**POWER SUPPLY**

**LAPS21000**

ACDC Power Current Driver System for Laser Applications with safety interlock

- Up to 21kW fast current driver
- Parallel operation for higher output power
- Safety interlock / ISO13849-1 class e

**LASY18A-12C**

High-performance power supply with multiple current drivers

- Up to 10.8 kW of electrical power
- Up to 12 laser diode current drivers for 3000 W of optical power
- Safety interlock / ISO13849-1 class e

**LAPS3800**

ACDC Power Supply for Laser Applications

- Input voltage: 180 V … 528 Vac, 3 phase
- Special design to handle any kind of pulsed load
- Base plate- or water-cooled
EPIC Meeting on High Power Laser Systems

This meeting brings together the main drivers of laser applications that require KW+ power or high fluence in an optical beam. The purpose of this meeting is to identify user needs and find suitable innovative solutions, for the applications that are driving this market. The main topics that will be addressed include: Beam shaping for high fluence lasers: “Gaussian” vs “Top Hat”, Beam Propagation Ratio (M2) measurement, and Cooling or power dissipation. Challenges of the power supply and power electronics such as current ripple, dimming, pulse width modulation (PWM) interfacing, pulse reproducibility and stability will be addressed. The companies in charge of the manufacturing Laser pumps, diodes, fibers, laser head and other components will present their state-of-the-art technology.

10 October 2019, Thursday

12:00 – 13:00 Registration & Lunch @ Van der Valk Theaterhotel Almelo
Address: Schouwburgplein 1 • 7607 AE Almelo • The Netherlands

13:00 – 13:05 Welcoming words by Jose Pozo, CTO, EPIC – European Photonics Industry Consortium

13:05 – 13:15 Welcoming words by Hans Pol, CEO, PBF

13:15 – 13:45 KEYNOTE: Challenges for Power Supplies in the Laser market
Rene Dingshoff, Business Development Manager, PBF (THE NETHERLANDS)

SESSION 1 – SETTING UP THE SCENE

13:45 - 14:15 KEYNOTE: Improved technology high power fiber lasers for increased productivity
Mark Richmond, Product Manager, SPI Lasers (UNITED KINGDOM)

14:15 - 14:45 KEYNOTE: kW femtosecond lasers – potentialities and challenges
Clemens Hoenninger, Vice President, Head of R&D, Amplitude Laser (FRANCE)

14:45 - 15:00 High-throughput laser processing using direct laser interference patterning
Nikolai Schroeder, Research Associate, Technical University Dresden (GERMANY)

15:00 - 15:15 kW-level femtosecond laser system for large-scale surface functionalization and its applications
Gedvinas Nemickas, FemtoSurf Technology Coordinator, Femtika (LITHUANIA)

15:15 – 16:00 Coffee break

SESSION 2 – HIGH POWER AND FLUENCE BEAM SHAPING SOLUTIONS

16:00 - 16:15 Robust beam shaping solutions for high power laser systems
Sabrina Matthias, Product Manager, asphericon (GERMANY)

16:15 - 16:30 Low stress ion beam sputtered coatings for high energy laser applications
Joseph Spilman, Director of Sales & Marketing, Optimax (USA)

16:30 - 16:45 Transmissive optical components for multi-kW laser systems
Laurynas Satas, CTO, Altechna (LITHUANIA)

16:45 - 17:00 Fully reflective versatile beam shaping enabling industrial laser material processing up to 20kW
Pu Jian, Vice President of Product Management & Partnerships, Cailabs (FRANCE)

17:00 - 17:15 Design and ultraprecision diamond machining of beam shaping components for high-power CO2 lasers in additive manufacturing applications
Gebirie Yizengaw Belay, Postdoc, Vrije Universiteit Brussel (BELGIUM)

17:15 - 17:30 Ceramik liquid cooler for high power laser systems
Harald Kress, Business Development Manager, CeramTec (GERMANY)
**EPIC Meeting on High Power Laser Systems**

**17:45**  
Bus transfer to dinner venue

**18:00 – 22:00**  
Dinner @ Kir Royal. Address: Prins Bernhardlaan 148 • 7622 BL Borne

**22:00**  
Bus transfer from dinner venue to Theaterhotel Almelo

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**11 October 2019, Friday**

**09:00 – 09:20**  
Morning coffee @Theaterhotel Almelo

**09:20 – 09:30**  
Recap by Jose Pozo, CTO, EPIC – European Photonics Industry Consortium

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**SESSION 3 – HIGH POWER LASER-BASED SOLUTIONS AND NEEDS**

**09:30 – 10:00**  
**KEYNOTE:** High power diodes and related components for high power laser systems  
Rene Engel, Senior Manager of Component Sales, Coherent (DENMARK)

**10:00 – 10:15**  
High-power thin-disk lasers for scientific and industrial applications  
Michal Chyla, Senior Researcher, HiLASE (CZECH REPUBLIC)

**10:15 – 10:30**  
Piezo based beam shaping for high dynamic laser material processing in 3D  
Lukas Rau, Product Marketing Manager for Piezo Systems, Physik Instrumente (GERMANY)

**10:30 – 10:45**  
Mobile and stationary high power laser processing – processes and equipment  
Oliver Meier, Managing Director, LASER on demand (GERMANY)

**10:45 – 11:00**  
Robust optical systems for high power lasers in the multi-kW regime  
Martin Traub, Optics Design and Diode Lasers, Fraunhofer ILT (GERMANY)

**11:00 – 11:45**  
Coffee break

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**SESSION 4 – THE HIGH POWER LASER SUPPLY CHAIN**

**11:45 – 12:00**  
Opto-mechanical products for high power lasers  
Laurent Ropert, Export Account Manager, ISP System (FRANCE)

**12:00 – 12:15**  
Non-contact focus spot and focus shift measurement of high power lasers in manufacturing processes  
Christian Dini, Director Global Business Development, MKS Instruments – Ophir Brand (GERMANY)

**12:15 – 12:30**  
Power in nothing without pulse to pulse control  
Sergio Pellegrino, R&D Director, Laserpoint (ITALY)

