



Hans J. Michael GmbH



Digital and virtual support facilitate work processes

Industry 4.0 from Bosch: a new level of efficiency



- Safe format changes thanks to RFID technology
- Efficient maintenance support – on-site and via remote connection
- Augmented and Virtual Reality applications offer support with maintenance, troubleshooting and training



A new level of efficiency: Bosch's i4.0 applications optimally support operators as well as service and maintenance personnel in their daily work - and help them to carry it out faster and more efficiently. (Picture: Bosch)

At interpack 2017, Bosch Packaging Technology showed how industry 4.0 solutions provide higher efficiency in modern manufacturing. "All of our industry 4.0 applications focus on humans," said Dr Stefan König, president of Bosch Packaging Technology. "Machine operators, as well as maintenance and service staff receive the best possible support in their daily work - and can thus complete it faster and more efficiently."

For instance, efficient and correct format changes with all format parts reliably installed in the right position, are a prerequisite for low downtime. In the future, machine operators will receive valuable support thanks to the Format Part Management based on RFID technology. The format parts are identified through an RFID tag. Via the format part ID, operators receive relevant information about the format change. This not only reduces changeover times, it also prevents potential mistakes.

Efficient maintenance support

With the Maintenance Support System (MSS), operators and maintenance engineers are supported

in the efficient execution of all kinds of maintenance activities. Thanks to the analysis of machine data in real-time, they receive all required information to their mobile devices. This enables them to react quickly, reduce walking distances and save time for the search for spare parts. The Operations Assistant makes it possible to create and store step-by-step instructions including text, images and videos. Via the visualization app Maintenance Assistant, operators receive real-time information and instructions for upcoming maintenance and cleaning jobs.

In case they do require external help, experienced Bosch specialists can connect with customer machines via the safe VPN data connection of the Remote Service. Whether support for set-up, remote diagnosis, troubleshooting or the installation of software updates is required - Remote Service makes it possible to correct faults efficiently before they lead to production disruptions. Additional images, videos and audio files can be exchanged with the Shopfloor Remote Assistant. For example, if a spare part needs changing, the Bosch technician can highlight it on the image. Moreover, Bosch offers data-based services allowing

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Bosch experts to evaluate and analyze production data and to make recommendations for action.

Transparency in real-time

Operators want to be informed about the condition of their lines at any time. The Line Dashboard provides a clear visualization of all relevant parameters. Wherever the operators are, the Line Dashboard delivers the appropriate information including alarm notification in case of a defect. This helps to reduce walking distances and downtime.

With developments in Augmented and Virtual Reality, Bosch takes transparency and efficiency one step further, and showcases first application areas at interpack. "We will literally take industry 4.0 solutions to the next dimension," König says. "Augmented and Virtual Reality offer completely new possibilities to support staff with maintenance, troubleshooting or during trainings by supplementing real live images by additional information, or even simulating three-dimensional environments."

New dimensions for maintenance, troubleshooting and training

On the mandrel wheel machine PME 4081, Bosch demonstrated how employees could perform maintenance activities even faster thanks to Augmented Reality (AR). To do so, they receive step-by-step instructions on their tablet, consisting of real machine images, as well as detailed visual and textual information. This way even service staff without expert knowledge can remedy faults and carry out format changes quickly and reliably.

AR glasses further speed up this process: instructions are projected directly into the field of view, so that operators have both hands available for the format change. This not only results in an efficient and correct execution of the task. It also brings a welcome change to daily work, as well as a positive user experience. New AR applications also make troubleshooting a lot more efficient. In case of a malfunction, the operator is shown the exact position of the component on his tablet, enabling him to locate and correct the defect faster.

Thanks to Virtual Reality (VR), operators can view the virtual image of their real machine, for instance via a smartphone which is integrated into a pair of glasses. VR applications especially facilitate error location and troubleshooting. They can, however, also be used



Efficient maintenance aid: The Maintenance Support System (MSS) analyzes machine data in real-time and helps operators and maintenance engineers efficiently execute all kinds of maintenance activities. (Picture: Bosch)

for virtual trainings, such as learning about format changes under near real-life conditions. Trainers can view the simulation live and give supporting instructions immediately. For operators, this is an efficient and safe way of training, as faults have no direct consequences. Moreover, the production process does not need to be interrupted.

"At interpack we want to explore these entirely new possibilities for our industry together with our customers," König explained.

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Dear subscribers,

while early summer days in Germany are very hot we are busy collecting information for a „hot“ autumn full of inspiring fairs such as **Cleanzone** in October in Frankfurt, the **9. Reinraumtage Saar** in Spiesen-Elversberg, the Symposium on „**Filmische Verunreinigungen**“ (filmy contaminations) in November in Ludwigsburg and the **Medica** in November in Düsseldorf. But summer comes first with the **8. Technologies Conference elmug4future** in June in Friedrichroda and **Rapid.Tech** in June in Erfurt.

In the meantime you can find in this newsletter plenty of information on measurement, specifications and cooperations as well as on new products for cleanroom technologies. Enjoy.

