LASER World of PHOTONICS

PRISMA

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LASER: A MULTI-TOOL FOR YOUR APPLICATIONS

WILD PHOTONIC

LASER IN THE BIGGER PICTURE.

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Due to their diverse application possibilities, lasers have long become a standard item in the toolbox of different industries. From medical technology, agriculture, transport, environmental protection and manufacturing to semiconductor technology, they all use lasers, sometimes vastly different from each other in terms of continuous-wave or pulse performance, wavelength and field of application. Yet they all have one thing in common: Ultimately, lasers are just a small cog in the entire system that makes an application possible in the first place. In addition to a laser, these often complex and highly integrated optomechatronic systems require a plethora of components to fulfil their tasks. These include the corresponding optics and optomechanics, kinematics when something moves and the electronics hardware or firmware that controls the device and collects and processes measurement data. Customer-specific development and manufacturing of such systems requires many years of experience and vast expertise. The WILD Group combines both. Thanks to their motivation and expert knowledge, the staff demonstrate on a daily basis that they can tackle even highly complex customer requirements.

High-precision manufacturing and cleanroom assembly enables us to implement systems and assemblies that incorporate state-of-the-art laser technology for our customers which is already setting the pace for greater efficiency, precision and sustainability.

What innovations can we expect in the coming years? The LASER World of PHOTONICS fair in Munich will give you a taste of what to anticipate. You can discuss your challenges with our application specialists themselves at our fair booth B1.433. Together we will find the technology that suits you best.

We look forward to seeing you there!

Martina Trinkel-Rudman / Stefan Preißer

A LIGHT THAT SHINES BRIGHTER AND BRIGHTER.

Thanks to its close collaboration with Luminus, PHOTONIC is one of the first partners worldwide to have access to the latest developments in LED light sources.

Today, surgeons can monitor tissue blood circulation in real time during operations and thus make more precise decisions. As a result, they can more easily determine lymphatic tissues, boundary lines when removing tumours or blood supply to the organs. These deep insights into the human body are made possible by fluorescence imaging, an area in which PHOTONIC has long years of experience and abundant expertise.

ADDED VALUE THANKS TO THE COLLABORATION WITH LUMINUS

PHOTONIC's collaboration with high-tech company Luminus delivers real added value for its customers. Luminus specialises in the manufacturing of powerful LEDs for different wavelengths, which stand out through their excellent light qualities. PHOTONIC Business Developer Stefan Preißer explains where these qualities lie by using the example of the CFT90-WDH LED: "The compact, monolithic VIS LED stands out through its high light output and very good colour specifications, which remain constant throughout the active illuminated area, the solid angle and the lifetime of the LED. This is decisive when tissue needs to be illuminated as orthrochromatically as possible over a large visual field. Thanks to PHOTONIC's robust light module design, including a customised cooling solution, the device has an average lifetime (L70) of well over 30,000 hours. "As a result of the cooperation with Luminus, we were one of the first companies worldwide to test these new LEDs and promptly integrate them into a newly developed module for serial production", says Preißer. PHOTONIC also wants to be a step ahead with the new CFT50-X LED. "The product is not yet available on the market but is already being tested by us for the first prototypes. In future, it will be used to illuminate smaller surfaces directly or through small endoscope diameters using a very powerful high-quality VIS light at an affordable price", Preißer explains. At 5 mm^2, the LED has a small active illuminated area and is therefore suitable for optical systems that require a high luminous flux with a smaller etendue. For higher requirements with regard to etendue or for very specific wavelengths with a narrow band, diode laser sources are used and incorporated in a system-integrated design.

Examples like these demonstrate that, from the system to optical design, mechanics and electronics through to thermal management, PHOTONIC implements the best possible solutions for the development and manufacturing of high-power light modules. Moreover, it achieves this quickly, with a focus on individual customer requirements and, on request, with end-of-line testing.

