PRISMA

The WILD Group magazine

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NETWORKING PRODUCTION

How the digital twin defines the manufacturing architecture of the future.

WILD

PHOTONIC

Photonic creates new solutions for fluorescence diagnostics.

Greater speed and process safety in analytical cleaning.

One-piece-flow optimises manufacturing at WILD Technologies.

Dr. Josef Hackl
Managing Director CEO WILD Group

THE DIGITAL TWIN.

Precision, reproducible product characteristics, short processes and an agile response to fluctuations in demand and technological advances. All these are factors that a modern product supply must manage smoothly. The principle of the „digital twin" can be best interpreted as a seamless digital data flow which precisely depicts what is happening with suppliers, in manufacturing, in assembly, and in transport.

WILD, too, is highly committed to gradually reviewing all business processes in terms of their effectiveness and to radically overhaul and ultimately digitalise the same. The company is currently concentrating on three major topics: Mechanical Manufacturing 4.1, Assembly 4.1, and Supply Chain Management 4.1. In this issue of PRISMA, we are putting the emphasis on results from the area of manufacturing.

The new ultrasonic cleaning machine that we recently put into operation, for instance, guarantees a higher level of documentation and automation. It delivers a higher output for analytically clean parts and ensures that WILD remains best-prepared for even more rigorous cleanliness requirements in the future. Martina Trinkel-Rudman and Daniel Pressl, our newcomers in the Business Development Team, are now in charge of future topics such as Photonic's venture into fluorescence diagnostics, which we will also be addressing in this issue.

Yours, Josef Hackl

↗ DEVELOPMENT

A COLOURFUL FUTURE AHEAD.

▼PHOTONIC

PHOTONIC is increasingly focusing on fluorescence diagnostics, thus creating innovative green synergies in the process.

LEDs have long become established the field of classic lighting technology and high-power modules can be used even in applications with extremely high brightness requirements. Brightness, however, is only one aspect of visual perception. It is contrast that plays the decisive role in delivering the sharpness required for the information content of an image. When it comes to displaying minute differences, such as, for instance, in the medical diagnosis and treatment of tumours, colour marking in particular, next to zooming, is an established method for the creation of such contrasts.

Fluorescence-based applications in surgical microscopy and endoscopy are made possible through the interplay of three components: the colouring agent, the suitable light source and the imaging system. PHOTONIC has developed in-depth know how in all three areas and is focusing intensively on future solutions. As a result, the developer team is concentrating its efforts on the platform approach. Based on the combination of several PHOTONIC modules, the specialist for innovative lighting systems and optomechatronics can already supply its customers with the suitable system solutions for the colouring agents of the future.

The future is green

Not least due to the extended technology know-how at its disposal within the WILD Group, PHOTONIC develops both modules for the stimulation of fluorescein and 5-ALA (protoporphyrin PpIX) as well as customer-specific product developments and combined lighting and imaging systems. „For us, delivering innovations means becoming green both literally and figuratively", Sales Manager Joachim Enengl explains. „This is done, on the one hand, by providing the suitable wavelength for infrared imaging with indocyanine green. On the other, by strengthening the green wavelength range in LED-based light solutions for the excitation of cyan-fluorescent protein. And, last but not least, by using natural colouring agents such as curcumin, which is found in the turmeric root.

Especially in the case of medical applications, including the diagnose or fluorescence-based removal of tumours, such innovative solutions present an enormous potential. „Compared to xenon arc lamps, the light of which is largely generated in wavelength ranges which must be optically cut out for the targeted fluorescence and be cooled using a great amount of energy, power-efficient LED solutions with wavelengths adjusted to the respective colouring agent are indispensable for a sustainable energy footprint", Enegl believes.

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↗ PRODUCTION

A DIGITAL REVOLUTION IN MANUFACTURING.

▼WILD

When it comes to manufacturing, WILD is facing the same challenges many others do: On the one hand, lot sizes are falling. On the other, orders are becoming increasingly complex. Those who focus on digitalisation, however, have an ideal tool in their hands to face up to this challenge.