Yours sincerely,

Reinhold Schuster

Martin Rothe, Managing Director of Kito Europe GmbH, talking about the company and his plans for the future

KITO products set a global benchmark

In the last 10 years, Kito has managed to assert its position on the European market for lifting gears as the only non-European company. How did you succeed?

I can only assess the achievements of past years from an outside position. However, as far as I have gotten to know the KITO company and the colleagues until now, there are three key pillars which led to Kito Europe's success on the European market: Excellent product quality, customer-specific solutions and pioneer spirit. The product quality sets standards for the sector. Our customers receive the best possible service. Kito Europe builds inhouse customized solutions from standard products – allowing for our customers to ensure their high-quality standard in order to become or to stay unique on the market. All of this is only due to the pioneer spirit of the very first employees. With the backing of a strong parent company, they established Kito Europe all throughout Europe in 2006. I highly appreciate these persons' power and drive.

What are your objectives for the years to come and what do these depend on?

Personally, my objectives are ambitious. I want success through growth and success through profitability. It is important to me to continue enthusing our clients about unique products and the KITO service. Furthermore, I attach high importance to my staff's satisfaction and want them to be passionate about the company. A bad working atmosphere has negative impacts on a company's success. During my term of office, we will never lack in fun or motivation.

Which role does the parent company play in this respect?

I am thankful for the enormous support from Japan regarding developing personnel and investing into marketing measures. Kito Europe can only be as good as the service and product range from Japan will allow. The parent company currently continues growing with the new, international positioning. In Japan, KITO is currently developing from a local hero to a global player. The executive management team now has a reorganized, international line-up in order to better understand regional demands. This has a positive impact on us as well.

Speaking of growth: What are the plans of Kito Europe for the near future?

We have great expansion plans and want to achieve a significant presence in Europe – both organically and through strategic partnerships. The B2B business will remain unchanged. Our retailers provide excellent service and our clients have regional contact persons who support and advise them very well. Of course, we support these collaborations by extending the product range and providing our retailers and clients with the whole package in the field of lifting gear.

Are there any sectors that Kito Europe wants to specialize on in the near future?

KITO products are unbeatable where the use of the hoist is extremely difficult and where products are pushed to their limits. In such extreme situations, the exceptional quality and durability of the product becomes evident. I am thinking of application in steel mills, foundries or offshore where competitor products cannot keep up. In the near future, more KITO products shall be used in clean room technology, food industry or in laboratories – i.e. wherever cleanliness is particularly important. And, of course, we will continue growing and offering customized product solutions in sectors where safety has top priority. As is currently in the case of overhead line projects – here, KITO products have been long preferred because of their outstanding security features.



Martin Rothe, Managing Director of Kito Europe GmbH

Why do safety and ergonomics play such an important role?

With every use of lifting gear, security has top priority. As in all application fields where KITO products are used, even the slightest mistake could have fatal consequences. KITO fabrications are subject to Japanese perfection; meaning that they do not only comply with the minimum safety requirements but that they even exceed the safety requirements many times over. The Japanese standards – as we know from other fields – are subject to the highest standards of the developers. KITO products are developed precisely, well-checked several times during the manufacturing process, subject to most stringent quality controls and therefore set a global benchmark.

Is digitalization going to be an issue in the years to come?

Definitely, yes! If only to simplify communication and service for our retailers. We are currently investing immensely into our IT infrastructure in order to become a pioneer in this field in the future. For our retailers, the collaboration with Kito Europe should be as easy and uncomplicated as an Amazon order. Meaning that retailers can order goods online and receive their order the next day. Should a component not fit – simply return it. That is service.

The German claim "Mit Sicherheit das Original" literally means Kito products are "safe, the original and the best". How is Kito Europe going to stay an original on the market and what product developments are expected in the future?

Currently, we are in the process of setting the course for KITO as a global player. We listen to the customer, so products will specifically tailored to meet the needs of different markets – custom products and customized solutions will be delivered from Japan to Europe. Globally, we will work together with conveyance universities to maintain our leading position in regard to safety and innovation in the future

What achievements are you particularly proud of?

I am proud of the fact that all essential elements of the company change process have been implemented – resulting in success and process optimization in the near future. Furthermore, I really enjoy working together with my team because every team member is active and passionate about the development process. Only an open and positive corporate culture can bring change and achievements.

Kito Europe GmbH D 40549 Düsseldorf

Cooperation between gempex and BSR

- comprehensive services for qualification according to DIN EN ISO 14644
- clean room qualification service

Collaborating for Professional, Integrated Qualification



The international GMP expert gempex and the BSR Ingenieur Büro, an integrated clean room measurement provider, concluded a cooperation agreement at the start of May. The two companies are bundling their specific expertise and offer a professional and integrated clean room qualification service to customers in all areas of the life sciences industry - pharmaceuticals, chemicals, biotechnology and more.

