stand for Diamond products throughout the world.

DIAMOND The fiber meeting

Ivar Koren

Technical Product Manager

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E: i.koren@diamond-kimberlit.nl

www.diamond-fo.com

MECHANICAL COMPETENCES

Integrated Ceramic production (pressing, sintering, machining); Precision metal machining in non-standard metals (TI,WC, Kovar, stainless,...); High precision plastic injection; Ultra-high precision lapping; Ultra-high precision drilling; Fiber-ferrule polishing.

OPTICAL COMPETENCES

Fiber active core alignment; Active Polarization
Orientation; Contact optical interfaces; Non-Contact
optical interfaces; High power optical applications;
3D linear (X,Y,Z) active fiber positioning; MultiChannel concepts.

ASSEMBLY COMPETENCES

Singlemode Fiber; Multimode Fiber; Standard PM Fiber; Enhanced PM Fiber; Reduced Clad Fiber; Double Clad Fiber; Large core Fiber; Small core Fiber; Multicore Fiber; Photonic Crystal Fiber.

REFERENCES

Nikhef – CERN – TNO – ESA – NASA – ECN – Mapper – Philips – ASML – Thales – Dutch Defense – NATO –

Fugro – Fokker Elmo – TU Eindhoven – TU Delft – UTwente – Leiden University – VU Amsterdam and many more.







BIG SCIENCE

193

LIONIX INTERNATIONAL

LioniX International is a leading global provider of customized microsystem solutions. We have driven technological and commercial development in our specialist fields – photonic integrated circuits and MEMS - since 2001.

As a vertically integrated company, we work across all stages of the production process from design to delivery of a finished product. And with world-class fabrication facilities, we scale production volumes as your requirements grow. Our strength lies in the service we provide as well as the creativity of our problem solving. By building a project team with you at the center and by asking the right questions, we make sure to deliver solutions that not only solve a problem, but drive your business.

KEY TECHNOLOGIES AND COMPETENCES

We support innovation in emerging markets such as photonic integrated modules in 5G networks, microwave photonics, life science, industrial process control, and space exploration.



LioniX International BV

PO Box 456 7500 AL Enschede The Netherlands

Visiting address

The Gallery
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7521 AN Enschede
The Netherlands

Contact details

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PHOTONIC INTEGRATED CIRCUIT MODULES

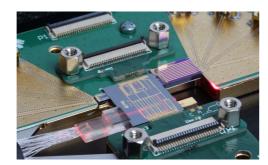
We offer Photonic Integrated Circuit (PIC) modules that are based on our proprietary Silicon Nitride TriPleX™ waveguide platform. This ultra-low loss technology is transparent over a broad range of wavelengths (405-2350 nm). As a result, our PIC modules are suitable for use in a wide range of applications in telecom/datacom, life science and metrology.

CUSTOMIZED MEMS

We provide customized MEMS (Micro Electro Mechanical Systems), with flexibility in design as well as in process and we produce these in small to medium volumes. We offer customized process variations and combinations that go beyond standard fabrication routes to directly address your requirements. The customized MEMS we design and manufacture are used in many applications, such as bioMEMS, microfluidics, physical and chemical Sensors, and optofluidics.

KEY MARKETS

Telecom/datacom, metrology, sensing and instrumentation, life sciences, space.



SUMIPRO

For more than 25 years Sumipro supplies high precision optics for customers all over the world. We help and support companies with design and manufacturability, produce prototyping parts and small series optics. Our customers have a background in all kind of industries as medical, aerospace, defence, space, VR/AR, injection moulding and optical metrology.

EXPERTISE

We realize custom made optics by means of diamond turning and fly-cutting. Optics for night vision systems, mirrors for imaging and communication systems, light sources, polymer lenses and inserts for injection moulding, etc. Materials that can be used range from aluminium to nickel and other non-ferro metals as well as lenses from optical quality polymers. We offer an inhouse coating facility, creating a one-stop shopping concept for your optical design.

Product information: Development and manufacturing of optical components with competitive pricing, fast delivery lead times and a high accuracy: surface form errors below ISO 3/1(1), depending on geometry, material and size and surface roughness values Ra < 10 nm. We specialize in aspherical, off axis, non-rotational symmetric, diffractive/Fresnel and plano surfaces. Our main product lines are:

BIG SCIENCE

195

| Mirror Optics | Polymer optics | IR optics | Inserts | Consultancy |
|---|---|--|--|--|
| Max. diameter 300 mm, made from various aluminium alloys (also RSA), copper or other non-ferro materials. | Fast prototyping in various optical polymers (PMMA, PC, Zeonex, OKP, Topaz, Apel). Lenses including complex milled mounting flanges are also possible. | Lenses realized in germanium, silicon and high purity float zone silicon (HPFZ) up till diameters of 240 mm. | Diamond turned inserts in Nickel, Aluminium, brass or RSA for injection moulding or we can be your partner for the delivery of small to medium volume series. | Innovative solutions in design, engineering and rapid prototyping. Our engineers can help you to create better optics and systems. |



Sumipro BV

Bedrijvenpark Twente 323 7602 KL, Almelo T: +31 (0) 546 81 51 41 E: info@sumipro.nl For most of the optics we can supply them with a reflective or an AR coating. Standard coatings are among others: reflective for mirrors e.g. gold, silver, aluminium protective and enhanced coatings; AR for VIS and IR, average reflectivity <0.5% or by custom design. Besides AR we can supply front sides with