Today, digitalisation forms the backbone of all successful manufacturing. What is required is digital data, from the CAD drawing through to product documentation, and a networked production that stretches over as much of the supply chain as possible. Currently, the crucial topics revolve around efficient manufacturing procedures and the securing of processes. In view of the much debated industry 4.0, companies must embark on a course of continuous action, i.e. convert theoretical approaches into practice and implement integrated manufacturing procedures. The WILD Group already began doing so several years ago, introducing the Manufacturing 4.1 status in 2018. „By introducing a series of projects such as plant visualisation, digital maintenance and measurement data entry as well as parts inspection during ongoing processing, we are setting new standards in digitalisation and therefore in the networking of man, machine, and working environment", WILD production manager Mario Pföstl explains.

Digitalised manufacturing control

Despite all of the hype around digitalisation, however, it is important not to lose sight of the actual objective. Only those who skilfully review and interlink manufacturing steps will achieve higher productivity, lower error rates and greater precision. This is also the reason why the times of conventional manufacturing control are finally over.

Therefore, a central aspect of manufacturing 4.1 at WILD is a quick response based on well-prepared data. „The better we manage to gain data-based insights into

manufacturing process flows, the quicker and more efficient we can analyse deviations and counteract these. For this reason, we are currently digitalising our entire manufacturing control system to allow for an automated process capacity monitoring", says WILD Group CEO Dr. Josef Hackl.

In an initial step, WILD has introduced various new digital systems in order to gain an overview of the complexity and transparency of numerous processes. More specifically, this involves, on the one hand, a software for measurement data collection and test planning. Furthermore, an in-line measurement machine was installed already at the end of last year. The device is located directly next to the manufacturing machines, thus allowing the worker to carry out measurements simultaneously with production and to immediately ensure the desired quality.

Another machine was installed in the measurement room just a few months ago. This one guarantees higher precision and independent output control. Both of them represent the state of the art and they automatically transmit measurements to a computer-aided quality (CAQ) system that provides workers with feedback on manufacturing precision. „In addition, these systems monitor component temperature and offset the measured value output. The result is highly precise measurement. Moreover, this also allows workers to take parts from the manufacturing machine and place them directly on the measurement machine", explains Emmerich Kriegl, Head of Quality Management at WILD. In addition, both systems can be programmed beforehand on measurement-asynchronous stations so as to keep the machines' operating time as long as possible.

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Information is a major production factor

For WILD, however, the key to success is not merely the introduction of new software or the installation of new systems and machinery. Even more important is a holistic digital approach and the corresponding work and data organisation. Intelligent manufacturing, as WILD sees it, utilises „information" as a production factor on all levels of the value chain and makes such information available at all times.

The company is currently testing a complete plant visualisation system. „In future, this may allow us to visualise the plant status during the entire production period so as to make all interference steps transparent and derive the necessary countermeasures more efficiently", says Mario Pföstl.

A stable and automatically monitored process also plays a central role in the cleaning of parts. Along with the purchase of a new ultrasound cleaning system, WILD has also installed an automation and complete plan visualisation system in its fine cleaning facility. This guarantees traceable process safety and the corresponding documentation. For more information on the benefits of this new cleaning facility, read the article on „Delicate washing cycle for parts".

↗ INTERN

STRATEGIC FUTURE ANALYSTS.

▼WILD ▼PHOTONIC

Martina Trinkel-Rudman and Daniel Pressl are joining the interdisciplinary Business Development Team headed by CTO Wolfgang Warum.

The objective of Business Development is to bring about innovation and to constantly rethink your own business. So today, business development is an area in need of discoverer types: people who push forward-thinking solutions for customers through new ideas and partnerships, thus helping to tap into new markets. This is precisely the task Martina Trinkel-Rudman and Daniel Pressl took on themselves when they recently joined the WILD Group's Business Development Team.

„WILD is already providing support to the major players and highflyers in today's high-tech world. We shall continue to do so in the future. We are following the path of our service and technology roadmaps with our eyes open and thinking outside the box, so we will succeed by venturing into new technology fields and markets together with our customers", Daniel Pressl assures. As a doctoral candidate at the Department of Materials Science and Engineering of the Massachusetts Institute of Technology, he worked and researched in the USA and also expanded his scope of knowledge by participating in several international projects.

After returning to Europe, he took part in worldwide frontrunner projects in research, development and industry in recent years. The latest focus of the 38-year old was on product development and innovation and quality management. „I've known the WILD Group for a long time now and I have always been impressed by their innovative solution competence. Now I am looking forward to contributing the spirit that comes with the experience from working abroad and to steering the requirements of our customers and my ideas into structured paths so as to embark on new approaches together with my colleagues."