"Now customers can rest assured that the

commissioned services are state-of-the-art and meet the highest quality standards," says Ralf Gengenbach, Managing Director & Owner of gempex GmbH. "An all-round worry-free package."

The comprehensive services range from GMP-compliant qualification planning to performing the required measurements according to DIN EN ISO 14644 and completing the work with the corresponding qualification reports that meet the requirements for official audits. Well trained and experienced specialists in the field along with a highly efficient approach save customers time and valuable resources.

The two companies have maintained a long-standing partnership based on mutual trust. "The step of formal cooperation was a logical consequence," says Dr.-Ing. Jürgen Blattner, owner of BSR Ingenieur Büro. BSR and gempex have been offering their services jointly to companies for many years. "We are a well-rehearsed team and share a lot of practical experience!"

The jointly offered services cover all clean room qualification tasks required in the

course of new construction projects and for existing facilities:

- Preparing user requirement specifications (URS)
- Performing risk analyses
- Planning - DQ, IQ, OQ, PQ
- Performing required calibrations and measurements according to DIN ISO 14644
- Raw data recording and analysis
- Deviation management
- Interim and final report preparation

What this means: Comprehensive qualification from one source for all companies performing research or production in clean rooms. Additional measurement and calibration activities can be carried out aside from clean room measurements.

gempex[®]

THE GMP-EXPERT

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ACHEMA 2018

Call for Papers for Congress and PRAXISforums



**11th - 15th June 2018: ACHEMA 2018,
Frankfurt am Main (D)**

Contributions to the congress program and PRAXISforums of ACHEMA 2018 can be submitted as of now. Scientists from industry and research institutions are invited to submit their papers until September 22, 2017 via internet (www.achema.de/congress). About 800 presentations at ACHEMA from June 11-15, 2018 will showcase results from application-oriented basic research through to applied research and development.

The ACHEMA-Congress comprises the complete spectrum of chemical and process engineering as well as biotechnology themes. The topics range from analytics, energy supply, process design, reaction technology through to safety. C. Focal topics include: Biotech for Chemistry – chemical and biotechnological processes are gradually merging; Flexible Production – digital integration of the value chain makes this possible; Chemical and Pharmaceutical Logistics – the digitalization of the logistics chain opens up new paths in supply chain management and distribution.

The ACHEMA PRAXISforums focus on industrial applications, trends, new products and services in chemical engineering, biotechnology and the process industry. Market- and practice-oriented topics are presented in a concise format. The ACHEMA PRAXISforums are held in the immediate vicinity of the respective exhibition group.

The linkage of exhibition and high-quality congress makes ACHEMA the distinctive world forum of the process industries. Around 4,000 exhibitors from over 50 countries and about 170,000 visitors from all continents are expected at this industry summit for users and researchers. The ACHEMA takes place from June 11-15, 2018 in Frankfurt am Main / Germany.

DECHEMA Ausstellungs-GmbH
D 60486 Frankfurt am Main

New machines and additional competences are soon to expand the portfolio

Electronic displays center is growing

New large machines are currently being installed. Together with their associated team, they are extending the possibilities in the Electronic Display Center to include additional processes in the areas of high vacuum (room temperature to high temperature), organic and inorganic coatings as well as solid state processes with high frequency activation. Such processes are required, for example, for new light sources which in contrast to LEDs are not bothered by high temperatures or VOCs (volatile organic compounds).

„A major challenge was the installation of the equipment. A total of three tractor-trailers, a low loader and a heavy-duty crane were used to transport the small and large machines“ explains Klaus Wammes, one of the drivers behind the idea of an Electronic Display Center in Gundersheim. The on-site infrastructure had to be prepared in such a way that all media, such as technical gases, high-pressure compressed clean air, energy, and an integrated process heating and cooling system, could be provided cost-effectively in the required dimensions and quality.

Wammes: „We are very pleased that, with the new technological possibilities, the expertise on the ground will also increase and synergy effects for joint projects will be improved.“ The Electronic Displays Center is a technology park for high-tech companies in the field of applied physics. The site has a total of around 4,000 square meters of offices, as well as functional and clean rooms on a 20,000 square meter site. Due to its central location within Germany, with direct access to the Autobahn A61 and an approximately 40-minute drive away from Frankfurt Airport, it is also a German branch for internationally operating companies.



(Photo: Wammes & Partner GmbH)

Wammes & Partner GmbH
D 67598 Gundersheim

Centrifugal fan for air conditioning and ambient air devices

Award for Special Design

The RadiPac centrifugal fans from ebm-papst have received a "Special Mention" in the "Energy" category at the 2017 German Design Awards. The jury uses this award to honor products whose design contains especially successful aspects or solutions. In the case of RadiPac, it is the significant improvement of efficiency, power and weight.