DLC (IR).
Please contact us
with your custom
design or optical
challenge.





| MATERIALS Handling: Delicate and/ Or heavvy | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | |
|--|--------------|---|----------------------------|--|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| GOODS, LIQUIDS and gases | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Мє | etal | | | | | | _ | | Тe | | | | | Pro | _ |
| AND UNGES | Company size | (Wilhi) | Codes | product centric | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| Ecomatters | | chemical safety; sustainability | 1090 | consultancy; service; training | | | | | | | | | | Х | | | | | | |
| Harsveld Appa- ratenbouw BV | S | process equip- ment supplier | 0901; 02; 060204; 1302 | piping; vessels; construction | Х | Х | | | | | | | | | Х | | | Х | Х | |
| Hydro-Carbon Separation Systems BV | | separation; filtering of hydro-carbons | 0902; 09031003; 1003 | customised separa- tion; filtering systems | | | | | | | | | | х | | | | х | х | |
| HQ Pack | S | packaging; handling and transport | 11; 1102; 1104 | integrated handling and transport solutions | х | х | х | х | х | | | х | х | | | | х | х | х | Х |
| IPS Technology | S | packaging; handling and transport | 11;1102;1104 | integrated handling and transport solutions | х | х | х | х | х | | | х | х | | | | х | х | х | X |
| Lamers High Tech Systems | М | processing high purity gasses and liquids | 0602; 09; 1006; 1309 | engineering; production; on site installation; turnkey | | | | Х | | х | | х | х | х | х | | Х | х | х | |
| Montair Proces Technology BV | М | nuclear proces technology; pollution | 09; 10 | turnkey systems supply; projects | | | | | | | | х | | | х | | х | х | х | |
| PTB Special Equipment | | customized ma- terials handling equipment | 1103; 1104; 1110 | engineering; manu- facturing | | | | | | | | | | | х | | | х | х | |
| Smink Group BV | S | installations and systems for high purity | 09; 10 | engineering; man- ufacturing; oribital welding | | | | | | | | | | х | х | | х | х | х | |

ECOMATTERS

Ecomatters provides services, tools and training in the field of sustainability and chemical safety and links these topics where possible. Among our multinational clients are chemical and pharmaceutical companies, manufacturers of cosmetics and cleaning products, companies that provide water and environmental services and retailers. Within each project we are committed to achieve tangible results that are comprehensible and useful within the organization. We focus on customer satisfaction in order to build sustainable business relationships.

SUSTAINABILITY

We offer sustainability strategy consultancy services as well as sustainability assessments based on Life Cycle Thinking, such as environmental footprinting, Life Cycle Assessment (LCA) and Life Cycle Inventory (LCI) data management. We assist organizations in determining their stance on sustainability and setting concrete sustainability goals. Further, we perform quantitative analyses in the area of social, financial and environmental issues and identify any issues within these sustainability aspects for our clients.

Based on Eco Efficiency Analysis (EEA), Ecomatters has developed the Customer Value Calculator (CVC). The CVC is a user-friendly, interactive model, which quantifies the business case of your

sustainable product throughout the value chain. Fully customized to customer-specific products and/or scenarios, the CVC provides an integrated overview of financial and environmental impacts of your product.

CHEMICAL SAFETY

In the field of legislation and regulations, Ecomatters provides advice and guidance on chemical safety, substance management, REACH, EU-GHS/CLP, and product registrations. Depending on our customer's needs we take the full project off their hands or part thereof, such as performing (eco) toxicological risk assessments, authoring MSDSs, creating exposure scenarios or calculating hazard classifications.

BIG SCIENCE

199



Max Sonnen

Partner

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BIG SCIENCE 200

HARSVELD APPARATENBOUW BV

ENGINEERING, MANUFACTURE AND INSTALLATION OF

- Piping
- Plate- and construction work
- Pressure vessels & tanks
- Heat exchangers
- Skidbuilding

MATERIALS

- All Steel and Hi alloy Steels
- All Stainless Steels and heat-resistant Steels
- Duplex and Super Duplex
- Aluminium
- Titanium, Hasteloy®, Incoloy®, Inconel®, Monel®, Haynes®

CERTIFIED

- ISO 9001
- ISO 3834-2
- NEN EN 1090
- PED Module H and H1.
- DNV-GL Approved Welding Workshop
- VCA**

"We have built the Smelt Reduction Vessel for the HIsarna pilot plant"

REFERENCES

Albemarle - Danieli-Corus - EXXON mobil -Gardner Denver Nash - Linde Gas - SCW -Tata steel - TNO e.a.



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50 employees





HYDRO-CARBON SEPARATION SYSTEMS BV

Hydro-Carbon Separation Systems BV is an engineering and sales organization focussing on filtration and separation solutions in the range of hydrocarbon based products, applications and markets all over the world.

We specialize in the filtration and separation of process streams, such as fuels, (natural) gas, hydrogen and water.

We provide engineering, design and supply of customized filtration and separation solutions, based upon years of relevant experience.

We offer a range of products including – but is not limited to – cartridge filters, coalescers, filter/water separatorsand separators for hydrocarbon liquids and gasses.

New pressure vessels can be designed according to customer's requirements, specifications and international pressure vessel codes including ASME U-stamp and NoBo inspections.