Martina Trinkel-Rudman, too, will be contributing international experience to the team. The chemical scientist was, among other things, responsible for the overall management of EU research projects with partner companies from the fields of medical technology, biosensorics, and nanotechnology at Joanneum Research, an institute which has been engaging in top research for the last 50 years. Her most recent work involved consulting and project management in Namibia. What fascinates Trinkel-Rudman about her new task at WILD Business Development is the diversity and complexity of the products created here. „I see the greatest strength of the WILD Group especially in this bandwidth of know-how, which can be extended to the most diverse segments and to new customers", says the 48-year old. As part of the six-person Business Development Team, Martina Trinkel-Rudman and Daniel Pressel will be immediately in charge of trend scouting, acquisition of new customers and organisation of knowledge transfer.

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DELICATE WASHING CYCLE FOR PARTS.

▼WILD

A growing number of parts, a higher volume of documentation and automation and increasing cleanliness requirements: the new ultrasound cleaning system shortens cleaning time and guarantees intensive but gentle cleaning.

Cleaning has become a key process and an essential quality criterion in the production of complex components. Both the requirements and the possibilities of modern cleaning technologies have undergone a radical transformation in recent years. Today, in order to guarantee the required process safety, it is necessary to apply the corresponding monitoring and documentation in parts cleaning as well. In addition, speed now plays a significant role. WILD has therefore invested in a new ultrasound cleaning facility that optimises both areas and guarantees a higher output for analytically pure parts.

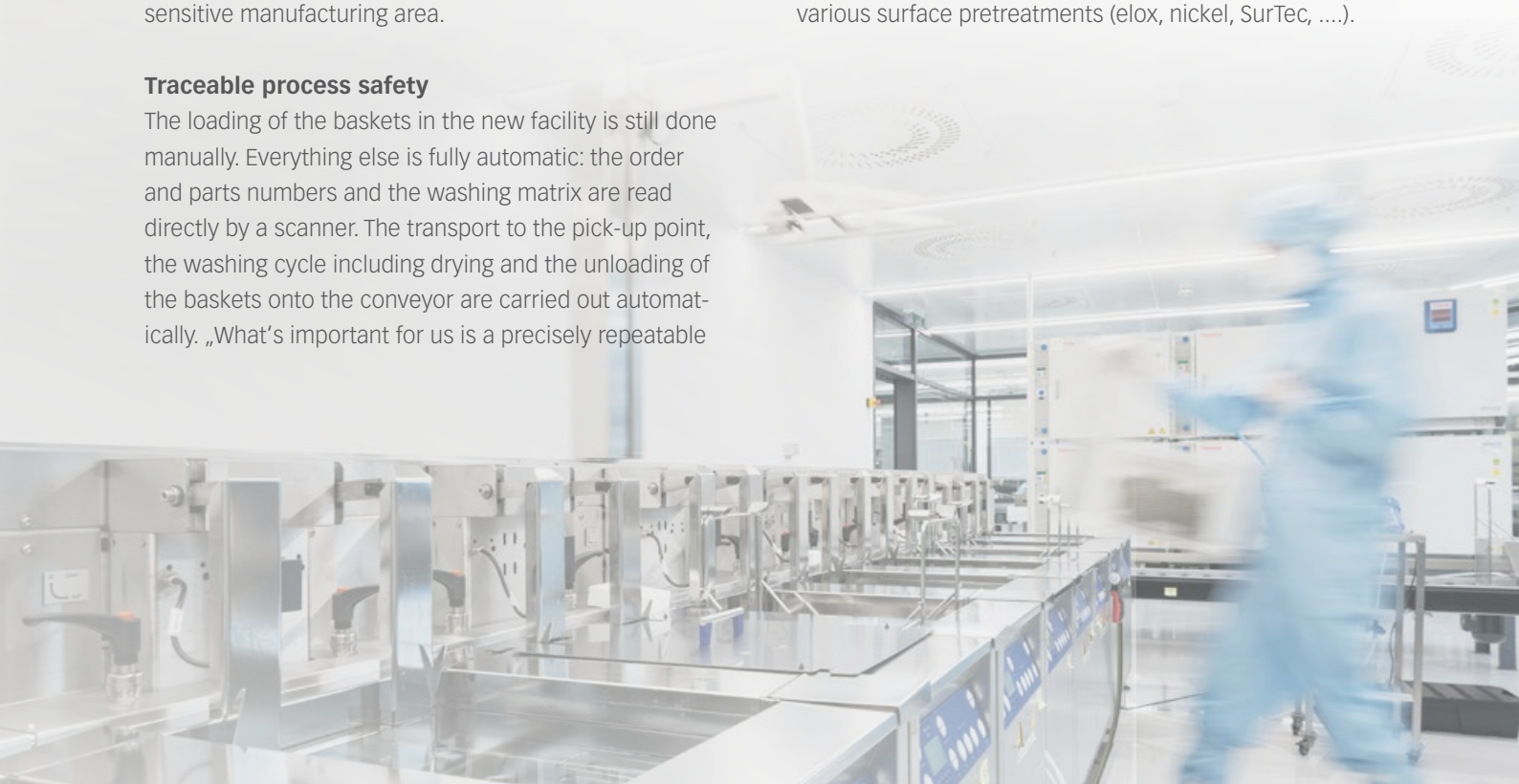
„Especially in the case of optical and medical products, the requirements for part cleanliness are on the increase. Such products include, for instance, cutting units, beam deflectors or assemblies for mass spectrometers. All these must be completely free of any residues“, explains Manfred Santer, Team Manager in the area of fine cleaning. For this reason, they are assembled under cleanroom conditions and the new Elma X-tra pre 550-10-WLT-F-R cleaning facility is also part of this sensitive manufacturing area.