Faithful to the founding principle

On behalf of the Development team, Hartmut Messerschmidt, Head of the Applications Development Department at ebm-papst, accepted the award certificate. "We are particularly pleased about this award since we received it for a product that we developed further based on our GreenTech philosophy - in complete alignment with the principle of our company founder, Gerhard Sturm. He said that each of our new developments must exceed its predecessor in the areas of ecology and cost efficiency." The independent jury of experts composed of representatives from industry, academia and design confirmed this assessment. The jury's decision stated: "As a result of revising key components and details, the product achieved palpable improvements related to efficiency, performance and weight."

Optimization in many areas

ebm-papst extensively revised the centrifugal fans in the RadiPac product range designed especially for use in air conditioning and ambient air devices. The frame for the motor and impeller now has a tubular construction with only two brackets. This reduced its weight, increased stability and improved the design. And the fans' aerodynamics were also optimized. For example, at the air intake in the impeller, the location of the external rotor motor in the impeller was adjusted and the impeller blade profile improved. The new aluminum airfoil blades ensure higher efficiency and at the same time, reduce the weight. The optimization results are extremely gratifying: In total, revising and optimizing the RadiPac fans led to an increase in efficiency of over eight percentage points. At the same time, noise emission was



(Photo: ebm-papst)



Fig. 1: On behalf of the Development team, Hartmut Messerschmidt accepted the award certificate. (Picture: ebm-papst)

reduced by over 3 dB(A). The new centrifugal fans operate very quietly.

ebm-papst Mulfingen GmbH & Co. KG
D 74673 Mulfingen

Ploughshare® Batch Mixer FKM in food and pharmaceuticals production

A well-established all-rounder

Lödige's horizontal Ploughshare® Batch Mixers are excellently equipped to meet current production requirements in the food and pharmaceuticals industry. A FKM 1200 demonstrated the potential of these well-established mixers at Interpack.

Lödige's Ploughshare® mixers of the FKM series have been used for decades in the manufacture of high-quality foods and pharmaceutical products. The mixers are suitable for mixing all solid materials, and they also allow the addition of liquids. What is more, the Ploughshare® Batch Mixers provide a space-saving and cost-efficient alternative to vertical high-shear mixers for the moist granulation of tablet masses as part of the conventional production method for tablets.

The horizontal Ploughshare® Batch Mixers of the FKM series are perfect for food and pharmaceuticals production because they combine short mixing times with a very high level of mixing precision and batch reproducibility. This is due to the mechanically generated fluid bed, introduced to mixing technology by Lödige: the Ploughshare® blades are arranged on a shaft and rotate as mixing elements in the FKM's horizontal,

cylindrical drum. This causes the powdery, granular or fibrous components to move three-dimensionally. The turbulence thereby generated in the mixing material prevents the formation of dead or low-movement zones in the mixing chamber, which results in fast and precise mixing. The special shape of the tools means that the radial movement lifts the mixing material from the wall of the drum, preventing the particles from being crushed.

In addition to use purely as a mixing system, the FKM is also suitable for granulation processes. A liquid feed allows a granulate medium to be added to the fluid bed. Granulates can be precisely formed due to the shear forces generated by the interaction between product particles, mixing elements and the mixing drum. With one or more fast-rotating cutter heads, a specific granulate size can be set and lumps dissolved.



The fact that the horizontal Ploughshare® Batch Mixer offers a selection of different mixing geometries and process parameters means that it is ideally suited to multi-functional use.

Gebr. Lödige Maschinenbau GmbH
D 33102 Paderborn

With the acquisition of majority stakes of Super Dry Totech on 04th May 2017 the ASYS Group brings in an additional manufacturer of dry storage systems. The successful development of both companies will continue and be strengthened thanks to the partnership.

Super Dry Totech becomes part of the ASYS Group

By purchasing the shares of the company the executive board of ASYS Group made a strategic decision. The objective is to strengthen and further build up the business area of material logistics with the broadened product portfolio. Super Dry Totech offers innovative solutions in dry storage with a broad range of desiccant dry cabinets and the automated Dry Tower handling and storage system. "The Dry Tower fit perfectly into the concept we pursue in the area of material logistics. We are building on our vision of a fully interconnected production, which includes material logistics as a main topic", buttresses Werner Kreibl, CEO of the ASYS Group, the buying decision. Totech will benefit from the global sales network of the ASYS Group enabling them to grow the business internationally. Jos Brehler, CEO of Super Dry Totech added, "Our new partnership will enable Super Dry to more rapidly advance that business and technology, while providing ASYS with a new and important element for their complete line logistics development."

As a result of the affiliate inclusion of Super Dry Totech into the ASYS Group the product portfolio of the subsidiary company ASYS Cleanroom Technology will be broadened. "We will exploit the synergy effects to our advantage and propel the future development of our enterprise group", confirms CEO Klaus Mang.



Solemnly incorporation of Super Dry Totech into the ASYS Group

ASYS Automatisierungssysteme GmbH
D 89160 Dornstadt

Cherwell Laboratories to highlight cleanroom microbiology solutions at The Clinical Pharmacy Congress

Cherwell Laboratories, specialists in products for environmental monitoring and process validation, will be exhibiting at the Clinical Pharmacy Congress. Held on Friday 12th and Saturday 13th May 2017 at ExCel London, the Congress is the largest clinical pharmacy CPD education programme and exhibition in the UK. A key focus on Cherwell's Stand A49 will be the microbiology requirements for pharmacy aseptic manufacturing, preparation and dispensing.