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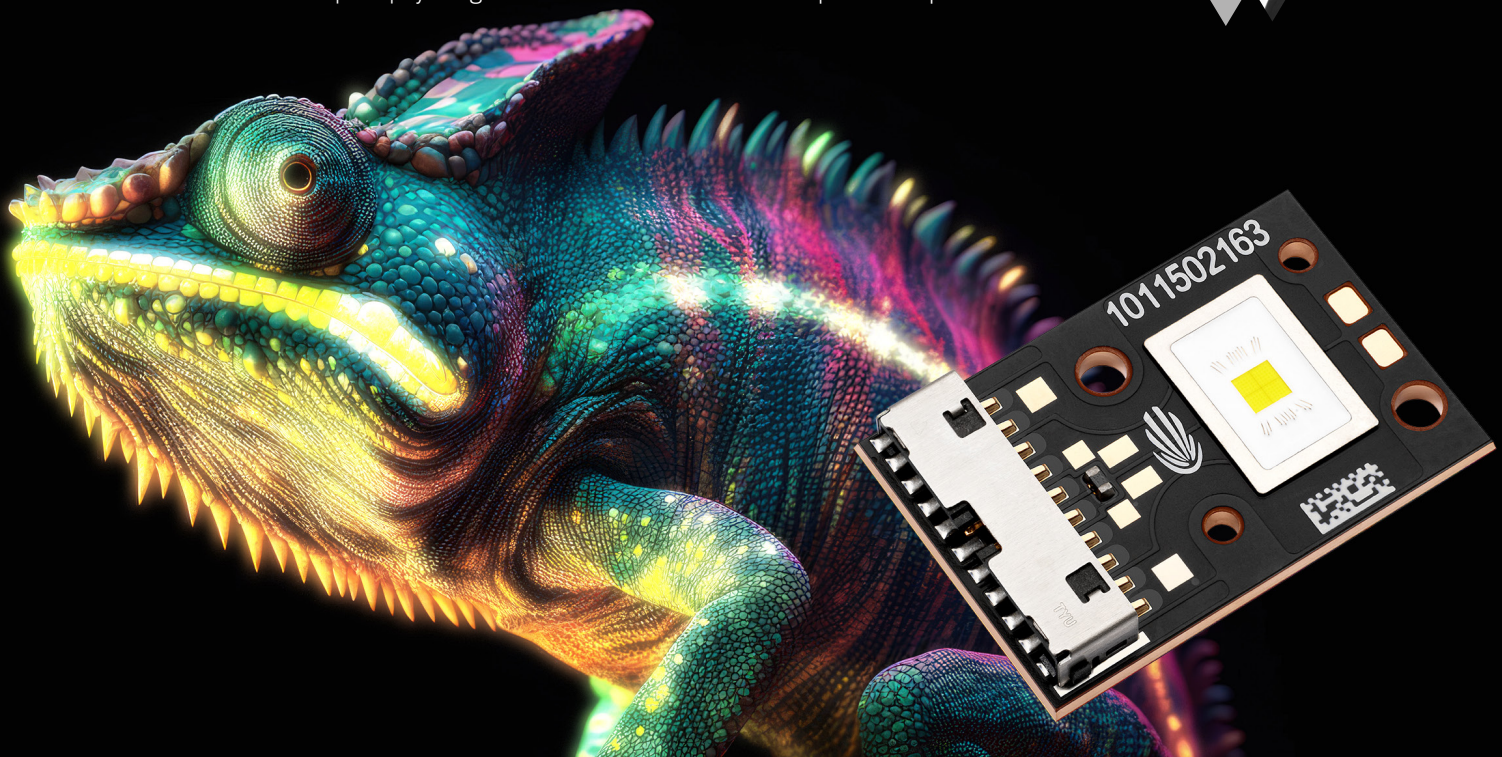

THE MULTI-APPLICATION TALENT.

It takes the right high-end optics to turn lasers into the key technology that opens new paths towards more efficiency, flexibility and precision. An enormous array of laser applications by the WILD Group demonstrates what is already possible today.

When lasers were invented in the early 1960s, the word was that this would be a tool in search of an application. Some colleagues of inventor Theodore Maiman even joked that he had found the solution to a problem that did not even exist. Today, lasers are often referred to as the "smartphone" of industrial tools. Like a master key, lasers open doors to ever more applications.

This is also the case at WILD. For almost 30 years now, the technology partner has been exploiting the potential of laser technology to meet its customer requirements. Whether for removing, applying, marking, scanning or measuring - in every intensity, direction or form - no other tool is as flexible and quick as laser light. Provided, however, that you know how to form the laser beam accordingly and choose the suitable wavelength and laser performance. This is exactly where the WILD Group's core competence lies. Beam-shaping and the right optics design allow for a huge spectrum of applications. "Only after one guides a laser beam through an optical system will it eventually obtain the characteristics required for the respective task. That is why our work begins where the laser beam leaves the source", explains Stefan Werkl, Head of Optical Technologies at WILD GmbH. However, the Group's development and manufacturing expertise goes far beyond that and has expanded over the decades, as have the specialised fields of laser technology where WILD and PHOTONIC operate: from optics for laser cutting, ultrashort pulse lasers for material processing and laser modules for medical technology or particle analysis to laser distance measurement.