**12:30 – 12:45**  
Burn-in and life test of optoelectronic devices  
Martin Collins, Vice President Sales and Marketing, Yelo (UNITED KINGDOM)

**12:45 – 13:45**  
Lunch

**14:00 - 14:15**  
Bus transfer from Theaterhotel to PBF

**14:15 – 16:00**  
Company visit @PBF

**16:00**  
End & Optional bus transfer from PBF to Theaterhotel Almelo

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**CONTACTS**

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Elena Beletkaia, Project Leader, mobile: +31 619 181296
<table>
<thead>
<tr>
<th>Name</th>
<th>Job Title</th>
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<tr>
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<td>Lead Engineer Research</td>
<td>II-VI</td>
<td>Germany</td>
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<td>Sales Manager</td>
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<td>Shanghai Feibo Laser</td>
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II-VI, a global leader in engineered materials and optoelectronic components, is a vertically integrated manufacturing company that develops innovative products for diversified applications in the industrial, optical communications, military, life sciences, semiconductor equipment, and consumer markets. Headquartered in Saxonburg, Pennsylvania, the Company has research and development, manufacturing, sales, service, and distribution facilities worldwide. The Company produces a wide variety of application-specific photonic and electronic materials and components, and deploys them in various forms, including integrated with advanced software to support our customers.

www.ii-vi.com

Patrick Kühl (Lead Engineer Research) has been working since 1998 for HIGHYAG Lasertecnologias GmbH, a subsidiary of II-VI. He studied Mechanical Engineering with a focus on Mechatronics at the University of Applied Sciences Brandenburg (Germany). As a longtime member of the R & D department, since 2016 he is pushing the research and technology development topics ahead to prepare the company for the challenges of the future. Patrick has a strong interest in all new technologies and is curious for upcoming innovations.

AIMEN is a leading research centre in Materials and Process Engineering. Located in Northern Spain, it operates as private, non-profit organization to provide high tech services and resources to a wide range of industries, from automotive to energy or medical devices. The research activity of AIMEN is mainly focused in materials engineering, robotics and manufacturing processes, all oriented to industrial applications and advanced manufacturing. The Laser Applications Centre of AIMEN is a dedicated infrastructure for research and development in laser based manufacturind and industrial photonics. This 1200 m² facility is equipped with state of the art laser-based manufacturing equipment. AIMEN conducts applied research in applications of machine vision an optical sensing, laser materials processing (thick section laser welding, cutting, surface treatment, precision laser machining, down to nanofabrication), together with system engineering and optical system development. AIMEN participates and coordinates multiple national and international research activities, both in publicly funded programs, or under industrial partnership. www.aimen.es

Camilo Prieto (Senior Researcher- System Technology for Lasers in Manufacturing) holds an MSc on Laser Physics and Technologies from University of Salamanca and an MEng on Mechatronics by University of Vigo. He has developed his professional career in research centre companies in the field of laser-based manufacturing, being involved in R&D programs for over 12 years. Camilo has been involved as experienced application researcher on both microprocessing and macroprocessing applications. He also has undertaken engineering technical leader roles on optical system design, development, integration and installation of Laser Systems in production environments. Camilo joined AIMEN Laser Applications Centre in 2015 and is leading the team of System Technology for Lasers in Manufacturing and is also project technical coordinator on a large collaborative EU project named INTEGRADDE that aims to deploy novel pilot lines on metal additive manufacturing. His main current research and development activities are on the application of novel high-power laser sources, beam shaping and monitoring technologies on additive manufacturing and welding processes.
Altechna is a Lithuania-based manufacturer of precision laser components and accessories, from optical coatings to motorized optomechanical assemblies. Since 1996, we have created and developed complex technological solutions and custom designs for the most powerful lasers in the industry. Our in-depth knowledge on dielectric coatings and optical designs allows our industrial customers to reconsider their laser geometries and achieve even higher peak levels of power or reduce the weight of commercial products. From test batch to mass production, the quality and repeatability of each product are assured at our metrology laboratory. So, if your challenge involves anything from femtosecond to continuous-wave technology, we are here to support you with our innovative solutions. www.altechna.com

Laurynas Satas (CTO) is taking responsibility for the company’s technical strategy as Altechna CTO. He has strong technical expertise and an academic background in optics, optical coatings, lasers and laser applications. Laurynas holds a BSc in Physics and Management of Modern Technologies and an MSc in Laser Technologies from Vilnius University. Since 2014, Laurynas has focused on supporting key industrial customers as part of Altechna sales team by developing and providing new technological solutions. His strong track record in multiple product development projects over the past five years has proved his technical expertise and leadership. He is highly motivated to turn things that seem “impossible” into a new product line.

Amplitude Laser Group is a leading manufacturer of ultrafast lasers for scientific, medical and industrial applications. The group consists of three manufacturing locations in Bordeaux and Paris, France, and San Jose, U.S.A., and an extensive network of support offices in Europe, Asia and North America. Amplitude Laser Group offers the widest range of ultrafast laser technologies available today, from industrial fiber lasers to high energy Petawatt class Ti:Sapphire lasers. www.amplitude-laser.com

Clemens Hönninger (CTO) has more than 20 years of experience in the design and development of diode-pumped femtosecond lasers, most of it acquired in Photonics industry. He graduated in Physics at the University of Heidelberg in 1995 and earned his PhD from the Swiss Federal Institute of Technology (ETH Zurich) in 1998. Following a Postdoc position at the University of Bordeaux, he started transferring his research interests to industry. He joined Amplitude Systèmes in 2002.
**asphericon** is one of the technological leaders in manufacturing aspheres and challenging optical components based on a patented technology to control CNC grinding and polishing machines. Its passion for revolutionizing the manufacturing of aspheric components with new technologies is changing the degree of precision and quality that is possible. Small runs right through to large series are realized with high precision in all details. asphericon serves its customers not only with optical components, it also supports with services like optic design, full-surface interferometric measuring and coating as well as assembling and characterizing optical modules. Driven by the idea of developing new technologies and optimizing existing ones, we are continuously refining and improving our processes for our customers needs. [www.asphericon.com](http://www.asphericon.com)

**Sabrina Matthias (Product Manager)** received an Engineer's Degree focused in Optometry from Ernst Abbe Hochschule Jena / University of Applied Sciences Jena. For her diploma thesis, she studied the light guiding ability of the Müller cells in the vertebrate retina at the Paul Flechsig Institute, Leipzig. In 2009, she started her career at asphericon as a Sales Engineer. From 2014 until 2016, she became president of asphericon, Inc., the company’s North American subsidiary. After successfully establishing the Inc., she went back to her German roots and now proudly represents asphericon’s BeamTuning products.