The Congress aims to provide advanced education for registered pharmacists and pharmacy technicians who want to keep up-to-date on clinical developments, updated on new medicines and maintain their CPD portfolios. The education programme at the Congress has been planned in conjunction with the Centre for Pharmacy Postgraduate Education (CPPE), with leadership sessions from the Royal Pharmaceutical Society (RPS) and new technology sessions in conjunction with the NHS Commercial Medicines Unit (CMU).

As experts in cleanroom microbiology, with 45 years of customer service experience, Cherwell Laboratories understand the microbiology requirements of pharmacy aseptic manufacturing, preparation and dispensing. Representatives from Cherwell will be on hand to offer delegates practical advice and solutions tailored to individual customers' aseptic process monitoring and validation needs.

Andrew Barrow, Sales Manager at Cherwell Laboratories, who will be attending the Congress, comments: "We're looking forward to exhibiting at this event for the first time. Our extensive experience working in the pharmaceutical manufacturing industry allows us to understand the exacting needs of our customers. We fully recognise the importance of providing customers with the best microbiology solution to meet their specific environmental monitoring and process validation requirements. Exhibiting at the Clinical Pharmacy Congress will allow us to meet existing customers and hopefully new contacts face-to-face to discuss their individual requirements."



Cherwell Laboratories product range for environmental monitoring and process validation.

Cherwell Laboratories supplies an integrated range of environmental monitoring and process validation products ideal for use within clinical pharmacies. The Redipor® culture media range for environmental monitoring, sterility and quality control testing includes: prepared agar plates, bottled media, broth bags, vials and ampoules. In addition, the SAS range of active air samplers incorporates portable hand-held units, a compressed air sampling device and an isolator specific unit.

Cherwell Laboratories Ltd OX26 4XB BICESTER
Vereinigtes Königreich

Whether it's computer chips, flat screens or smartphones, solar modules, medical technology or self-driving cars: Chances are that light or laser technology from LIMO is involved. For a quarter of a century, LIMO Lissotschenko Mikrooptik GmbH has helped shape technological progress as a pioneer of the „light age.“ In the process, it has provided customers in related key industries, such as semiconductor manufacturing, flat-panel display production, medical device manufacturing and the automotive industry, with the necessary tools for their quantum leaps of technological innovation.

LIMO – 25 years of excellence in beam shaping

25 years of laser beam shaping made in Germany: Since 1992, global market leader LIMO has continuously delivered technological progress for optical components, beam shaping solutions and application-optimized laser and optics systems – making the company a constant innovative force in industry, business and research for a quarter of a century. Up to now, the potential to increase the speed, efficiency and profitability of industrial production processes with efficient light and laser technology has hardly been realized at all. But LIMO has devoted itself to the determined pursuit of unlocking the rest of this capability. The company's powerful interdisciplinary team is made up of 200 employees from 13 different countries, including 60 scientists and engineers. In addition to its headquarters in Dortmund/North Rhine-Westphalia, which features over 2,000 m² of clean room space and 10,000 m² for development, production and application, LIMO also maintains an international network of sales and service partners, as well as a branch office and company-owned application center in China. As a specialist for efficient beam shaping, LIMO provides innovative optics and highly customizable complete laser systems from a single source – from Germany to anywhere in the world.

LIMO is a veritable pioneer of laser technology, holding nearly 300 patents and reinvesting more than 10 percent of revenues in research and development. Thanks to its numerous collaborations with research institutes like Helmholtz Centres and Fraunhofer Societies, national and international universities, and other R&D institutes, LIMO is a trend-setting international player in the field of laser beam shaping. In addition, LIMO also makes innovative contributions through its participation in research networks for the European Union, the Federal Republic of Germany, and the German State of North Rhine-Westphalia. A number of the company's current projects, such as OSLO, Opti-Bond, PHOTONFLEX, Multisurf and Up-LLPC to name a few, rank among today's most important scientific undertakings in the field of photonics.

Key technology for quantum leaps forward

According to CEO Dr. Guido Bonati, „The secret to our success is the consistent focus on the needs of our customers and partners, who gain access to the key technology for market-relevant innovative advances through our cutting-edge optics and beam shaping solutions.