With this specific knowledge we are in the position to offer custom made:

- Filters to remove solids from refined hydrocarbons as diesel, naphtha, gasoil, kerosene, gasoline, etc.
- Filter/water separators for removal of water from hydrocarbon liquids and gasses
- Knock out vessels and water separators for removel of water from hydrogen & oxygen in electrolysis stacks.
- Oil separators to remove hydrocarbons (oil) from

BIG SCIENCE

201

• Degassers (OIML R117-1) to remove gas from liquids in custody transfer metering systems.



Andy Hein

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IPS TECHNOLOGY

Your hightech packaging partner

Hightech products travel the world. It is good to think about this when designing your products. The way in which they are packed and transported, in whole or in parts. Our clients build highquality advanced electromechanical machines and systems.



We think about how products go from manufacturer to customer and we design and deliver their packaging and lifting and handling equipment so that those products can be transported and installed worldwide. It makes us an internationally recognized specialist.

CUSTOMIZATION IN OPTIMAL PROTECTION

We make sure that products can be dismantled, conveniently and safely packed, transported and reassembled. And so we understand engineering, disassembly, assembly, packaging and transport. This also includes testing products packed and unpackaged. We determine this in our own test lab. We use the results of those tests to optimize packaging and systems for handling and tooling.



Tim Ummels

Marketing & Sales Manager

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DESIGN FOR CLEANING

Sister company Innovar Cleaning Control focuses on cleaning, assembling and qualifying parts and assemblies for the high-tech industry. We supply specific lifting and transport equipment for use in cleanrooms. We are also increasingly involved in returns: products that must be completely clean again after use and ready for transport. Together we stand for 'design for cleaning, assembly and logistics'





LAMERS HIGH TECH SYSTEMS BV

Lamers is THE expert in the field of Ultra High Purity gas & liquid distribution, control & delivery systems.

Lamers is the leading industrialization partner of systems for the transportation, management and distribution of ultra-high purity fluids. Covering the complete lifecycle, from the design & engineering to production, qualification, installation, commissioning and end-of-life of a product. This involves components, modules, systems, skids and complete (infrastructural) installations.

Lamers was founded in 1909, based in Nijmegen (the Netherlands) and is part of the Aalberts Advanced Mechatronics group. We serve the semiconductor, science & analytical and industrial installation markets. Being the preferred supplier of high-tech OEMs.

Lamers excels in the development of low volume, high mix, high complexity systems and aims for early involvement and customer intimacy. We provide plug & play solutions to accelerate time-to-market and support customers from the concept phase to high volume manufacturing of new ultra high purity equipment.



LAMERS

Marco van Diessen **Sales Director**

De Vlotkampweg 38 6545 AG Nijmegen T: 088 525 4500

E: info@lamersHTS.com

aalberts-am.com/lamers/

SPECIAL COMPETENCES INCLUDE:

system development, turnkey installation of complete infrastructures, orbital welding, UCV cleaning, production and integration under cleanroom conditions, full functional system testing & qualification.



BIG SCIENCE

203





PTB SPECIAL PRODUCTS

CUSTOM BUILT MATERIAL HANDLING EQUIPMENT

PTB Special Products is a manufacturer of non-standard mobile material handling equipment. Pallet trucks, pallet stackers and industrial tow tractors up to 50 tons lifting capacity.

Custom transport and lifting machines
Our custom-made material handling equipment is
used throughout the world for handling (extremely)
heavy and sizable goods. Goods like oversized
or heavy pallets, metal coils, injection molds, train
bogies, machine parts and so forth.

PTB Special Products develops tailor-made solutions for the handling of heavy and complex cargo, in the safest, ergonomic and most efficient way.

The equipment made by PTB Special Products is designed and produced in its own factories in Groningen (NL).

REFERENCES

The company has built special machines for many well-known business partners, including Deutsche Bahn – Siemens - ASML – Mercedes Benz – Philips – NedTrain – APM Terminals – Hitachi and many others.

PTB Special Products brings non-existing solutions to reality.



Jelle Zuidersma

Director

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SMINK GROUP BV

Smink Group is a fast-growing specialized company in orbital welding of high purity piping assemblies and systems. We (co-) design, engineer, fabricate and install both process piping assemblies as well as standalone systems (skids). These systems are applied in the semiconductor, pharmaceutical, food and chemical industries, both as one off as well as series.

The Smink Group operates in the clean utilities (gases and liquids) discipline whereas orbital welding is a requirement.

Orbital welding is a technology used for welding high-quality pipe constructions.

In support of the above operations, we are

equipped with ISO certified cleanrooms. Our workshops are in Veghel and Kerkrade.

The Smink Group can deliver the full spectrum from process design, detail engineering to serial builds under different standards including GMP and FDA. The design of these systems are done by our own engineers using 3D CAD systems.

In accordance with the latest required standards Smink translates the User Requirement Specifications (URS) and Functional Design Specifications (FDS) into a fully functioning system.

Smink is ISO 9001 and VCA** (SCC) certified and we work in accordance with the guidelines of the OHSAS 18001 occupational health and safety standard and the ISO 14001 environmental standard.