**Brussels Photonics Team (B-PHOT)** is a research group within the Faculty of Engineering of the Vrije Universiteit Brussel (VUB). B-PHOT is active in fundamental, applied and industrial research in the field of optics and photonics with a strong focus on the design, fabrication and metrology of freeform optical components. B-PHOT has state-of-the-art expertise and tools for the design of freeform optics and extensive infrastructure for prototyping and characterizing optical components in its Photonics Innovation Centre. B-PHOT sets a strong track record in coordinating large-scale EU research and innovation projects and providing engineering services to the industry. In the field of high-power optics for laser-assisted manufacturing, B-PHOT has been involved in several projects in which it designed an optical head for integrated laser hardening on a milling machine and the beam delivery optics for a laser sintering additive manufacturing process. [www.b-phot.org](http://www.b-phot.org)

**Gebirie Yizengaw Belay (Postdoc Researcher)** is a postdoctoral researcher at Vrije Universiteit Brussel (VUB). He graduated from the Erasmus Mundus Master in Photonics program in 2010 with a double MSc degree, one from Royal Institute of Technology (KTH), Sweden, and the other from Ghent University (UGENT) and Vrije Universiteit Brussel (VUB), Belgium. He received his PhD in Photonics Engineering from VUB in 2015. Since then he is working as a postdoctoral researcher mainly involved in industrial projects in the modelling and design of imaging and non-imaging optics.
Founded in 2013, Cailabs is a French deep tech company which designs, manufactures and distributes innovative photonic products for telecommunications, free space transmission, industrial lasers, and LANs. A global leader in complex light shaping, its technology is currently protected by 19 patent families. Its innovative optical components are used in a variety of sectors and have contributed to several world records (notably the optical fiber bandwidth record achieved by the Japanese operator KDDI). Since 2016, Cailabs has obtained numerous innovation awards worldwide. www.cailabs.com

Pu Jian (VP Product Management & Partnerships) launched all Cailabs’ award-winning products and drives their go-to-market strategy. She leads the cooperation between Cailabs and its strategic partners. She holds a Ph.D. in quantum optics from the Ecole Normale Supérieure and the Université Pierre et Marie Curie.

CeramTec is an international manufacturer and supplier of Technical Ceramics. The Ceramic Experts offer a portfolio with well over 10,000 different products, components and parts, made of a variety of engineered ceramic materials. They are used in a wide range of applications. With a tradition of more than 100 years, more than 3,500 employees are worldwide active at 20 production sites in Europe, USA and Asia.

APPLICATION RANGE OF ADVANCED CERAMICS:

* energy supply and environmental technology
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* electronics and communications technology
* medical implants, devices and prosthetics
* cooling and heating for electronics and many other applications. www.ceramtec.de

Harald Kreß (Business Development Manager) is a graduate engineer in electronics and electrical engineering. He has more than 40 years of experience in power electronic applications. He was over 13 years at the company Semikron in Nuremberg as production manager. From 2003 to 2013, he worked as Key Account Manager at Curamik / Rogers, with over 4 years responsibility for Japan. In 2013, he started as Business Development Manager for Ceramic liquid coolers in field of power modules and laser applications at CeramTec.
Coherent, founded in 1966, is one of the world’s leading providers of lasers and laser-based technology for scientific, commercial and industrial customers. With headquarters in the heart of Silicon Valley, California, and offices spanning the globe, Coherent offers a unique and distinct product portfolio and services for Scientific Research, Life Sciences, Microelectronics & Semiconductor processes, and Materials Processing. In November 2016 Coherent and ROFIN merged to form the world’s largest photonics company. Coherent differentiates from other laser manufacturers by offering the broadest product portfolio available. This unsurpassed portfolio of lasers varies in wavelength, average and peak power to be subtle enough for DNA studies, precise enough for microelectronics, and powerful enough to cut the strongest steel. From continuous-wave to femtosecond lasers, from a few milli-Watts up to multi kilo-Watts of power combined with in-depth process development skills, we are the ideal partner for deployment of photonics in Science and Industry. Coherent develops and produces a large proportion of its products in Europe, including diode and fiber laser components, high repetition rate short pulse lasers, diode-pumped solid-state lasers, optically pumped semiconductor lasers, ultrafast lasers, excimer lasers up to industrial fiber, diode and CO₂ lasers as well as laser-based system solutions. We employ approximately 2,800 people in Europe. www.coherent.com

René Engel (Head of Component Sales, EMEA) has been with Coherent since April 2018. He is overseeing sales of components for the photonics and laser industry from a broad portfolio. This includes Advanced Crystals for gain and harmonic conversion, High Power Diodes (DILAS + Coherent + Ondax), Specialty Fibers, Coils and Assemblies (Nufern + StockerYale), Fiber Cables and Beam Delivery Components (Optoskand), Customized Power Supplies (PMB) and Laser Measurement/Beam Diagnostics equipment. Before joining Coherent, he served in a number of roles within telecom, corporate venture and innovation, specialty fibers and fiber lasers, ranging from R&D through sales, marketing, product management and board of director positions. René holds a number of patents within telecom and fiber technology. He obtained his M.Sc. 1994 from Technical University of Denmark.