25 years of LIMO: The optics and beam shaping solutions specialists have been developing innovative technologies for research and industry since 1992, and have constantly unlocked new possibilities along the way. (Image: LIMO)

Our goal is to harness the economic potential of laser light and use technology trends to benefit our customers.“

Progress at what feels like light speed: Founded in Paderborn, Germany with just five employees in 1992, LIMO would already become the global market leader for refractive micro-optics by 1998. In 1999, LIMO would then expand its range of available products and services to include high-power diode lasers and beam shaping systems for all types of laser sources. In 2004, the company would go on to develop the L3 LIMO Line Lasers®, its very own line laser technology for large surface area processing. LIMO would continue to expand by adding an applications center and in-house process development facilities. In 2008, LIMO then receives the German Business Innovation Award for its groundbreaking beam shaping systems based on free-form micro lenses, and in the process shoots to the top spot on the list of innovative German small and medium-sized businesses. Always at the leading edge of technological development, LIMO would introduce a pilot laser system for scalable large-area surface and coating finishing in 2011 before integrating beam shaping systems for the flat-panel display industry in production lines worldwide from 2012 through 2017.

Now, 25 years after it was founded, LIMO's presence in its anniversary year is stronger and more global than ever before after being acquired by the Chinese company Focuslight Technologies. In 2016, company founder Dr. Vitalij Lissotschenko stepped down from his position as LIMO Group president and shareholder, the new corporate management team now consists of CEO Dr. Guido Bonati and Dr. Chung-En Zah. As a major international player in the development of advanced laser-based production technologies and photonic manufacturing processes for the „light age,“ LIMO provides key technologies for future trends in fields like mobility, energy and the environment, and communication and the digital world. This makes LIMO an active participant in shaping the future and an important driver of technological innovation in the 21st century, the century of light.

LIMO Lissotschenko Mikrooptik GmbH
D 44319 Dortmund

Medical mounting solutions from CIM med® receive accolade

The height-adjustable S-series mounting solutions from CIM med® have been rated as the best in the category of medical technology by the INDUSTRIEPREIS 2017 AWARD TEAM – and are now entitled to carry the corresponding certificate and logo. This award recognises especially advanced products that have a considerable level of economic, social, technological and ecological benefit.

The new S-series won over the judges with its optimised design, its user-friendly installation as well as the Cable Integration System (CIS). The CIS, was developed by CIM med® and raises the standard of bedside care by protecting the cables supplying power and data to the patient monitor. It ensures a flawless connections, and also offers huge advantages in terms of hygiene and infection prevention. Germs are unable to settle on exposed sections of cable and the sleek design of the arms allows gives large one-wipe surface areas for ease of cleaning. All CIM med® products, this generation is EN60601 compliant and benefits from a maximum carrying capacity of 22 kilos.

The arms boast a customisable internal rotation stop at every pivot point, making it possible to limit the arms range to suit its use and environment. It is particularly useful when used in anaesthesia, to assist in stability.

The use of the most modern aluminium alloy also reduces the weight of the arms considerably. This also helps with the stability testing of mounts placed on carts as well as reducing transportation costs for delivery. It all adds to the “green thinking” behind the product.

Managing Director Manuela Deverill is very pleased about having been awarded the prize, “Because the INDUSTRIEPREIS 2017 AWARD rewards products that offer maximum customer benefit and



reflects our high aspirations regarding quality and innovation. We consistently aim to align the development of our products to the requirements of the customer and the market. We are absolutely dedicated to raising the clinical standards of medical mounting solutions. It's fantastic to have this recognised by such a prestigious body.”

This means that this year, CIM med GmbH is already able to boast two significant awards. In January the international renowned Munich-based company was awarded the latest ISO 13485:2016 accreditation making them one of the first to have implemented the strict requirements of the new standard in its management system.

CIM med GmbH
D 80939 München

Hohenstein Group establishes the Hohenstein Health Center

With effect from 1 May 2017, the Hohenstein Institute has set up a new centre for textile public health as part of its group of companies in Boennigheim. The Hohenstein Health Center will concentrate specifically on medical textiles, i.e. clothing, textile products or processes which affect human health. Prof. Dirk Höfer is leading the new centre as Medical Director and Managing Director of Hohenstein Laboratories GmbH & Co KG.

The use of textile products in disease prevention and in maintaining and restoring human health in everyday life - and also for medical, caring and hygiene purposes - has increased greatly in scope and diversity. Consequently, many of the users and other people involved in healthcare do not have the necessary clear, up-to-date and scientifically-based information about the benefits, risks, applications and areas of use of these

textiles. Medical textiles in the healthcare sector have been a growth market worldwide for decades, also benefiting small and medium-sized companies producing interesting products, but the framework conditions are going to become much more difficult in future: The changes that will be introduced by the EU Directive on Medical Devices (MDR)



With „ARTUS“, the ARTificial Uterus, scientists at the Hohenstein Institute in Boennigheim have developed the world's first artificial uterus, which helps premature babies to develop by providing sensory stimulation. © Hohenstein Group

which enters into power in 2017 will present new challenges for all textile companies operating in the medical textiles sector. For example, there will be higher specifications for clinical evaluation.

It is against this background that the Hohenstein Health Center will in future be developing and supporting medical expertise on textile products affecting human health, both those that are either already on the market and those due to be launched. It will also be establishing links with the various players in the healthcare sector who deal with this kind of textile, and sharing expertise and new findings within the textile industry and among doctors and consumers. The Hohenstein Health Center will offer specialist medical expertise to support efficient product development, from the initial research concept through to product launch on the market. The main purpose of the new centre will be to support the use of textiles to promote, protect and restore good health.

