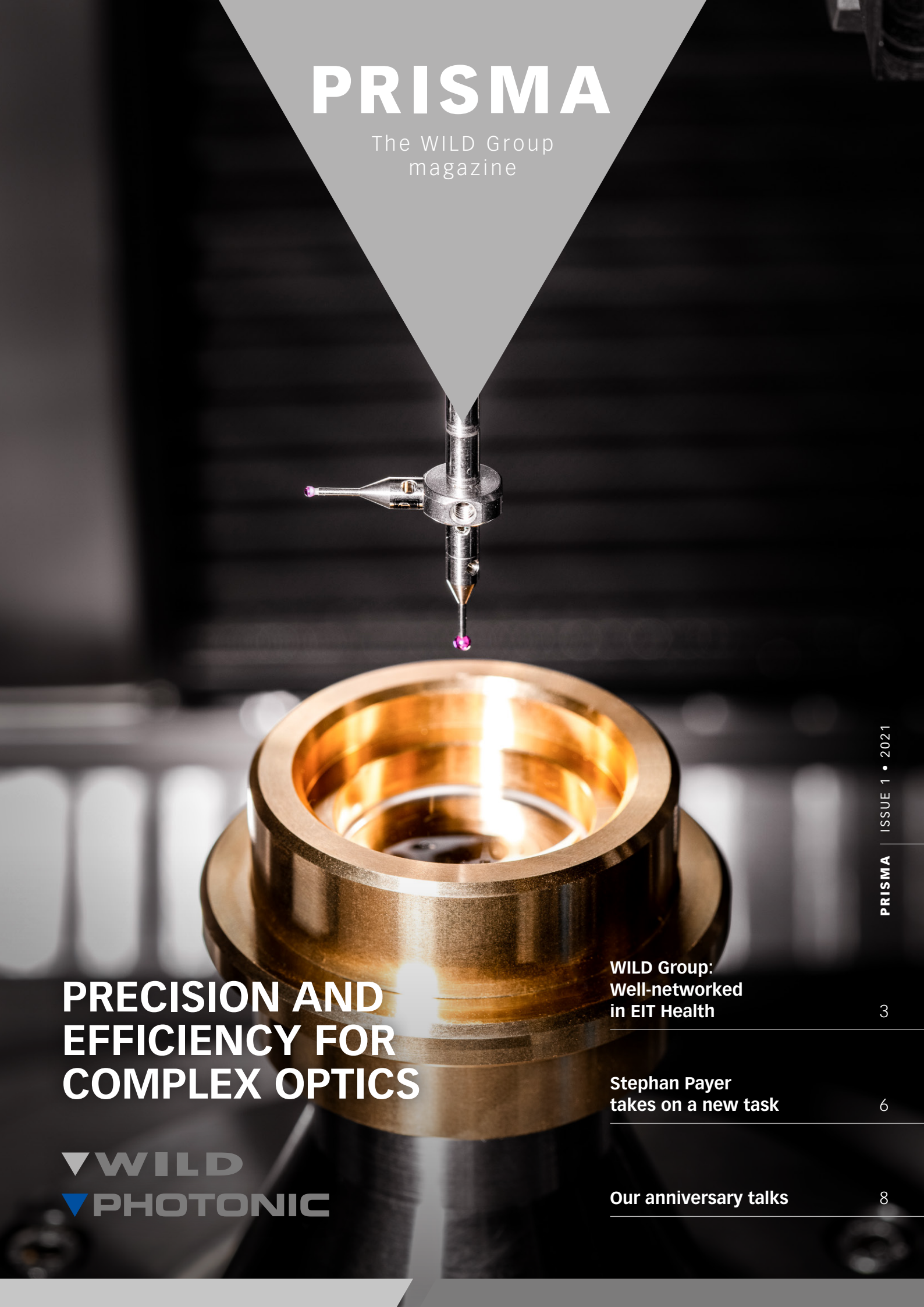
PRISMA

The WILD Group magazine



PRECISION AND EFFICIENCY FOR COMPLEX OPTICS

WILD PHOTONIC

PRISMA | ISSUE 1 • 2021

HIGH-PRECISION OPTICS AT A LOWER COST.