Mats Blomqvist (R&D Manager) finished with a PhD in Condensed Matter Physics from KTH Royal Institute of Technology in Sweden (2005) developing ferroelectric oxide thin films for electro-optical applications. Mats then joined Optoskand in 2006 where he has been working in the R&D group developing new beam delivery products for the high-power laser market. Mats was awarded Agilent Technologies PhD Fellowship and has been working for more than a year at Agilent Technologies Central Research Lab, Palo Alto, CA, USA. He is the author of over 15 scientific publications and holder of one patent. Since 2016, Mats is working as R&D Manager at Coherent Sweden (former Optoskand) managing a group of 10 R&D engineers.
EPIC is the European industry association that promotes the sustainable development of organisations working in the field of photonics. Our members encompass the entire value chain from LED lighting, PV solar energy, Silicon photonics, Optical components, Lasers, Sensors, Displays, Projectors, Optic fiber, and other photonic related technologies. We foster a vibrant photonics ecosystem by maintaining a strong network and acting as a catalyst and facilitator for technological and commercial advancement. EPIC works closely with related industries, universities, and public authorities to build a more competitive photonics industrial sector, capable of both economic and technological growth in a highly competitive world-wide marketplace. [www.epic-assoc.com](http://www.epic-assoc.com)

**Jose Pozo (Director of Technology)** is a Senior Photonics specialist with extensive background in technology, market knowledge and an eye for business opportunities, with 14+ years of professional background. Experienced at building consortia and supply chains for the development of innovative solutions towards improving the state of the art of the Photonics Industry. Highly regarded scientist as well as an award-winning conference speaker with over 70 publications (including a Nature paper in 2015). Member of the board of IEEE Photonics Society – Benelux.

**Elena Beletkaia (Project Leader)** graduated from Lomonosov Moscow State University (MSU) specializing in biophysics. In 2015 she acquired her PhD in Leiden University with her research focusing on biochemical and biophysical mechanisms underlying metastasis of Ewing sarcoma. Later in collaborative setting of NKI and Twente University, Elena investigated application of a non-invasive spectroscopic/multiphoton methods for intraoperative resection margins assessment. All her research projects involved understanding and use of multiple micro- and spectroscopic techniques.

**Helena Jelinková (Events Manager)** studied Business Administration and Management at Thomas Bata University in Zlín, Czech Republic. Her passion for travelling brought her into the hospitality and tourism industry. She worked for several international hotel brands in Prague at various positions both in the operations and sales department. She dedicated most of her professional life to events. Projects she worked on range from corporate conferences and meetings to sport tournaments or weddings. In June 2019 she has joined the EPIC team as their second Events manager.
**Femtika** is a spin off company from Vilnius University Laser Research Center established in 2013 by team of experts with portfolio of many years of research and development of 3D laser precision micro processing. Company specializes in hybrid microfabrication technologies using femtosecond laser workstations for multiphoton polymerization, laser ablation, selective glass etching technologies and offering research services. Femtika is targeting supplying the growing worldwide demands of available tools and technologies, enabling true 3D laser fabrication of custom design components in micro- and sub-micro scale. Microstructures provided by Femtika are used in development of new future products in semiconductors, photonics, medical, automotive and space industries. Femtika's core product – Laser Nanofactory workstation is equipped with unique technological combination of power and precision. Advanced hybrid micro-fabrication design allows to fabricate micro-structures using additive and subtractive technologies in one process. Fabrication process is controlled by Femtika’s own 3DPoli software. Modular structure allows system to be used as single core when developing customer specific solutions. [www.femtika.lt](http://www.femtika.lt)

**Gedvinas Nemickas (FemtoSurf Technology Coordinator)** has 5 years of experience in femtosecond laser micromachining technologies and applications. He graduated physics at the Vilnius University. From 2015, he joined “Femtika” team as physicist researcher. He has experience and knowledge in laser micro/nano fabrication of various structures and different materials including steel, aluminum, copper, tungsten, etc. as well as different plastics and ceramics. Currently, he is the leading person of one of the micromachining group and the technology coordinator of the FemtoSurf project.

**HiLASE Centre**, established in 2011, a part of the Institute of Physics of the Czech Academy of Sciences, is a new technological infrastructure in the field of application-oriented laser research and development, commissioned in 2016. The main mission of HiLASE is to serve as a bridge between the academic world and hi-tech industry. Under one roof at HiLASE we develop the next generation of high power Diode Pumped Solid State Lasers, while at the same time, exploit these unique light sources for a wide range of hi-tech industrial applications such as Laser Shock Peening, Laser Induced Damage Threshold testing, and Laser Micro-Machining. Our most important facilities include the world record-breaking superlaser “Bivoj”, delivering over 1 kW of average power, and the compact picosecond thin-disk lasers delivering high power laser beams at wavelengths from mid-infrared to deep ultraviolet. It makes HiLASE facility the perfect partner for hi-tech companies, bringing an unmatched opportunity for research excellence, technological innovation and industrial exploitation. [www.hilase.cz](http://www.hilase.cz)

**Michal Chyla (Senior Researcher)** received his master’s degree in optoelectronics from the Military University of Technology in Warsaw in 2010 and his PhD degree in physical engineering from the Czech Technical University in Prague in 2015. He works as a senior researcher in the HiLASE Centre at the Institute of Physics of the Academy of Science of the Czech Republic. He has been working on thin-disk lasers since 2010. He is currently focusing on development and commercialization of industrial-grade thin-disk lasers.
ISP SYSTEM is specialized in design and manufacturing of high precision mechatronics. Addressing many markets such as Photonics, Defense, Aerospace, Automotive, Medical Science and Life Science, ISP designs and manufactures innovative turn-key solutions for its customers. Main products: Beam transport systems (optics mounts, deformable mirrors, active benders, fast steering mirrors), embedded electrical actuators, micro- and nano-positioning systems, micro-assembly machines for electronics and opto-electronics, high precision special machines. www.isp-system.fr

Laurent Ropert (Export Account Manager) graduated from the Ecole Centrale de Lyon (Engineer) and from the Technische Universität Darmstadt (Dipl.- Ing. – Maschinenbau). He started to work as a Project Manager and later on as Technical Sales Engineer in the automotive industry, first at Peugeot-Citroën, and then for Tier 1 and Tier 2 suppliers. He joined ISP SYSTEM in 2014 as Export Sales Manager, especially for the promotion of products related to opto-mechanics all over the world. He has now 20+ years’ experience in dealing worldwide with large projects with technical challenges, involving partners from various horizons.