Hohenstein Laboratories GmbH & Co. KG
D 74357 Hohenstein

Gerresheimer has been crowned a „MINT Minded Company“ this year for the first time by audimax Medien GmbH and the „MINT Zukunft schaffen“ („Creating a fu-ture with MINT“) initiative. The abbreviation MINT stands for academic subjects and professions in mathematics, computer science, the sciences and technology. Gerresheimer trains around 150 school leavers in over twenty different professions at its plants across Germany every year. Good grades in the so-called MINT subjects are an important stepping stone for successful entry into most careers at Gerresheimer, including for process engineering apprentices and students on the dual BEng degree in mechanical engineering or plastics and rubber engineering.

Gerresheimer named MINT Minded Company

„We are especially proud of this award because, as a traditional B2B company, it really means a lot to us to be recognized as an attractive place to begin a MINT career,“ says Thomas Perlitz, Global Senior Vice President for Human Resources, adding that training managers at the plants have already been working hard for several years to successfully recruit, train and encourage talented young people – efforts that are now paying off.

The seven Gerresheimer training centers in Germany offer training in the following MINT professions: Electronics engineer for industrial engineering, system integration computer scientist, industrial electrician, industrial mechanic, mechatronics engineer, screen printing media technologist, technical product designer, process engineer for glass technology, process engineer for plastics and rubber technology, tool mechanic and cutting machine operator.

Glass made in Germany – IHK award for best in year

Gerresheimer's sites, some of which have been home to production facilities for glass packaging for several centuries, include Gerresheimer Essen (North Rhine-Westphalia), Lohr (Bavaria, Lower Franconia), Tet-tau (Bavaria, Upper Franconia) and Wertheim (Baden-Württemberg). Of course, these plants still boast state-of-the-art technology today, with modern and environmentally friendly production facilities. Gerresheimer's production processes are defined down to the last detail, ensuring safety and allowing

it to meet the high quality requirements of its customers, the majority of whom come from the pharmaceutical industry. Stringent, multilevel quality controls ensure that only flawless amber and clear glass bottles are supplied to customers. Gerresheimer's stated aim is to achieve almost error-free production, which requires reliable, experienced and skilled staff more than anything else. That's why the company places great value on training its future specialist staff and managers. This is also clear from the fact that some Gerresheimer apprentices turn out to be the best in the year in their respective chambers of industry and commerce at the end of their training, including Ludwig Fietz, who is now working as an industrial electrician at the „cold end“ in Lohr. His colleague, Martin Rinaldi, who now works as a glass process engineer at the „hot end“, managed the same feat.

Gerresheimer Medical Systems in Pfreimd and Wackersdorf, Bavaria

Gerresheimer Medical Systems manufactures high-quality medical products from plastic in the Upper Palatinate, including inhalers and insulin pens. Among its high-tech pieces of equipment are modern injection molding machines, assembly machines and testing devices. Even more important, however, are the efficiency of its processes and the outstanding work of its staff that make for top-quality products. The center primarily trains process engineers for plastics and



rubber technology.

The benefits of a dual training system are now generating a great deal of interest in the US too. Managers from three technical colleges in the US state of Georgia visited Gerresheimer's sites in Wackersdorf and Pfreimd in December 2016. The aim of the visit was for Gerresheimer to introduce its American guests to the exemplary German training system with its close-knit network of schools, universities and companies in order to introduce a similar set-up at Gerresheimer's site in Peachtree City in future.

Gerresheimer Bünde, North Rhine-Westphalia

Syringes for pharma companies around the world are manufactured at Gerresheimer's Bünde plant in East Westphalia, where apprentices train to become electronics engineers for industrial engineering and industrial mechanics. The course combines theory with practice and enables students to progress towards a BEng in electrical engineering.

Anyone gaining a vocational qualification at Gerresheimer has a good chance of finding employment there after passing their exams because the company trains up the people it needs itself. The same applies to applicants keen to follow a dual curriculum. Earlier this year, Gerresheimer launched GxGo!, a trainee program for young professionals targeted at university graduates.



Gerresheimer AG D 40468 Düsseldorf

Pfeiffer Vacuum presented leak testing solutions for a variety of applications at Interpack and Control

- Leak testing with air
- Leak detection with tracer gas
- Optical emission spectroscopy

Leak testing plays a vital part in quality control in a wide range of applications. Reliable integrity of primary packaging is of crucial importance in the pharmaceutical industry to guarantee sterility and protect drugs from any microbiological substances, oxygen or moisture that may ingress. In the automotive industry, leak testing ensures that various components are operating perfectly, including parts guaranteeing the supply of gasoline. Pfeiffer Vacuum is one of the leading providers of vacuum technology and leak testing solutions. The corporation benefits from more than 50 years of experience in the field of leak detection. At the Interpack and Control fairs, Pfeiffer Vacuum presented test technologies that satisfy numerous leak detection and measuring method requirements: leak detection using air, leak detection with a tracer gas and optical emission spectroscopy.