Stefan Werkl
Head of Optical Technologies
WILD GmbH

Sensors with ever higher resolutions and advancing miniaturisation require particularly powerful precision optics. The quality of such optical systems largely depends on the positioning of the lenses. In the case of telescope, microscope or camera lenses, these must be precisely centred, otherwise the optical axis will shift when zooming. To avoid this, WILD recently purchased a state-of-the-art alignment turning station, which we present in this issue of PRISMA. For the WILD Group, the new machine is a decisive step forward both in high-precision manufacturing and in optical design. After all, alignment turning is a key technology that allows cost-effective assembly of high-quality optics, i.e. in laser technology applications.

Administering the right dose of light exactly where it is needed is a task Photonic has been focusing on. On page 7, we describe how factors such as colour rendering index and colour temperature have a significant influence on the correct depiction of the objects under study.

My colleagues Stephan Payer, new Head of Division at WILD Electronics, and Daniel Pressl, initiator of WILD's membership in EIT Health, have one thing in common: a talent for networking. On pages 3 and 6, we explain why these two are instrumental in making sure that the WILD group can deliver its customers' complex devices in a safe, flexible and efficient way.

Stay up to date,
stay healthy!

Stefan Werkl

AT THE FOREFRONT.

As an Austrian pioneer member in the EIT Health Network, WILD collaborates in innovation projects that can quickly achieve market maturity thanks to its bundled expertise. The latest example: a portable respirator.

For one year now, WILD has been a partner in the EIT Health network, which brings together high-calibre organisations from industry and research, as well as universities and entrepreneurs. Of the network's three pillars, "Education – Business – Innovation", the latter is of particular interest for the systems partner. "We have identified numerous common links to renowned entrepreneurs and distributors, and we work together with them on introducing new products and services to the European market in the shortest time possible", says Business Developer Daniel Pressl, who initiated WILD's membership in EIT Health.

> **"Out of 70 submitted projects, only three candidates made it through. One of these was our project.**
> *Daniel Pressl, WILD Business Developer*

The network, which is funded by the EU, places a clear focus on market-oriented, application-related research. Only projects that are already at an advanced stage have a chance of receiving support. They should reach market maturity within three years. "Although we only recently became a member, we have managed to submit a project for a portable respirator with Pandemic Call, set up by EIT Manufacturing, which fully meets these requirements. Out of 70 submitted projects, only three candidates made it through. One of these was our project, which we are working on together with consortium partners* throughout Europe", Pressl proudly reports. The device, which is based on technology created by WILD's long-standing customer Carl Reiner, is operated without electricity and merely requires compressed air or an oxygen bottle to work. It is easy to use, so that the patient can be ventilated even over the top of a mask or while intubated. In addition, the device is inexpensive and crisis-proof – attributes that could be of great interest in the future both for markets in the developing world and for European countries. "This project proves that innovative cooperation projects can help enhance value for end customers and, at the same time, reduce costs". WILD is currently adapting the technology and design of the respirator to the latest standards. "There is still a lot of work to be done on the components but the doors are open for distributors who want to market the relaunched product together with us", Pressl says.

WILD wants to secure another head start together with its local EIT Health partners by establishing a potential EIT Health Cluster Centre here in Austria. The objective of the cluster would be to further advance Austria as a place of innovation and to get top-notch research from around Europe to the market quicker by integrating business, research, and education.