Since LASER on demand (LOD) was founded in 2007, it has developed to a specialist in laser applications. The core competences are the development of laser processes as well as the mobile assignment of industrial laser sources – even under demanding conditions on construction sites or freezing temperatures. Moreover, LOD develops and manufactures customized laser systems for materials processing. Dr. Meier, the founder of LOD, has got more than 20 years of experience in laser applications. Thus, LOD is a competent partner to provide complete laser based solutions beginning with a feasibility study and the process development, the manufacturing of customized laser systems till the implementation and optimisation at the customer. www.laser-on-demand.de

Oliver Meier (Managing Director) started his scientific career at Laser Zentrum Hannover (LZH) in 2001 after his diploma in mechanical engineering at the University of Hanover. In 2002, he became assistant to the board of directors until he was placed in charge of the group "Laser Joining" in 2004. In 2005, he received his PhD for a thesis on “Process integrated induction heat treatment during laser welding” and headed the department “Materials and Processes” at LZH between 2005 and March 2008. Since August 2007, he is managing director of LASER on demand.

LaserPoint, founded in 1987, develops and manufactures a complete line of instrumentation for the measure of laser power/energy and customized laser systems that serve manufacturing, medical and research industries. All key technologies are in-house developed. The Company holds several patents (e.g. on techniques to measure Power, Beam Position and Diameter on a single instrument). Well known for the robustness of its coatings and products, LaserPoint has a long record of innovations in laser measurement: High Speed Laser Sensor (“Blink series” patent pending) able to measure
pico/femtosecond pulsed lasers up to 1 MHz repetition rate, world’s First Super Hard Coating (SHC) for multi-kW high brightness lasers, world’s first Air Cooled detector for 1.2 kW, world’s First Power Probes based on the measurement of fast temperature transients in thermal sensors. As a result of the extremely high quality of its products, LaserPoint has been world’s first in providing a 3 Years Standard Warranty for Laser Measurement Products. www.laserpoint.eu

Sergio Pellegrino (R&D Director) has 25 years’ experience in R&D at, among the others, Alcatel Research Center (Italy and France) and Tokyo Institute of Technology. He graduated in Physical Chemistry “summa cum laude” and University Special Award in 1985, holds 8 patents and is author and co-author of about 70 Conference and Journal Papers. Currently he is engaged in the development of new high speed laser sensors (patent pending).

Davide Scorticati (R&D Manager) received a master’s degree in Solid State Physics at the University of Milano Bicocca in 2010. In 2015, he attained his PhD, graduating from the group of Applied Laser Technology at the University of Twente in the Netherlands. Since 2015, Davide is an R&D engineer at LaserPoint srl, being involved in the development of sensors for the measurement of laser radiation. Davide is the inventor and project leader of Blink high speed sensors, following their development from the lab to the production line.

LASSE

Laser Systems & Solutions of Europe (LASSE), headquartered near Paris is a subsidiary of SCREEN Semiconductor Solutions (Kyoto, Japan), a leading supplier of manufacturing equipment to the semiconductor industry. LASSE develops and manufactures laser thermal annealing products based on a unique high energy UV excimer laser technology. By providing a precisely controlled, ultra-shallow and ultra-fast thermal processing of semiconductor materials, our Laser Annealer enables the manufacturing of advanced devices such as CMOS imaging sensors, thin wafer power devices and responds to the challenges of advanced CMOS manufacturing at or below 10 nm node. LASSE’s expertise covers UV laser technology, optical design, system integration of complex equipment as well as semiconductor process integration. www.screen-lasse.com

Sylvain Perrot (R&D Manager) joined the semiconductor industry nearly a decade ago. Prior to LASSE he held the position of Research Manager at FOGALE Nanotech, developing optically based metrology tools for 3D integration. At the same time, he was also co-director of the METRO3D joint laboratory at University of South-Paris. Prior to that, he spent ten years at the Institute of Optics (France), leading research studies for industrial companies. Sylvain Perrot received his M.Eng and M.Sc in Optics from the Institute of Optics. He holds seven patents.
Laser Zentrum Hannover is an independent, non-profit research institute for photonics and laser technology. The Laser Zentrum Hannover stands for innovative research, development and consulting. The LZH was founded in 1986 with the aim of conducting interdisciplinary research and development in the area of laser technology, bringing together research and practice, and training skilled workers in an industry-oriented manner. The interdisciplinary collaboration between scientists and engineers enables innovative approaches in various areas: from component development for laser applications, for example for medical technology or lightweight construction in the automotive sector. Currently, almost 200 employees are working at the LZH. The LZH is funded by the Niedersachsen Ministry of Economic Affairs, Employment, Transport and Digitalisation. www.lzh.de

Lars Jensen (Head of Laser Components Department) studied physics at the University of Hannover (now: Leibniz Universität Hannover) and graduated as a physicist. He obtained in 2013 a doctorate degree (Dr. rer. nat.) with a dissertation titled „Laser-induced damage in oxide coating systems for the UV range“. Dr. Lars Jensen has been working at the Laser Zentrum Hannover e.V. (LZH) since 2005. From 2005 to 2011 as a scientist, as responsible project leader of BMWi and BMBF projects, as well as for industrial development contracts in the field of highly-precise absorption measurements and laser-induced damage processes for the short pulse and ultrashort pulse range. From 2011 to 2016, Dr. Lars Jensen was Head of the Characterization Group, and from 2016 to 2018 Head of the Coatings Group of the Laser Components Department. Since 2018, Dr. Jensen acts as Head of the Laser Components Department. His main research areas include: Interaction mechanisms between laser radiation and dielectric media, especially thin films; Damage phenomena in optical components; Optical losses in dielectric coatings; Qualification of optics for use in outer space; and Development of measurement methods for optics characterization and their transfer into standards.