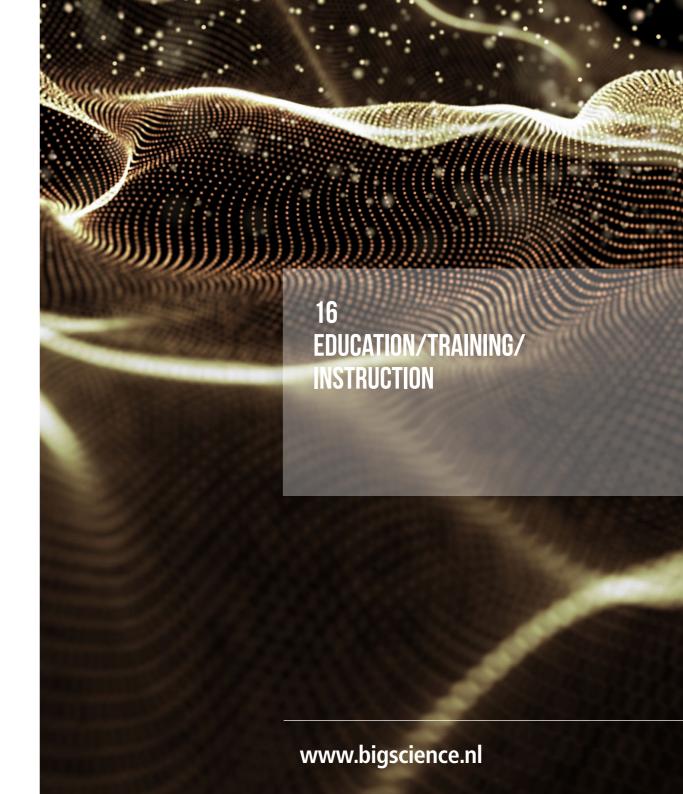
Our processes focus on zero defects, preventing waste and continuous improvement.

Our people, drive for innovation, quality, and customer focus are keys to success. We grow together with our customers through personal commitment and a solution-oriented approach. If you are interested, don't hesitate to contact us!



Smink Group
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www.smink-group.com





| EDUCATION/ Training/ Instruction | | | Speciality (US | P) | | | | | | Area | | Service | | | Supply | | | | | | |
|--|--------------|--|-------------------------|--|-------|-------|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|---|
| | | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ | Me | etal | | | | | |]_, | | -Te | | | | | Pr | | |
| | Company size | (WHAT) | coues | product centric (HOW) | Large | Small | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement | |
| Mikrocentrum | | knowledge and network organization | 1214; 129004; 13 | technical training-courses; trade fairs-thematic events | | | Х | Х | X | Х | х | Х | Х | Х | | | х | X | Х | х | |
| High Tech Institute | | courses and training in precision engineering | 121402; 121404; 1290 | open enrollment or (customized) in house courses | Х | Х | Х | Х | X | х | Х | | Х | Х | X | Х | Х | Х | Х | х | X |

HIGH TECH INSTITUTE

The training portfolio of High Tech Institute contains high-end training courses that are relevant in the high-tech domain such as for electronics, mechatronics, optics, systems, software and leadership skills. Our communication and leadership training courses are specifically aimed at improving the skills for people and teams who have to excel in technical development environments that are moving in a high pace.

FROM INDUSTRY, FOR INDUSTRY

Our partners excel in the domains electronics, mechatronics, optics, system architecture and system engineering, embedded software and leadership skills. They select their trainers very strictly on proven technical excellence, experience, educational skills and the drive to transfer their knowledge. Almost all trainers work in high-tech practice, where they apply their expertise in teams that have to deliver high performance under pressure of deadlines.



BIG SCIENCE

209



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MIKROCENTRUM

TOGETHER WE CREATE THE TECHNOLOGY OF THE FUTURE

For over 50 years, Mikrocentrum is supporting industrial companies with Training – Events – Business

Mikrocentrum offers assistance with increasing knowledge, expanding your network, improving business processes, presenting your company and strengthening your competitive position.

We have access to a large professional network that extends to the industrial sector, the public and semipublic sectors, and knowledge institutes and educational institutes. About 25.000 people take part in our events and activities annually.

We organize courses, trade fairs, events and network meetings in the following technical fields:

- Additive manufacturing and prototyping
- Agri and food technology
- Automotive technology
- Electronics and electrical engineering
- Extended Reality
- Mechatronics, robotics and industrial automation
- Optics, photonics and lasers
- Precision technology and mechanical engineering



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| MISCEL- Laneous | | | Speciality (US | P) | | | | | Area | | Service | | | Supply | | | | | |
|---------------------------|--------------|---|--|---|----|----------|------|--------|----------------|----------|--------------------|---------------------|-----------------------|-----------------|-----|-------------|-------------|-----------------------|--------------------|
| | Company size | Discipline (WHAT) | Procurement codes | Technology-/ skill-/ product centric (HOW) | Me | Mechatr. | Cryo | Vacuum | Electronics HW | Software | Project Management | Systems Engineering | Technical Consultancy | System Supplier | R&D | Development | Engineering | Production / Assembly | Test & Measurement |
| ATG Europe | ze | on site technical services | 1305; 1307 | projects; simulation; analysis; FEM | | | | | х | х | X | ng x | x | <u>e</u> . | x | X | | 앙 | Ä |
| Atkins BV | L | technical services | 13 | design and analysis; areospace; consulting | | | | | | | х | х | х | | х | х | х | | |
| Deerns Nederland BV | | purity and contamination control | 050305; 13 | projects; service; support | | | | | | | | | х | | | х | х | | |
| elQuip | | technical room furniture | 1120105; 120106 | | | | | | | | | | | | | | | | |
| Inno4life | | life science; engineering; packaging | tailor made; automation; system inte- gration | integrated handling and transport solutions | | | | | | | | | Х | | | | X | Х | |
| Omneo Systems | | contamination control for supply chain | 010208; 10; 1214 | development of innovative cleaning concepts | | | | | | | | | х | | | | | | |
| Thomas Thor Associates | S | staff and interim consultants for nuclear | 13; 1312 | recruitment; executive search | | | | | | | х | х | | | | | | | |

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 europe

Michiel Vullings

Manager Projects

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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.