***Consortium partners:**

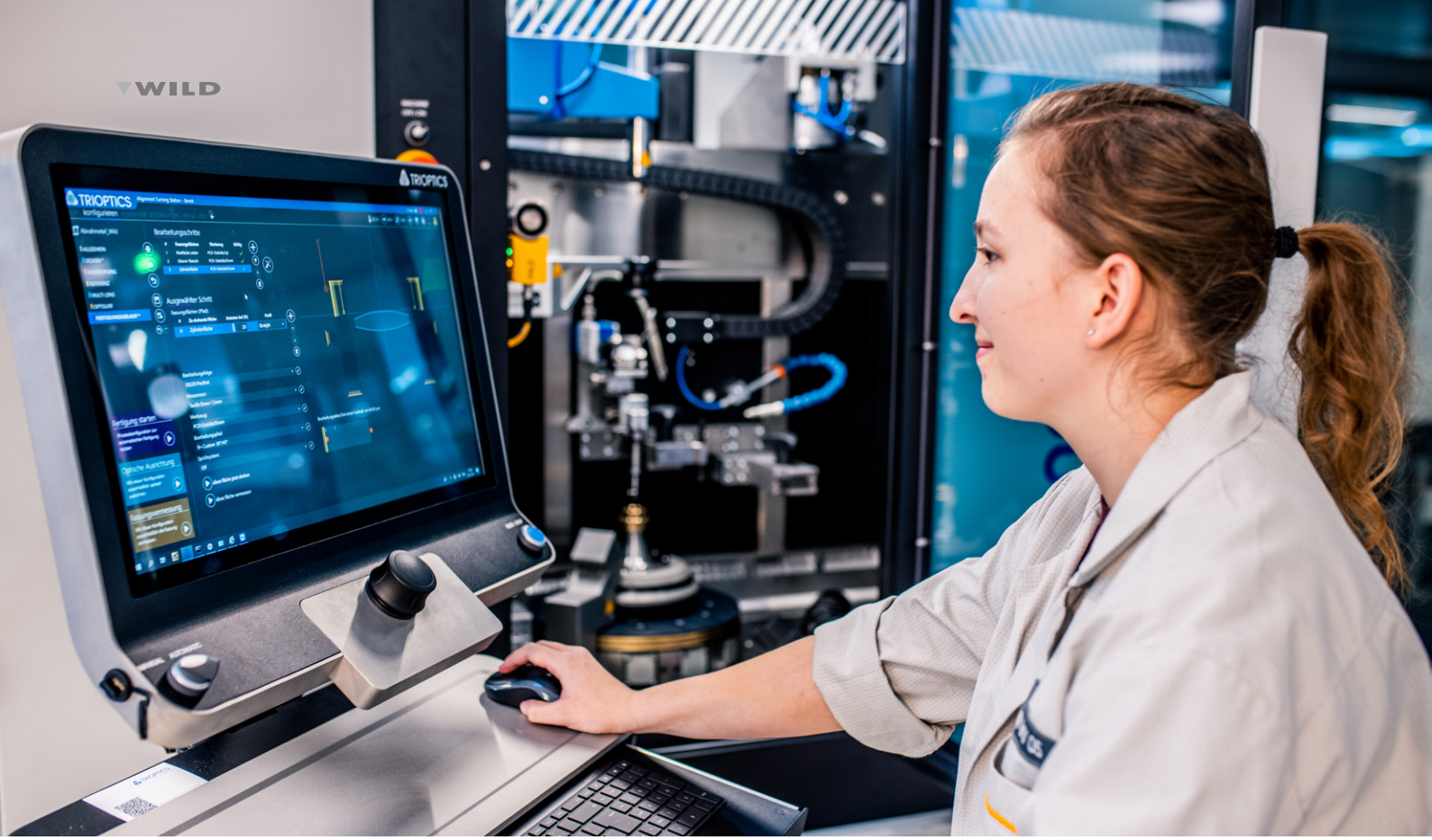
Carl Reiner GmbH – Business and Commercialization Partner

Technical University of Graz - Institute for Health Care Engineering with European Testing Center of Medical Devices – Regulation and Certification Partner

Osakidetza, BioCruces - Health Research Institute supporting Cruces University Hospital – Animal Trials and Clinical Studies Partner

University Hospital Cologne - Department of Anesthesiology and Intensive Care Medicine – Clinical Studies and Simulation Partner

Tecnalia – Health Division – Technology Transfer Partner



A QUALITY LEAP IN PRECISION MANUFACTURING.

WILD recently added a new alignment turning station to its machine park. The machine is a pivotal element for utmost precision and efficiency in the manufacturing of complex optics.

Optical systems such as those currently used as a standard in photolithography have changed the world. And they will continue to do so in the future. The decisive factor behind such high-performance lens assemblies is the enormous precision in manufacturing, only achievable through alignment turning. This process, however, is very sensitive. The chances of cost-effectively producing high-performance optical systems in both small and large volumes greatly depend on rendering this process more efficient. To guarantee this, the WILD Group recently invested in a new alignment turning station by German manufacturer Trioptics. "Using the ATS 200 UP, we can now guarantee an even higher reproducible precision of complex optics than before, while further increasing efficiency", stresses Stefan Werkl, Head of the Optical Technology Division at WILD.