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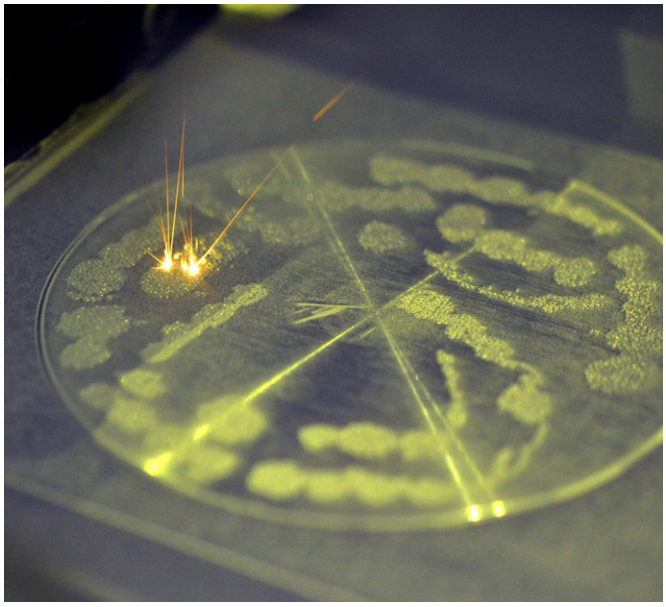
> *Stefan Werkl, Head of Optical Technologies WILD GmbH*

SCAN INSTEAD OF MEASURING

WILD manufactures the optics module of a 3D laser scanner series on behalf of a leading supplier of 3D measurement technology which allows for quick, easy and precise measurements up to 350 m indoors and outdoors. Compared to other systems available on the market, this series offers extremely high stability to temperature and humidity variations. In addition, the devices are significantly more compact and inexpensive, and they play off their advantages especially when scanning shiny and dark objects. In ophthalmology, too,



laser scans have become an indispensable part of modern diagnostics and follow-up monitoring. The ever-increasing pixel density of the 3D images in particular guarantees that the diagnosis and the subsequent surgical interventions are done more precisely than ever before. This has been rendered possible by an ever-higher scanning speed, which has risen dramatically in recent years. As an FDA-certified development and manufacturing partner, WILD is capable of quickly transitioning such quality leaps to serial status. This is a skill that is highly appreciated by a leading company specialising in ophthalmology, for whom WILD has been manufacturing several product groups for decades.

LASERS ARE A DOOR OPENER IN 3D PRINTING

The NanoOne 3D printer impressively demonstrates the exciting possibilities offered by high-resolution laser lithography systems. The device was developed by UpNano, optimised together with WILD and is now being manufactured by the technology partner. The device can print objects from sub-micrometre to centimetre scale with unprecedented speed and precision. This 3D printer's secret to success lies in the laser power of up to one watt, which is several times more powerful than in comparable systems. As a result, it can print highly precise 3D structures in black and, thanks to a combination with a new transparent material, even complete optical systems.

A MIXTURE OF LASER AND LIGHT

As an expert in illumination solutions, PHOTONIC is also heavily involved in the latest laser applications. "The unique properties of laser light are increasingly finding their way into medical lighting optics. We concentrate on the development of innovative light sources, especially where increasingly thinner light guides are advantageous", emphasises Fabian Lücking, Optics Project Manager at PHOTONIC. The latest customer example is a multi-colour light source for fluorescence microscopy with a light spectrum from the visible range (VIS) ▶

HIGH IN DEMAND.

3 QUESTIONS FOR PHOTONIC'S LASER EXPERT FABIAN LÜCKING

From quantum technology to integrated photonics: Will lasers play a decisive role in many future developments?

Lücking: "Absolutely. We are currently experiencing the first wave of commercialisation in the field of quantum-encrypted communication. It is reasonable to assume that quantum encryption will become the standard in security-critical applications. In addition, fibre lasers are increasingly taking over areas previously reserved for solid-state lasers, especially in femtosecond laser technology. Lidar, i.e. laser sensors that perform three-dimensional measurements of their surroundings, will accelerate the development of autonomous driving in the future".

Why is the WILD Group an interesting technology partner for new laser applications?

"The WILD Group combines openness towards new solutions and solid expertise in manufacturing technology. With its broad know-how in the production of optical precision systems, the company is in a great position to benefit from new applications in the field of laser technology. There is demand and interest for our services among new enterprises and innovators in renowned companies alike. We can build new bridges here."

What is your specialised field in the area of laser technology?