BIG SCIENCE

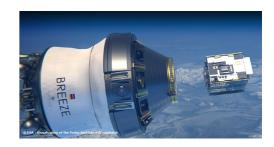
213

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



ATKINS

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
- Structural integrity prediction methods development
- 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.

- Future aircraft program concept studies
- · Landing gear systems & structures engineering

ATKINS

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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









DEC GROUP

Dec Group is a leading global provider of contained powder handling systems and is recognized as a world-leading expert in process containment technologies. It has been supplying the pharmaceutical, chemical, food and cosmetic industries for more than 30 years. In excess of 600 companies worldwide have successfully integrated more than 10,000 Dec systems and concepts into their production sites, always enhancing safety, containment and productivity.

Dec Group provides the following solutions:

Dec Group Product Divisions Particle Size Bulk Handling Mechanical Milling • Dosing · Contained and/or and gels into various Mixing ing dual-chamber sy- Sampling Contained and/or full facilities, mobile aseptic handling Secondary packaging Contained and/or aseptic filling

DecFill® aseptic filling lines – uniquely designed and easy to operate – enable a wide range of applications from laboratory needs to mass production. Our semi- to fully automated filling lines can be designed for different speeds and containers such as vials, cartridges, syringes and double chamber systems.



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www.dec-group.net

DECFILL® KEY BENEFITS & FEATURES

- Ergonomic and easy-to-operate enclosed filling line concepts
- Flexible use with various speeds & containers - vials, cartridges, syringes and dual chamber systems
- Multi-container handling in one filling line
- High filling accuracy, no product waste
- Various barrier systems (oRABS, Isolators, etc.)

BIG SCIENCE

215

- Seamless integration & state of the art robotics
- cGMP compliant Annex 1 Manufacture of Sterile Medicinal Products guidelines
- Fully integrated aseptic upstream handling, blending, micronizing and conveying possibilities with Dec's unique PTS and MC DecJet® technologies.

With Dec's unique patented microdosing technologies for both powder and liquids, you can achieve high precision, thus preventing overfilling and accomplishing higher batch yields.

From the raw material handling to the aseptic packaging process of the final product, Dec offers comprehensive solutions and innovative concepts as well as deep-rooted experience. Dec products offer a high level of safety for both operator and product. Our advanced systems, from the standard powder transfer system to highly complex integrated handling and processing equipment, allow you to increase your productivity while respecting current legal requirements.

DEERNS NEDERLAND BV

Deerns delivers solutions for high-tech facilities where contamination control is paramount. Our Clean Tech experts have decades of expertise and experience in developing, designing and putting into operation contamination controlled research and manufacturing facilities.

Our design methodology puts the client's process at the center of the design. This 'future ready' approach is crucial in achieving successful solutions that effectively integrate all aspects of operations, processes and equipment within the facility, the supporting systems and technical infrastructure. Our projects include research and production spaces, both new and renovated, providing improved efficiencies, flexibility, and people-centered spaces that meet international standards.

KEY REFERENCES

ASML - FOM - Nikhef - imec - Danone - DSM - MESA+ - MSD - SRON - University Eindhoven -NXP - Bayer - ARCNL - VU Amsterdam

OUR CLEAN TECH SERVICES

- Project Programming
- Project Management
- Design and Engineering
- Construction Supervision
- Qualification & Validation
- Hook-Up
- Operational Support



Eric Stuiver

Clean Tech sector director

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ELQUIP

elQuip has been for over 30 years overall designer of workshops in the field of electrical and electronic engineering and assembly. Advice and guidance form the basis for each project, customized solution or delivery of finished products.

PRODUCT INFORMATION

The range (ESD-safe) workshop furniture consists of a variety of workbenches and workbench configurations, work chairs, filing cabinets and trolleys. Additionally elQuip offers a wide range of tools, (ESD) accessories and instruments (including oscilloscopes, spectrum analyzers, generators, power supplies and multimeters of the brand BK Precision).



The workshop furniture brand Flexiline® has been developed by elQuip on the basis of customer requirements. Much attention has been put into ergonomic aspects, flexible applicability and extensibility. As a basis a worktable is used, which can be extended with measuring uprisings, electrification (230/400V), instrument-consoles (for 19" equipment), electrical work height control,

lighting, soldering fume, etc. A client can customize the products and extend them to his own needs. The product is mainly used in the fields of R&D, service, maintenance, repair, calibration, small-scale production in the fields of electronics, such as appliances assembly, and in education.

Our customers can be found in the industry, utility companies, government, hospitals and technical/ scientific & educational institutes.