FULLY INTEGRATED MEASUREMENT TECHNOLOGY

The outstanding feature of this new system is that it combines manufacturing and measurement technology in one machine like no other. "The precision of the lens mount is checked after every machining step, guaranteeing improved process control and repeat accuracy", adds Production Manager Christian Tazoll. In addition, all procedures are controlled by the machine itself in an automated step-by-step process and visualised using user-friendly software. This allows for greater speed and precision. And when Christian Tazoll speaks of precision, he means extremely tight tolerances of less than 0.5 µm.

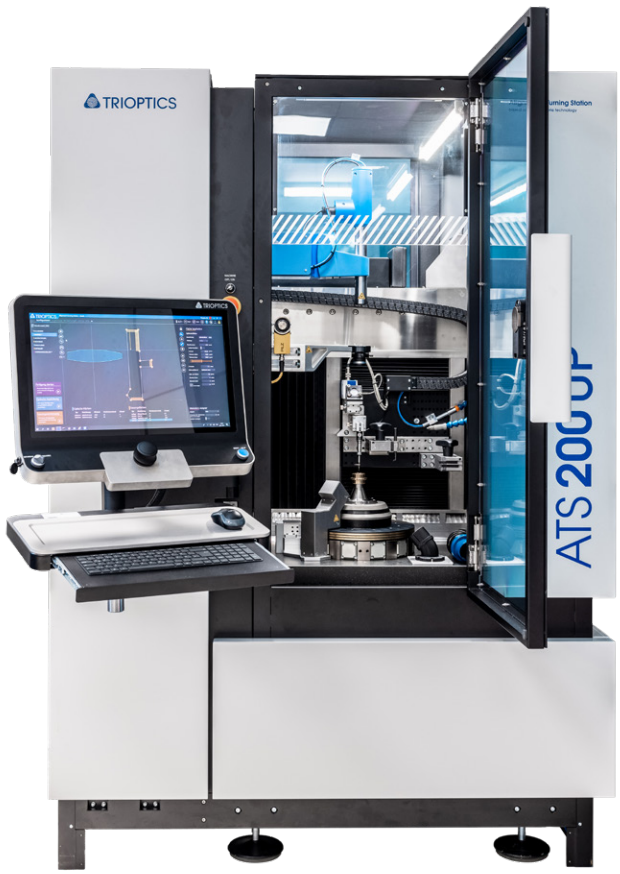
These extreme accuracy requirements are necessary because high-performance optics consist of several precisely polished and exactly positioned lenses or mirrors. The lenses are individually mounted and then, for instance, stacked in a lens barrel. During this process, both the alignment of the individual lenses and adherence to the tight tolerances of the air gaps are of essence. Even the smallest deviations are enough to produce defective images. This makes such lens assemblies very sensitive and very challenging to manufacture.