"I would say that femtosecond laser technology, which was also the topic of my doctoral thesis, is my 'scientific home'. After working for various companies on the innovative side of photonics, my last position was as developer for a manufacturer of laser ultrasonic test systems. Now at PHOTONIC, I look forward to bringing innovative optics into serial production."

to NIR and UV. To achieve this, the several LEDs are optically mixed and coupled together again in a light guide. Alternatively, individual colour channels can be fitted with a laser instead of an LED. "We have accompanied this project in all phases, from the search for suitable LEDs, laser diodes and dielectric filters through the design of the light path, the sensitivity and tolerance analysis of the optical system, to prototype development and transition to production. Today, the customer has a light source of unique modularity. It can be easily adapted to new applications, yet still manufactured at scale", says Lücking.

A highly precise optical sensor that records and detects ultra-fine dust particles smaller than 0.2 micrometres. This is another in a series of laser applications realised by WILD. "To achieve this, we had to redesign the laser module, develop an optics design for the available prototypes and also create the necessary measuring environment", Stefan Werkl summarises.

Examples like these demonstrate that WILD ticks all the boxes when it comes to qualifying as a strategic partner for laser technology. This begins with optics design, covers all areas of manufacturing of precision parts and extends into the assembly and adjustment of laser modules, including the alignment turning of optics with arcsecond precision. In terms of laser sources, WILD has built up expertise in various areas for the wavelength range from 380 nm to 1700 nm: Nd:YAG lasers for drilling, welding and cutting, diode lasers for measuring and scanning applications, fibre lasers for data transfers and medical applications and gas lasers for cutting and engraving. When it comes to power classes, the technology partner's experience extends from milliwatts to kilowatts of optical

power. To meet the extremely high standards with respect to the production environment, WILD applies a closed process chain and uses all corresponding opportunities available in component and precision cleaning and clean-room manufacturing. This guarantees that all components are free from particles and film contamination, a prerequisite for the long-term stability of laser optics.

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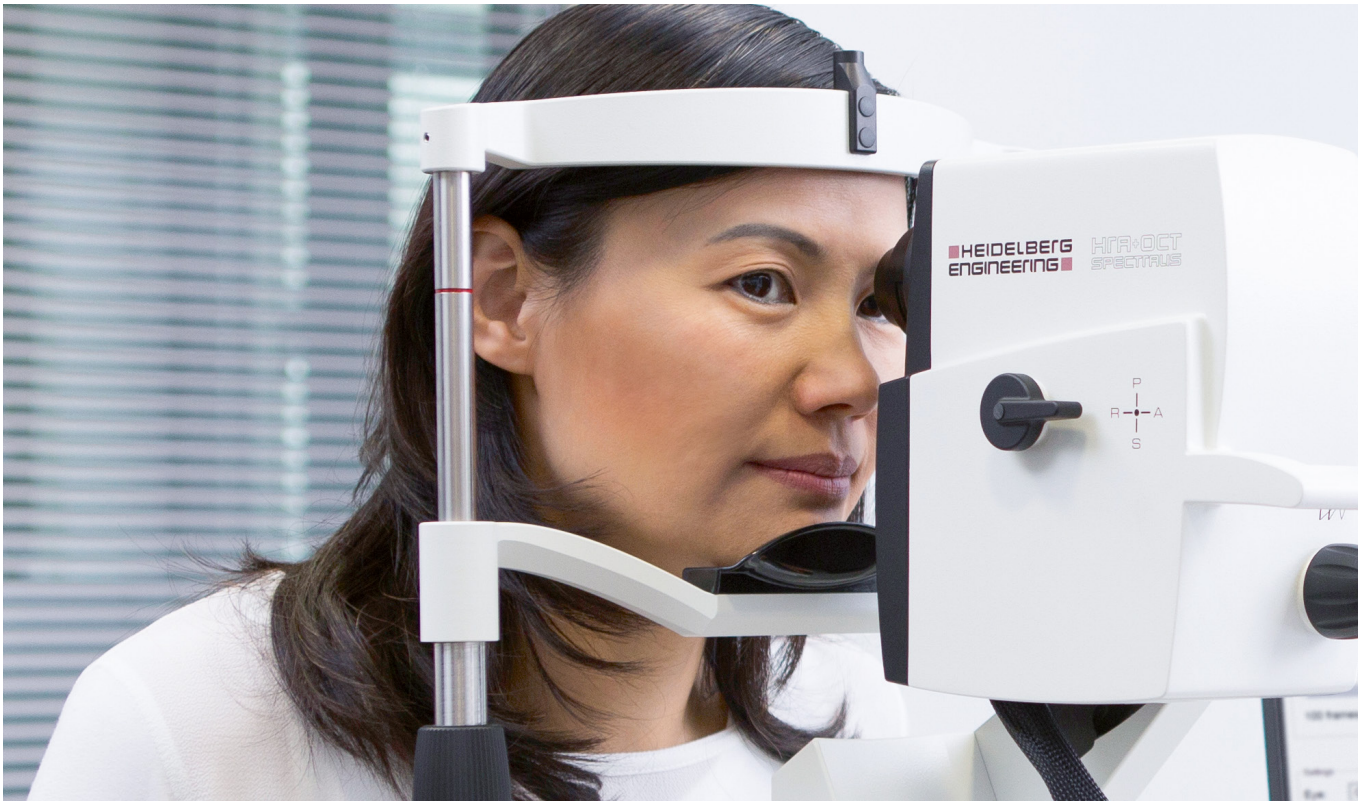