Traceable process safety

The loading of the baskets in the new facility is still done manually. Everything else is fully automatic: the order and parts numbers and the washing matrix are read directly by a scanner. The transport to the pick-up point, the washing cycle including drying and the unloading of the baskets onto the conveyor are carried out automatically. „What’s important for us is a precisely repeatable and traceable process safety. Each programme monitors and stores critical data such as conductance, temperature, ultrasound intensity and washing time, so that we can provide every customer with the documentation they require and immediately react when necessary,“ Santer explains.

99 individual washing processes

The machine allows the programming of 99 washing processes, which can vary according to customer requirements and materials. A washing programme lasts for approx. 20 minutes, and it is possible to have several programmes run in parallel. The system automatically calculates when the next programme will start. As a result, it covers an extreme variety of parts. Part sizes range from 5 x 5 x 5 millimetres to 430 x 260 x 230 millimetres. Moreover, many of the workpieces to be cleaned have highly complex geometries such as tiny drilling holes and are made of different materials, ranging from aluminium and stainless steel to ceramics and various plastics. WILD is also capable of delivering the required particle and analytical purity for parts with various surface pretreatments (elox, nickel, SurTec, ...).



↗ PRODUCTION

EVERYTHING BUT MONOTONOUS.

WILD

WILD Technology demonstrates how One-Piece-Flow marries greater productivity with higher employee motivation.

In modern manufacturing, proactivity and personal initiative are key qualifications. Recently, employees at WILD Technologies impressively demonstrated that they possess both. Using the knowledge acquired during a Green Belt training course, they developed a strategy for manufacturing optimisation by asking themselves the following question: How can you produce more components during the same period with fewer staff and in a smaller space? Their answer: By converting manufacturing to One-Piece-Flow.

Based on a value-stream map and the potentials derived therefrom, the team converted the production of headphone capsules to this form of manufacturing. With success. „The line for a Korean customer, where operation has been everything but monotonous since 2018, has stood the test. Expressed in numbers, this modification speaks a clear language: since the date is now automatically tagged on the product, the duration of this work step has been reduced by 90 percent. By combining further work steps, it was possible to significantly shorten distances and reduce the required space from 34 to less than 18 sq. m.“, says Tobias Knoop, Managing Director at WILD Technologies. In addition, ergonomics were significantly improved, and there is far more clarity in place.

„All these factors quickly resulted in an optimised quality and lead time for each product. For this reason, we converted a second assembly line for a table stand to one-piece-flow in June“, Knoop explains. Further lines are to follow and the insights gained from this employee initiative will also be applied to the same.

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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.