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REFERENCES

Amolf - TU-Delft - TU-Eindhoven - NXP -ASML - Intel - Fugro - Technolution - NUON powergeneration - Roy - NL Navy - Thales - TNO - RTD - Tokheim - DAF Trucks - Heineken - and many more.



Jan Straver

CEO

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OMNEO SYSTEMS

CONTAMINATION CONTROL FOR THE HIGH-TECH SUPPLY CHAIN

OMNEO offers a reliable contamination control system for the entire supply chain in the high-tech industry. We validate and control the production processes according to set standards and we develop innovative cleaning concepts.

WHY OMNEO

- The certainty of a proven measurement technique in according with standards as ASML GSA cleanliness grades
- The convenience of covering all chains in achieving cleanliness
- The ability to identify, count and classify contamination
- The availability of detailed and validated information to improve workspace and processes

CONSULTANCY & TRAINING

Every part of the process has an impact on the quality of the end product. We are happy to use our cleanliness expertise for you to increase your gross profit, increase your market share and/or reach a new target group.

PROCESS VALIDATION & CONTROL

Based on the set requirements and standards, we validate the steps of your production process with our validation test blocks and periodically check



Stefan Kuipers

СМО

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this with our control testblocks on the basis of an agreed schedule.

PDM PARTICLE DEPOSITION MONITORING

No matter how good your cleanroom and/or cleaning system is, you cannot prevent particle deposition on critical surfaces. By obtaining quantified and qualified data per time unit with our OMNEO-PDM you can determine whether your cleanroom and/or cleaning system meets the requirements.

RGA RESIDUAL GAS ANALYSIS

We design and realize custom RGA systems and apply the software we have developed ourselves. In our own laboratory we use an ultra-precise and unique RGA system for our test blocks for the various types of processing for the purpose of validating and controlling your processes.

CLEAN LOGISTICS

Preventing contamination after cleaning is therefore a challenge. This applies to both internal and external transport, as well as for handling and packaging. To prevent is better than to cure.

TRACK & TRACE

We have built a web-based portal that allows you to check, among other things, whether your supplier uses the right materials, performs the periodic RGA checks and chemical analyses you have requested.



THOMAS THOR ASSOCIATES

A BRIEF DESCRIPTION OF OUR BUSINESS AND MAIN AREAS OF EXPERTISE

Thomas Thor Associates provide Recruitment and Executive Search services to the global nuclear industry. Our clients include governments, regulators, utilities, operators, equipment manufacturers and supply chain organisations across the nuclear industry. With offices in Europe and the Middle East, we are set up to recruit nuclear professionals for our clients on an international scale. Our staff is multinational and multilingual and we have a live network of over 23,000 nuclear professionals globally.

WHAT MAKES US DIFFERENT TO OUR COMPETITORS?

- We are completely focused in the recruitment of professionals for the nuclear industry, both temporary and permanent staff.
- We have a successful track record in recruiting nuclear specialists for international clients and consortia.
- We are specialists in the international relocation of nuclear professionals.
- We represent multinational and multilingual experts in the nuclear industry.

Our network of candidates includes internationally mobile project and engineering specialists in new build, commissioning, operation and decommissioning in the following disciplines:

- Executive and Board Level Positions
- Project and Programme Management (design, construction and commissioning)



Kaoutar Belarbi

Marketing and Sales Intern

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www.thomas-thor.com

- Project Support and Control (Planning, Contract, Cost. Time Schedule)
- · Safety (deterministic and probabilistic)
- Quality, Human Factors, Human Performance and Risk Management

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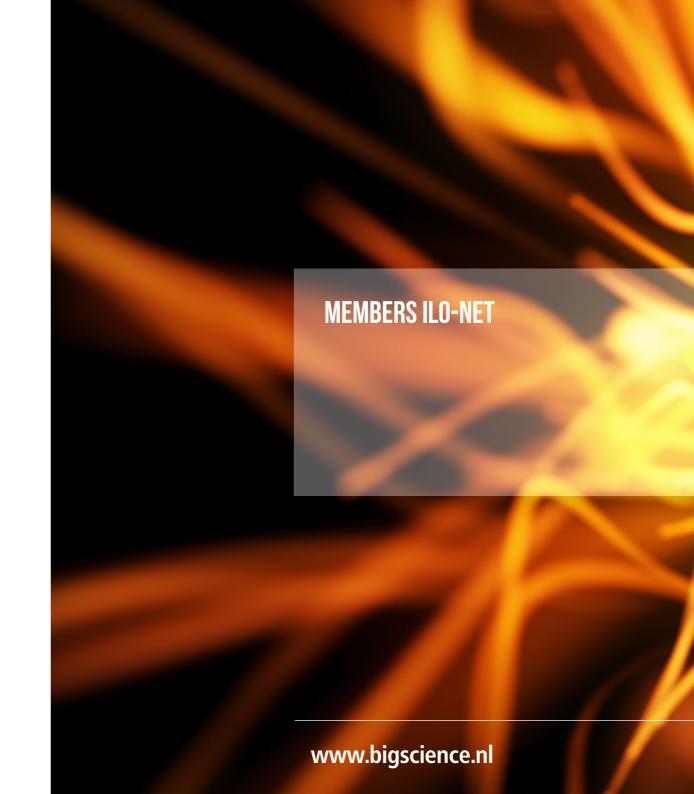
219