LIOP-TEC is located in Radevormwald, in the vicinity of Cologne and Düsseldorf. We develop, manufacture and distribute opto-mechanical products and tunable dye laser systems and accessories. Opto-mechanical components comprise highly stable and precise mirror mounts for laser beam steering applications in R&D and industry with fine thread adjusters of up to 170 TPI. In addition we develop customer specific solutions, e.g. mirror mounts for large mirrors used in petawatt laser systems (our ANTARES® brand) and mirror mounts for ultrahigh vacuum applications. Large and heavy optics can be supported virtually stress-free (patent pending). Motorization of our mounts is also available. ANTARES® mounts have been successfully installed at key sites of the ELI project and with customers such as XFEL, HZDR Dresden-Rossendorf, Rutherford Appleton Laboratories. www.liop-tec.com

Patrick Incorvaia (Sales Manager) was born in 1978 in Wermelskirchen, Germany. He joined Radiant Dyes GmbH in October 1999 until August 2007. From August 2007, Patrick joined and build up fine-adjustment until May 2012 when he joined LIOP-TEC GmbH. He is responsible for optomechanics and custom made mounts especially for bigger optics.
Monocrom designs and manufactures low and high-power diode laser devices, mainly for medicine, aesthetics, material processing, pumping, science, defense, aero-spatial, instrumentation and graphic arts industry. Monocrom has been recognized throughout the laser industry for supplying high performance products at a competitive price due to its unique and patented "clamping" technology. Monocrom’s products are alike appreciated for their custom-fit characteristics, high reliability and long lifetime. Our experience in the laser field has demonstrated the applicability of new concepts in laser physics, like our Q-Switched green solid state laser, capable of providing microseconds pulses and considered one of the most important developments in eye surgery from the last years, or our ultra-light weight and resistant green laser device designed for a Space mission to MARS (ExoMars).

www.monocrom.com

Elad Volfin (VP Sales & Business Development) begun his technological journey in RF and Electro Magnetics more than 20 years back with a PE in Electronics and computer. Along the way, he shifted to Program management until he finally landed in the commercial department. Since 2015, he is the VP Sales and Business Development at monocrom, a young in spirit growing laser company from the lovely a rea of Barcelona.

MPS Microsystems develops and manufactures high precision, high-performance electro-mechanical microsystems. Managing the miniaturisation and integration of functions in small spaces, MPS Microsystems provides solutions that meet specific customer requirements. MPS product family includes among others “short strokes, high frequency lens focus mechanisms” based either on flexure elements or linear actuators; “compact zoom mechanisms” used for laser guidance or stereoscopic surgical cameras; “particle free laser focussing systems” suitable for laser cutting or other laser machining technologies. MPS Microsystems also offers a standard range of mechanical components, such as linear bearings and ball screws. Located in Bienne, Switzerland, in a modern and well-equipped facility MPS Microsystems offers its 220 employees an exceptional working environment and provides customers with unique capabilities that are perfectly suited to the requirements of the optics & photonics industry. www.mps-microsystems.com

Patrick Ruffieux (Product Manager- Optics) received his master’s degree as an engineer in micro-engineering from the Swiss Federal Institute of Technology in Lausanne (EPFL) in 1998. He joined the Applied Optics Group at the Institute of Micro technology of the University of Neuchâtel in 2002 working in the field of birefringent optics in liquid crystals. Patrick received a PhD from the University of Neuchâtel in 2008 in the field of passive micro optical elements. After several years of development in the field of photoelectric sensors, he joined MPS in 2019.
NTS Optel, since 1986 based in Nijmegen the Netherlands, is a leading technical engineering firm specialized in applied optics, opto-electronics and laser technology. We are proud to be a partner for world leading 3D sensing players, by providing them high volume optical & functional test systems and solutions for 3D sensing hardware. Our broad experience, expertise and existing technical solutions in optics, advanced vision, metrology, opto-electronics and laser technology, are a solid base to provide customers with customized solutions. This to create a perfect fit to their needs for optical inspection and functional testing solutions. We are the partner of choice in key markets like 3D sensing related hardware such as Wafer Level Optics (WLO), DOE’s, ROE’s, HOE, MLA’s, ToF (time of flight), VCSELs, structured light sensors and LIDAR. NTS Optel (part of the NTS group) is your partner for the design and the optimization of products and processes that demand advanced optical solutions. With 30 years of experience and knowledge in optical design, lasers & white light interferometry, lighting systems, spectroscopy, advanced imaging and image & signal processing, we are able to accelerate your product development and production processes. [www.optel.nl](http://www.optel.nl) or [www.nts-group.nl/en/competences/optical-testers](http://www.nts-group.nl/en/competences/optical-testers)

Jeroen Sprankenis (New Business Development) worked at several high-tech companies in the Dutch optics and opto-mechatronics eco system within the field of engineering and sales after his bachelor study Industrial Engineering and Management in 2004. In 2010, he started working at NTS/NTS Optel. Since 2016, he is responsible as a Manager New Business Development for the creation of new business and new customer relations. Due to these roles, and the achieved success, he has acquired a lot of experience in precision machining, advanced mechatronics, optics and opto-mechatronics. One of these achievements is the fast growing optical and functional testers group within NTS Optel, which company develops and builds a broad range of test equipment from R&D testers to high volume testing solutions, intended for leading 3D sensing companies.

Optimax is America’s largest optics manufacturing company. On the cutting edge of future applications, Optimax implements an engineered solutions approach to help our customers achieve breakthroughs in the aerospace, defense, semiconductor, research, and medical industries. Optimax has a wide range of capabilities to support your programs, including advanced optics for high energy laser systems. [www.optimax.com](http://www.optimax.com)

Joseph Spilman (Director of Sales and Marketing) joined Optimax in 2014 as the Business Development Manager and now leads the company’s Sales & Marketing organization. Joe has more than 15 years of business development, program management and engineering experience in the optics, photonics, laser and advanced materials manufacturing industries. Prior to joining Optimax, Joe worked at ArmorLine Corp., where he led and managed the start-up of a capital-intensive advanced transparent manufacturing business. He holds a Bachelor’s degree in Optical Engineering from the University of Rochester’s Institute of Optics and a Master’s in Business Administration (MBA) from the Saunders College of Business at the Rochester Institute of Technology (RIT).
Pete Kupinski (Director of Optical Coating Technology) has been working in the field of high energy laser optics for 15 years. Pete has a MS in Materials Science from the New York State College of Ceramics at Alfred University and MBA from the Simon School of Business at the University of Rochester.