DOUBLE TRADE FAIR PRESENCE.

WILD and PHOTONIC will be showcasing themselves as true allrounders at the anniversary fair "50 Years of Laser" of the LASER World of PHOTONICS in Munich.

Updates on the latest trends. Bundled expert knowledge. Insights into future technologies. And a plethora of opportunities to exchange views with international pioneers. From 27 to 30 June 2023, the LASER World of PHOTONICS fair will once again be setting the pace for the technologies and products of the future.

SOLUTIONS FOR MANY AREAS OF APPLICATION

Their huge diversity is on display at the WILD Group's booth: "For us, the LASER World of PHOTONICS is the ideal place to inform visitors on the wide range of final applications created that contain our know-how", says Stefan Werkl, Head of Business Unit Optical Technologies at WILD GmbH. From systems for endoscopy, microscopy and fluorescence imaging to diffractive optics and innovative laser lithography systems, there is a vast field of key technologies emerging with the support of WILD and PHOTONIC experts.

A SEAMLESS PATH FROM DEVELOPMENT TO SERIAL PRODUCTION

"We also deliver decisive added value as well as cost and time advantages in the areas of in-vitro diagnostics, machine vision or in industrial applications such as component inspection. Regardless of the phase of a product, our teams develop bespoke solutions that can be seamlessly transferred from development to serial production", adds PHOTONIC Business Developer Stefan Preißer.

Insights into the development and manufacturing sites, which are available to visitors to the fair at all times via video, help explain how the technology partner supports its customers. "We gladly invite you to take virtual guided tours through the company. Yet the essence of a fair is the human interaction that takes place here in an innovative environment with a special spirit", explains Martina Trinkel-Rudman from the interdisciplinary Business Development Team.

WELL-PREPARED FOR THE FUTURE

On the occasion of the anniversary fair, Business Developer Daniel Pressl will give a lecture describing how advanced technologies and products in optics, lasers and optomechatronics have evolved over the decades. "The lecture will be a retrospective and an outlook: On the one hand, the past and all its lessons. On the other, the future with all its new technologies such as AI, for which we are well-prepared thanks to our experience", Pressl assures.

WANT TO FIND OUT MORE?
Take advantage of the LASER World of PHOTONICS to meet one of our experts at booth B1.433.
WE LOOK FORWARD TO SEEING YOU THERE!

USING THE POWER OF THE SUN.

The new photovoltaic system at the Völkermarkt site is now in full operation. More will follow with the aim of achieving greater sustainability and economic efficiency.

After five months of construction, 1,750 photovoltaic modules have recently been installed and connected on a total of 3,400 square metres of roof space at WILD GmbH in Völkermarkt. Under ideal conditions, the system can generate 666 kWp. This corresponds to around 20 percent of WILD GmbH's electricity requirements.

COO Arthur Primus, who is in charge of sustainability within the group of companies, expects that this investment and other energy optimisation measures will save some 900 mWh over a period of one year. This equals around 27 percent of the electricity it draws from the grid. WILD Group's sustainability concept provides for a gradual reduction in the carbon footprint.

The new photovoltaic array at the Völkermarkt site is an important first step toward supplying all the Group's sites with CO_2-neutral power in the future. More systems are currently being planned for the WILD Electronics and WILD Technologies sites, which are expected to be completed in 2024.

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THE WILD GROUP

The WILD Group is comprised of the WILD brands which are established in Völkermarkt and Wernberg (Austria) and Trnava (Slovakia), as well as Vienna-based PHOTONIC. The technology partner develops and produces optomechatronic systems for medical and industrial applications as well as optical technologies exclusively on behalf of its customers. Approximately 500 staff members are always the first choice whenever precision and reliability are called for and wherever innovation takes place.