- Licensing and Regulatory
- Process and Design Engineering
- Procurement, Supply Chain and Supplier Management
- Senior technical specialists areas including I&C, HVAC, Thermo hydraulics, Reactor Physics
- Plant Operations and Maintenance
- Waste management and decommissioning strategy

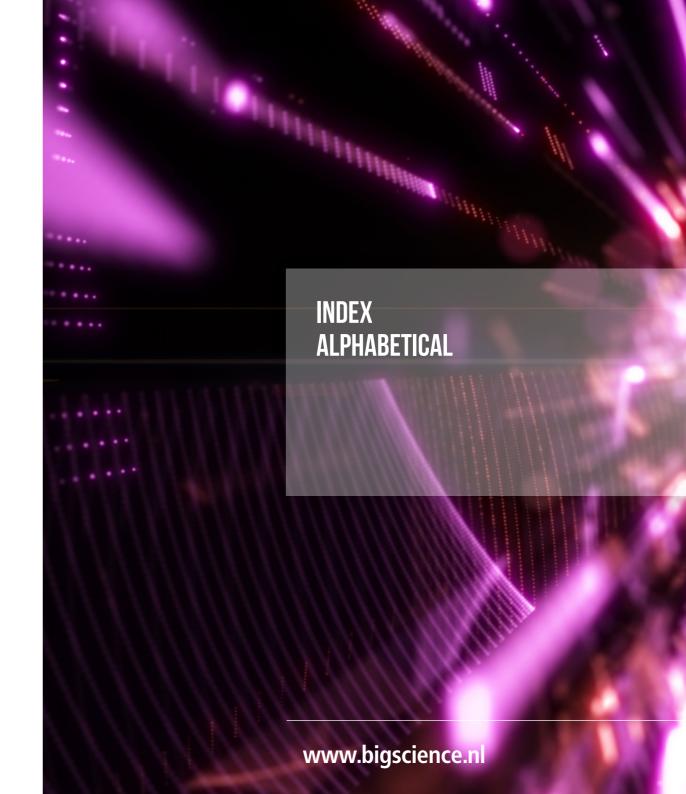
THE SERVICES THAT WE OFFER

- Provision of interim/temporary consultants
- Recruitment of permanent staff (contingency, retained search, executive search and campaign management)
- Industry information and survey results





| Name ILO / Affiliation | Email | Big Science Organisation/ Facility | Focus area |
|---|-------------------------------|--|--|
| Jan Visser NIKHEF | janvs@nikhef.nl | CERN, ET | ILO-net coordinator Accelerator and gravitational wave facilities |
| Rob van der Meer NIKHEF | meerr@nikhef.nl | ET, ETpathfinder | Gravitational wave facilities |
| Ronald Halfwerk ASTRON | halfwerk@astron.nl | LOFAR, SKA | Radio telescopes |
| Michiel van Haarlem ASTRON | haarlem@astron.nl | SKA | Radio telescopes |
| Ramon Navarro NOVA | navarro@astron.nl | ESO | Optical telescopes |
| Paul Hieltjes SRON | p.j.hieltjes@sron.nl | ESA | Space science |
| Gerard Cornet SRON | g.cornet@sron.nl | | European Network of Research Infrastructures & Industry for Collaboration (ENRIITC); a Horizon 2020 project |
| Martine Heiligers RU Nijmegen/HFML/ FELIX | martine.heiligers@ru.nl | HFML/FELIX | Magnets with ultra high fields Free electron lasers |
| Marck Smit NIOZ | marck.smit@nioz.nl | NIOZ | Sea and ocean research (including deep sea research and technology) |
| Toon Verhoeven | a.g.a.verhoeven@gmail. com | | Pan-European Research Infrastructures ILO organisation (PERIIA) International Organisation Committee BSBF |
| Eric W. Boom | ericboom@upcmail.nl | | Representing the Dutch Industry Fusion Industry Innovation Forum (FIIF) |



INDEX

BIG SCIENCE | 224

| NUMBERS | | Cosine Measurement Systems | 128 |
|--|-----|--|-----|
| 3D Metal Forming | 109 | Cryoworld BV | 137 |
| 4DSP | 187 | | |
| | | D | |
| A | | De Valk | 111 |
| Aalberts Surface Technologies Eindhoven BV | 84 | Dec Group | 215 |
| Airborne | 86 | Deerns Nederland BV | 216 |
| ACE development & engineering | 161 | Delta Elektronika BV | 27 |
| ACQ Engineering | 151 | DeMaCo Holland BV | 138 |
| Actemium EMS | 152 | Demcon Advanced Mechatronics | 78 |
| Active Space Technologies | 121 | Diamond Kimberlit BV | 193 |
| Admatec Europe | 101 | DotX Control Solutions BV | 154 |
| Advanced Electromagnetics BV | 9 | | |
| Advanced Solutions Nederland | 188 | E | |
| Airbus Defence and Space Netherlands | 77 | Ecomatters | 199 |
| AJB Instruments BV | 59 | EKB | 164 |
| Amstel Engineering BV | 162 | elQuip | 217 |
| Amsterdam Scientific Instruments | 127 | Entechna Engineering | 165 |
| Antonius | 87 | Etchform BV | 90 |
| AR Benelux | 153 | | |
| ATG Europe | 213 | F | |
| Atkins BV | 214 | FMI High Tech Solutions / FMI Machining | 48 |
| | | Formatec | 104 |
| В | | Frencken Group Limited-Mechatronics Division | 49 |
| Bakker Fijnmetaal | 47 | Futura Composites BV | 91 |
| Bayards Aluminium Constructions | 41 | | |
| Benecom | 88 | G | |
| Betech Mass Turning | 60 | Germefa | 62 |
| BKB Precision | 102 | Geurtsen Machinefabriek | 63 |
| BKL | 163 | | |
| Bodycote Vacuum Brazing | 89 | Н | |
| Boessenkool | 42 | Harsveld Apparatenbouw BV | 200 |
| Bouman Machinefabriek | 61 | Heemskerk Innovative Technology | 122 |
| Buigstaal Tube Bending | 110 | High Tech Institute | 209 |
| | | High Voltage Potting and Coating (HVPC) | 10 |
| C | | Highrise BV | 92 |
| Capable BV | 21 | Hitec Special Measuring Systems | 155 |
| Ceratec Technical Ceramics BV | 103 | Hittech Landes | 50 |