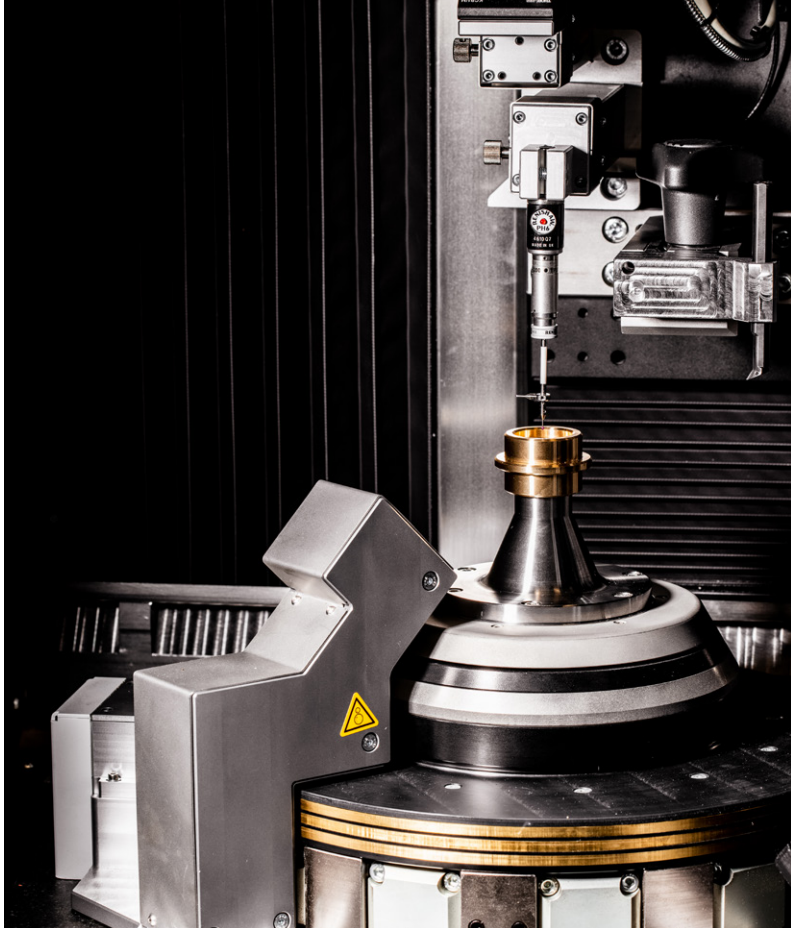
To rule out any errors, the new alignment turning station relies on integrated high-resolution autocollimators, as well as tactile and optical sensors that ensure highly accurate measurement of the relevant mechanical parameters.
The new machine thus allows for highly precise adjustment

of air gaps between two lenses and exact measurement of the lens thickness directly inside the station. If necessary, it is possible to adjust the air gaps to the actual dimensions of the lens thickness according to the optical product's design. "In future, alignment turning in the quality we can now offer will open the door to new designs with very small air gaps", Stefan Werkl believes. Since the alignment of the lenses is done from two sides, it is also possible to centre optics that are not transparent in the visible range, such as in the case of germanium lenses. In the case of glued lenses, such as achromatic lenses, the two outer surfaces and the glued surface can be included in the centring process with freely selectable weighting. Moreover, the high machining accuracy makes it possible to precisely adjust the diameter to the counterpiece.

WIDE RANGE OF APPLICATIONS

Since the individual mounted lenses are firmly attached in the lens barrel with their entire contact surface, the new alignment turning station makes lens assemblies more resistant to vibrations. "Such optical stability is essential where lens assemblies are exposed to large temperature fluctuations", adds Christian Tazoll. In principle, the range of applications for the alignment turning process is quite comprehensive: It extends from very small optics used in microscopes to optics for remote sensing. Moreover, the use of all common materials for the mounts, such as steel, Invar, aluminium or brass, paves the way for numerous manufacturing possibilities. "Besides, the manufacturer of





the alignment turning station has shown great willingness to further develop the machine according to our customer requirements. On our part, we support them with expertise as regards the structural design of lens mounts and their optimum accommodation in the alignment turning machine. The contour turning feature, for example, has so far been implemented exclusively for WILD", says Tazoll.

WILD has installed the new machine in the assembly hall in Völkermarkt, so that the entire value creation process can take place in a single line for the first time. For this purpose, not only the processing machine but also the optical measurement systems were relocated to the assembly area. "The result is a workplace where the lenses can be glued, the mounts can be centred and turned together with the lens, and the entire product can finally be measured and cleaned in the flow box on site", Tazoll explains. Thanks to the resulting proximity and the coordinated clock cycles, one employee per shift will be able to cover the entire process in the future.

The advantages of the ATS 200 UP at a glance:

- Suitable for small and medium-sized lens assemblies with a diameter of up to 200 mm and a weight of up to 5 kg
- Easy and quick setup of the workpiece
- Reproducible manufacturing with a repeat accuracy better than 0.5 µm

MAKING SUCCESS STORIES HAPPEN.