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Remigijus Šliupas (Co-founder and CEO) considers photonics not just a technology or a science but a passion, which he got obsessed with 10 years ago at the University of Insurbia, the same day when he met Dr. Paolo di Trapani and Dr. Matteo Clerici in their laboratory. Moreover, friends, colleagues and partners from Vilnus University, where he gained a deep technical background in different fields of photonics, demonstrated a true meaning of light and its impact for far-reaching possibilities. That is why he decided to become a part of this world-changing community. After 10 years spent in laser labs, technical sales, marketing, quality and business management, he collected a set of critical skills and experiences. Just recently, together with a good friend, Dr. Simonas Kičas, they decided to gather all skills, positive and negative experiences related to photonics and especially optics into one place. That is how OPTOMAN was created.
**PBF Group** – The specialist for power supply solutions, coils & linear drives. The PBF Group develops, manufactures and markets highly reliable standard and semi-standard high-power-platform solutions for demanding requirements in laser and semiconductor manufacturing equipment and analytical applications. The PBF Group also co-develops and manufactures highly complex and reliable coils & linear drives for semiconductor manufacturing equipment and analytical applications. PBF operates from its R&D and manufacturing locations in Almelo, the Netherlands, and Cluj-Napoca, Romania. Since 1999 PBF have been helping customers with their mission critical objectives by designing and manufacturing power supplies, coil & linear drive solutions for laser, analytical and semiconductor applications. PBF Group B.V. was created from Philips Electronics NV through a management buy-out in 1999 and since 2009 has also been represented in Romania with PBF Power SRL. [www.pbfgroup.nl](http://www.pbfgroup.nl)

**René Dingshoff (Business Development Power Supply Solutions)** has over 16 years’ experience in segment of power supply systems. He joined PBF Group in 2003 as senior design engineer, designing power supplies and systems. In 2007, he became R&D manager of PBF group (The Netherlands and Romania). Mr. Dingshoff is presently in business development for power supply solutions with focus in the segments laser applications, analytical and semi-conductor manufacturing equipment. He is responsible for the product and technology road map within the PBF group.

**Frank Broekhuis (R&D manager)** is responsible for all R&D activities within PBF Group for both The Netherlands (Almelo) and Romania (Cluj-Napoca). Frank joined PBF in 2010, where he started as a hardware designer. Frank is one of the drivers behind PBF platform strategy, resulting in the launched of a standard platform for the Laser market. Frank Broekhuis has a bachelor’s degree in electrical engineering and holds a post-graduation in Business Administration. He speaks German, English and Dutch.

**Michael Sauer (Business Development Power Supply Solutions)** has over 18 years’ experience in segment of power supply systems. He joined PBF Group in 2012 after working in positions in the R&D department and project management for optical communication systems, division manager and head of sales for power supply solutions. Mr. Sauer is presently in the business development for power supply solutions with focus in the segments of laser applications and semi-conductor manufacturing equipment. In addition, he is taking care of the key account management of PBFs customers in central Europe.

**Onno van Apeldoorn (Business Development Laser Power Supply Solutions)** has over 20 years’ experience as an international sales manager in different industries. He has built up expertise in analysing markets, creating and implementing business plans. He joined the PBF Group in 2018 and is working as a business developer for the high power platform for laser applications, looking after markets in all continents and paying special attention to key-accounts. Mr. van Apeldoorn holds an MSc. in Economics from the University of Groningen (RUG).
**PI (Physik Instrumente)** with headquarters in Karlsruhe, Germany, in the past four decades has become the leading manufacturer of nanopositioning systems with accuracies in the nanometer range. With four company sites in Germany and fifteen sales and service offices abroad, the privately managed company operates globally. Over 1000 highly qualified employees around the world enable the PI Group to meet almost any requirement in the field of innovative precision positioning technology. All key technologies are developed in-house. This allows the company to control every step of the process, from design right down to shipment: precision mechanics and electronics as well as position sensors. The required piezoceramic elements are manufactured by its subsidiary PI Ceramic in Lederhose, Germany, one of the global leaders for piezo actuator and sensor products. PI miCos GmbH in Eschbach near Freiburg, Germany, is a specialist for positioning systems for ultrahigh vacuum applications as well as parallel-kinematic positioning systems with six degrees of freedom and custom-made designs. [www.pi.ws](http://www.pi.ws)

**Lukas Rau (Product Marketing Manager)** studied Industrial Management and Engineering at the Karlsruhe Institute of Technology (KIT) with a focus on product innovation among new sensor and actuator technologies. After several positions in sales and marketing within the semiconductor industry, he joined PI in 2017. He is responsible for the portfolio of piezo nanopositioning systems. His latest product is a focus modulation devices for laser machining systems (welding, cutting and structuring). It is the result from a joint project (i.a. with Fraunhofer IOF and IWS) funded by the German Federal Ministry of Education and Research (BMBF).

**Schulz-Electronic** -The Partner of Laser Professionals - is Germany’s renowned power supply specialists where you can find a comprehensive selection of OEM drivers, pulse generators and accessories by leading edge manufacturers. As well as OEM components for almost any requirements, we also offer complete turnkey solutions in the area of ultrashort pulse to CW high-performance diode applications. We are the partner of choice for industrial special developments in the laser field. You will find us in Baden-Baden and at our branch offices in Berlin and in Basel (Switzerland). From us you can expect the customer-specific solutions you need, and which many suppliers today find it increasingly difficult to provide. For years now our own rack & system production has maintained close cooperation with our experienced development partners and suppliers. [www.schulz-electronic.de](http://www.schulz-electronic.de)