| Hositrad Vacuum Technology | 143 | | |
|-------------------------------------|-----|--|-----|
| Hydro-Carbon Separation Systems BV | 201 | N | |
| | | National Instruments | 14 |
| I | | Nebo Special Tooling BV | 106 |
| IBS Precision Engineering | 71 | Nedinsco | 129 |
| IGS GeboJagema | 64 | New Cosmos -BIE | 179 |
| INCAA Computers | 156 | Neways | 34 |
| INDOLES Precision BV | 79 | Nijdra Group | 53 |
| Innogrind | 93 | NLR - Royal Netherlands Aerospace Centre | 170 |
| Innplate | 94 | | |
| IPS Technology | 202 | 0 | |
| | | Oceanz | 115 |
| J | | Omics2Image | 157 |
| Jeveka | 112 | Omneo Systems | 218 |
| JPE | 166 | Optics11 | 130 |
| K | | P | |
| Kersten Kunststof(f) coating | 95 | Peter Haak Produktontwikkeling | 131 |
| Kusters & Bosch | 51 | Photonis | 132 |
| | | PM B.V. | 80 |
| L | | PMP Lichtenvoorde BV | 54 |
| Lamers High Tech Systems BV | 203 | Prodrive Technologies | 28 |
| Lencon | 167 | PTB Special Equipment | 204 |
| Linear Technology Corporation (LTC) | 11 | | |
| LioniX International | 194 | Q | |
| Louwershanique | 105 | Q-sys | 81 |
| M | | R | |
| Magnetic Innovations | 12 | Raditeq | 15 |
| Mat-tech BV | 113 | Romal.com | 23 |
| MCap Cable & Glassfiber assemblies | 22 | | |
| MECAL High-tech/Systems | 168 | S | |
| Megahard | 33 | S&T | 158 |
| Metrik Fasteners BV | 114 | Schelde Exotech | 43 |
| Mevi | 52 | Settels Savenije | 171 |
| MI-Partners | 169 | Single Quantum | 133 |
| Mikrocentrum | 210 | Sintecs | 35 |
| Mitutoyo | 72 | Sioux Technologies | 172 |
| Mogema 3.0 | 144 | Smink Group BV | 205 |
| MTSA Technopower | 13 | Somni Solutions | 134 |
| Multivalent Plating & Etching BV | 96 | Steered Technology | 24 |
| | | Stirling Cryogenics BV | 139 |

| Tebulo Engine |
|---------------|
| Tebunus Tube |
| TechMasters E |
| Technobis Gro |
| Technolution |
| Telmastaal |
| Ter Hoek Von |
| Tessella |
| Thales Group |
| Thomas Thor |
| TNO |
| Tol Plaatwerl |
| Topic Embedd |
| Tree C |
| |
| V |
| Vacutech |
| ., |

| Stream HPC BV | 189 | VDL Enabling Technologies Group | 55 |
|----------------------------|-----|--------------------------------------|-------------|
| Sumipro | 195 | VDL Fibertech Industries | 98 |
| | | VDL TBP Electronics | 37 |
| T | | Velmon Maintenance Piping & Construc | tion BV 118 |
| Tebulo Engineering BV | 173 | Vermeulen Metaal BV | 56 |
| Tebunus Tube Bending | 116 | Vernooy Vacuum Engineering | 147 |
| TechMasters BV | 174 | VIRO | 176 |
| Technobis Group | 16 | Vonk | 29 |
| Technolution | 17 | | |
| Telmastaal | 117 | W | |
| Ter Hoek Vonkerosie | 97 | Wijdeven Inductive Solutions | 183 |
| Tessella | 190 | Wilting | 66 |
| Thales Group Competence | 36 | Witec | 67 |
| Thomas Thor Associates | 219 | | |
| TNO | 175 | X | |
| Tol Plaatwerl | 65 | Xpress Precision Engineering BV | 73 |
| Topic Embedded Products BV | 18 | | |
| Tree C | 123 | Z | |
| | | ZEISS Industrial Quality Solutions | 74 |
| V | | | |
| Vacutech | 145 | | |
| Vacuüm Specials | 146 | | |
| Van Halteren Metaal BV | 44 | | |

NOTES

BIG SCIENCE | 227

| NOTES | |
|-------|--|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
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NOTES

| NOTES | |
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