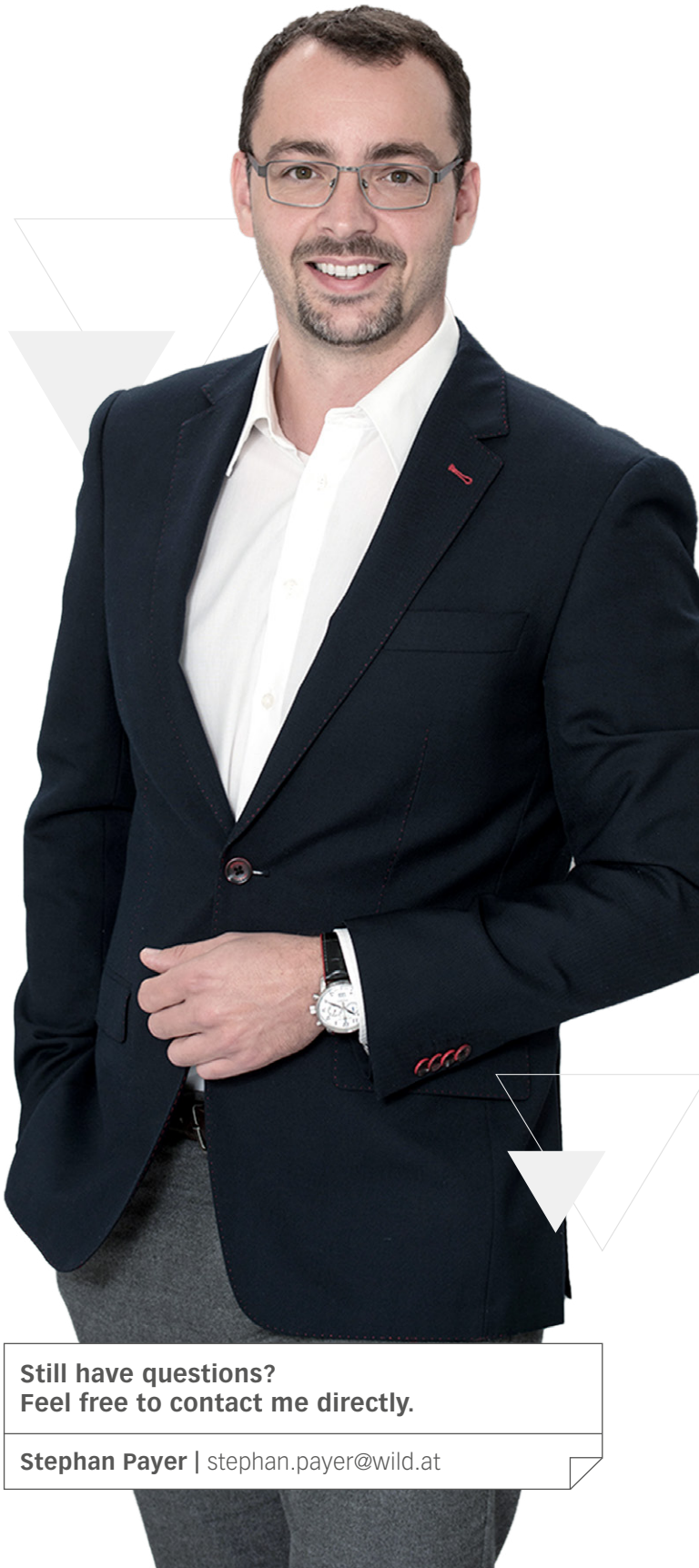
With the aim of interconnecting people and skills, Stephan Payer will continue the successful course of WILD Electronics as its new Head of Division.

"In sales, we are the first port of call for our customers and the communication link to all the value-generating areas in the company. We always learn first-hand about what works well and what still has room for improvement." This is how Stephan Payer describes the special role of sales, where he has been at the helm as Head of Division at WILD Electronics since October 2020. In this position, he feels that he and his team have the responsibility to fully align processes and interfaces in the company to the customers' requirements.

"As a holistic systems partner, our aim is to deliver the complex devices of our customers in a safer, more flexible, and generally more efficient way than they could do so themselves or with other suppliers. To this end, we must better understand the challenges of our customers and offer them a leading edge, both technologically and in overall order processing", Payer believes. To achieve that, sales, operations and support processes need to be innovative and well-connected.