**Johannes Wolf (Segment Manager Laser)** finished studying physics and computational science in Würzburg focusing on laser- and plasma-physics closing his education by a diploma. He started working for JENOPTIK Laserdiode GmbH as a sales engineer in Jena in 1997, continued to work as a sales director in 2002 for HIGHYAG Lasertechnologie GmbH in Berlin and later turned back as a product manager to JENOPTIK again mainly responsible for the sales and business development in Asia, focusing on Japan and South Korea. Since end of 2016 he is joining Schulz-Electronic GmbH in Baden-Baden. There he is responsible for the sales of high power electronics into the laser segment, the branch beside the automotive market that Schulz-Electronic is addressing as a big potential future, challenging and quickly expanding market.
SPI Lasers is a leading designer and manufacturer of premium pulsed and CW Fiber Lasers for welding, cutting, marking, drilling, micro-machining and additive manufacturing. Operations can be carried out faster and more accurately with an SPI Laser for better reliability, less waste and improved productivity. The product portfolio covers countless application process areas across a wide range of industries including automotive, e-mobility, electronics and the medical device sectors. SPI Lasers is a wholly owned subsidiary of the TRUMPF group and sells its products globally, and has its major business operations, including research and development, and manufacturing in the UK, USA and Asia, as well as worldwide sales and customer support. www.spilasers.com

Mark Richmond (Product Manager) is now Product Manager for High Power CW Fiber Lasers at SPI Lasers, UK. He received an MA(Oxon) Physics degree, and then a DPhil from the University of Oxford in 1985 for research into VUV Lasers. He has over 30 years’ experience in the fields of new technologies and laser developments for defence and industrial applications covering a broad range of laser types and power levels. His focus now is on promoting the advantages of Fiber Laser technology into manufacturing processes covering a broad range of market sectors.

The Technical University of Dresden (TU Dresden) is one of the eleven German universities that were listed as an ‘University of Excellence’ by the German government. That university is strong in research, offering first-rate programs with an overwhelming diversity, with close ties to culture, industry and society. One of the institutes at the TU Dresden is the “Institute of Manufacturing Technology”. The basics of the main fields of manufacturing technology are investigated and the corresponding production processes are further developed. www.tu-dresden.de

Nikolai Schröder (Research Associate) graduated from the Technical University of Dresden with a Diploma in Mechatronics in 2017, focusing on laser manufacturing technologies. Afterwards, he started to work as a research associate at the Fraunhofer IWS Dresden in the field of laser cutting. In 2019, he joined the “Institute of Manufacturing Technology” of the TU Dresden. Nikolai is now doing his PhD under the supervision of Prof. Lasagni.
Shanghai FEIBO Laser Technologies is based in Jiading, Shanghai, China, with two manufacturing facilities in Nanjing and Suqian, Jiangsu province. Since founded in 2012, FEIBO has played an active role in fiber laser industry and delivered more than 7000 units of medium to high power CW/QCW fiber lasers to customer in China and abroad, serving material processing, medical and scientific research markets. With 200+ employees, 6000+ sq. mt. of cleanroom space and a 1000 sq. mt. application research lab, FEIBO strives to expand its product line and services to solid state lasers, ultrafast lasers, and application solution to meet the ever changing and more stringent market demands. FEIBO is actively looking for partners in technology innovation and market expansion worldwide. [www.feibolaser.com](http://www.feibolaser.com)

Xiaojun Li (General Manager) received his B.Sc. from Peking University in 1996 and Ph.D. from Boston University in 2005. Between 2000 and 2003, he worked for Lasersharp Corporation as laser scientist, founded by Hong Po., in Hopkinton, Massachusetts. He joined nLIGHT in 2006 and led industrial laser program in Shanghai branch for seven years before starting FEIBO Laser in 2012. He is an active member in both academic and commercial laser society in China, a distinguished research fellow at SIOM of China Academy of Science and guest professor at Nanjing University.

WZWOPTICAG has designed and manufactured high-end, quality optics solutions for a global customer base for more than 54 years. Specializing in 'build to print' manufacturing, from start to finish, WZWOPTICAG has the unique capability of offering customers an integrated 'one-stop' source for all their optical requirements. ‘Super-polished’ or laser quality polished substrates are ideal for use as low-loss laser mirrors, where thermal stability, surface scatter and high laser damage thresholds are key requirements. Magnetoerohological Finishing (MRF) - Obtain high-precision surfaces (lambda/50) and Correction of transmitted wavefront (windows, phase plates, entire system correction on one surface). WZWOPTICAG provides opto-mechanical engineering and system prototyping services. WZWOPTICAG offers a high level of specialized expertise to all phases of assembly fabrication, from opto-mechanical concept and design, through component construction, final assembly and testing. [www.wzw.ch](http://www.wzw.ch)

David Varrie (Director Sales and Marketing) is South African born and has spent the last three decades in sales and marketing. He graduated with a degree in Financial Management in 1990. In 1993, he completed a degree in Business Economics. Over the next 12 years, he founded a start-up which was focused on endoscopic imaging for surgery in the medical industry. In 2005, David relocated from South Africa to Switzerland and started a M.B.A at the University of Cumbria. In 2006, David joined WZWOPTICAG as Area Sales Manager, Israel, US, UK and Scandinavia. In 2010, he was promoted to the Board of Directors and took on the responsibility for world wide sales and marketing activities.
Yelo, founded in 1983, specialise in the design and manufacture of burn-in and life test equipment for optoelectronic devices. With an experienced team of 50, Yelo has grown to become one of the industry’s leading and most trusted names for burn-in equipment. The company is vertically integrated and possesses full design and manufacturing capabilities. One of Yelo’s biggest strengths is its in-house mechanical design capability which looks after device fixturing and probing for many different types of devices (bare chip, laser bar, chip on carrier, chip on substrate and packaged devices). Another key strength is its Research and Development division which provides solutions for complex issues such as thermal management. By having early discussions in the design phase of a new photonics device, Yelo can advise a suitable approach needed to enable safe, repeatable device testing. www.yelo.co.uk

Martin Collins (Vice President Sales & Marketing) has an MEng Electronic Systems. Martin previously worked on digital hardware design projects, developing ASICs and firmware for DEC PDP-11 computer emulation projects. Subsequent years as a Sales Engineer in the semiconductor distribution industry has led Martin to his current position with Yelo.

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