He is convinced that openness and the ability to find solutions are essential prerequisites for innovation to happen in a company. They ensure that the WILD Group finds the right answers to evolving market demands and changes in the general environment, thus allowing it to maintain a lead for the benefit of its customers. The same objective is driving the adjustment of processes in sales. "In an effort to further advance our area, we launched a wonderful process that each and everyone in the team supports. The aim is to process tasks in customer management, transition to serial production and series management in a more focused manner, to develop core competencies within the team, and to better share and provide the knowledge available."

What comes in useful for the father of two teenage daughters in addition to his business background are his relevant experiences from previous career stages, including his position as manager of a technology cluster. "Exciting topics and interconnecting people and skills have been part and parcel of my work for several years. At WILD, we also experience many top innovations in development and manufacturing first-hand. What motivates me in particular is that each and every one of us gets the opportunity to make success stories happen!"



Still have questions?
Feel free to contact me directly.

Stephan Payer | stephan.payer@wild.at

NOT ALL LIGHT IS ALIKE.

Whether in diagnosis or treatment – Photonic helps customers administer the right dose of light exactly where it is needed.

Light is considered an important safety aspect in medicine: from surgery lights to endoscopy and treatment, reliable results can only be achieved with state-of-the-art lighting systems. The advancements in LED technology have opened up many new possibilities and choosing the right type of light has become a more complex affair. Hence the need for specialists like Photonic, who know exactly which lighting characteristics are required for a specific application. "Factors such as colour rendering index and colour temperature have a significant influence on the correct depiction. This is a well-known phenomenon in photography. When taking pictures with a flash, you essentially have the same problem as a physician in medical diagnostics. Whether with the naked eye or through the lens of a camera, a realistic depiction of the object to be examined is possible only when all colour components are included in white light", explains Photonic Business Developer Joachim Enengl.

> **"What we offer our customers is technical expertise in producing and guiding light and optical radiation.**
> *Joachim Enengl, Photonic Business Developer*

In addition to a particularly high CRI value, which Photonic achieved through long-standing partnerships with LED manufacturers and thus secured an influence on the latest LED generations, the optical design of the light source and thermal management make sure that the light spectrum does not begin to drift. "There is no standard solution. Each system is optimised for its intended use", says Enengl. For instance, a change in the spectral characteristics of lighting can increase the contrasts between healthy and diseased tissue. Some types of tumours, however, are difficult to detect under white light. This is where fluorescence diagnosis comes in, and customers rely on Photonic's expertise in this field.

Light, however, can also be used as part of treatment. In the blue wavelength range, for instance, it is used in the treatment of infant jaundice, ultraviolet A radiation combined with psoralen are used to cure psoriasis, and wavelengths in the red or near-infrared spectral regions are well-suited for the treatment of inflammations and pain. "Both wavelength and power density have a decisive impact on treatment success. What we offer our customers is technical expertise in producing and guiding light and optical radiation. As a result, they can concentrate entirely on the clinical evaluation and marketing of their products", Enengl stresses.

Your contact

Joachim Enengl | enengl@photonic.at

CELEBRATING TOGETHER.

We want to say THANK YOU for the many wishes we received and the exciting conversations we had with you on our 50th anniversary.

"A long-standing customer held up a banner. Others drank a toast to WILD or lit a candle on the Sacher cake we had sent them. And many raised their glasses via webcam. Special moments like these made us feel that it is possible to get together and celebrate despite the distance that separates us. We would like to sincerely thank you for this", stresses CTO Wolfgang Warum, referring to the numerous anniversary conversations the WILD staff had with customers. WILD has a long-standing relationship with many of them.

Some of them have been working together with the company for more than 20 years. "One can certainly claim that the path we have travelled together has been one of success. Therefore, we took the opportunity during these talks to look back in a relaxed atmosphere and share anecdotes from the past. At the centre of all these conversations, however, was always a palpable sense of mutual appreciation. We perceive this as a great gift", says CEO Josef Hackl.

Customers also gave us very positive signals with regard to current and future projects. "We thus feel encouraged to meet the challenges of the coming years with the same commitment and determination and write the next chapter in the success story of the WILD Group", CFO Michael Wratschko delights.

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THE WILD GROUP

The WILD Group is comprised of the WILD brands which are established in Völkermarkt, Wernberg and Trnava/Slovakia, as well as Vienna-based Photonic. The Group's 451 highly qualified staff members are always the first choice when precision and reliability are a must and when innovations are called for.