Pfeiffer Vacuum ASI 35 modular leak detector



Integrity testing of high-sensitivity medication packaging and sealed highly sophisticated parts using Pfeiffer Vacuum AMI

Leak testing with air

At the trade fairs, Pfeiffer Vacuum presented products made by its new subsidiary Advanced Test Concepts, Inc. (ATC) from Indianapolis, USA. The leak detectors that were exhibited work on the basis of leading leak testing technology using air, and so do not require any special tracer gases.

The devices operate according to patented Micro-Flow technology. This technology consists of an integrated micro sensor that works on accelerated flow. A sensitivity of up to $5 \cdot 10^{-4}$ mbar l/s is achieved with this method. This technology is used in the automotive industry, such as for testing power trains and gearbox housings.

A specific use of the Micro-Flow sensor is the Mass Extraction technique, which works on the principle of rarefied gas flow. Testing takes place in vacuum conditions to attain higher sensitivity.

This type of testing is particularly suitable for packaging or enclosed objects, such as pharmaceutical packaging and electronic components, that require to be tested for watertightness. Sensitivity of up to $5 \cdot 10^{-6}$ mbar l/s can be achieved with this method.

Micro-Flow and Mass Extraction technology offer a number of advantages over other

leak testing methods that work with air. The speed of testing and their low susceptibility to ambient changes are notable examples of this. They also stand out due to their higher sensitivity and accuracy, and do not require calibration on a daily basis.

Leak detection with tracer gas

The ASI 35 leak detector delivers excellent performance in integral and localizing testing methods, as well as combinations of the two, using helium or hydrogen as a tracer gas. The device combines high performance, reliability and repeatability with extremely short cycle times. This leak detector is designed for demanding testing situations with minimal background signals and enables short overall cycle times. The robust iridium filaments also ensure long durability. Particular applications for this device are the automotive industry but also the field of electronic and mechanical components, and refrigeration and air conditioning.

Optical emission spectroscopy

It is important that packaging preserves the stable condition of particularly moisture-sensitive medication such as dry

powders for inhalation; at the same time, it must also prevent biological substances from the packaging from ingressing into parenteral drugs. This necessitates the use of high sensitivity integrity testing. The method used by the AMI measures leak tightness using a patented process that does not require a tracer gas.

Instead, this method uses the existing gas mixture in the cavities inside the packaging to perform high-sensitivity testing over an extended measuring range. The procedure offers great flexibility: a variety of different packaging types such as blister packs, pouches, vials, plastic bottles, and sealed parts such as battery casings, can be tested in this way.

A big advantage of the AMI is its wide measuring range that also offers higher sensitivity than conventional tests. As a result, the AMI device can perform helium leak testing and rough leak testing with just one device. The procedure delivers deterministic test results with high repeatability, irrespective of the user, and with reliability and accuracy that comply with USP 1207.1.

Pfeiffer Vacuum GmbH
D 35614 Asslar



International trade fair for cleanroom technology uses the special showcase “Living in Space” to demonstrate how production for space takes place.

From cleanrooms to outer space: Cleanzone trade fair at Techtexsil 2017



17th - 18th Oct. 2017: CLEANZONE 2017, Frankfurt am Main (D)

Textile innovations for cleanrooms must satisfy the most demanding requirements

Fascination, science fiction and visions of the future: people have long been enchanted by the dream of colonising space and the question of whether there may be life – even intelligent life – beyond our blue planet. Satellites and space probes sent on missions of exploration must not only work perfectly – they must also be sterile, to ensure that their findings are in no way compromised by biological contamination. That is why these highly complex space vehicles are built and cleaned in cleanrooms.

Cleanzone, the international trade fair and congress for cleanroom technology, will be demonstrating how cleanroom technology works at the special showcase “Living in Space” at Techtexsil from 9 to 12 May 2017 in Frankfurt am Main. The special showcase, which was created by Techtexsil in collaboration with the European Space Agency (ESA) and the German Aerospace Center (DLR), will use the example of space travel to provide a practical and entertaining look at the variety of technical textiles and their processing. Participants in Cleanzone’s presentation include the Fraunhofer Institute for Manufacturing Engineering and Automation (IPA), the Adriatic Institute of Technology (A.I.T.), Initial Rentokil, Alsico Hightech and Colandis in cooperation with Clear & Clean.

Fraunhofer IPA, for example, is presenting a film of the new, state-of-the-art cleanroom that the institute designed for the ESA

in the Netherlands. Among other things, this cleanroom is where the Mars rover for the “ExoMars” mission will be cleaned. The Adriatic Institute of Technology is presenting a desktop model of its “Shellbe” mobile cleanroom. The “Shellbe” module is notable for its ability to be deployed in a wide range of regions and under extreme conditions. In order to satisfy the demanding requirements of work in cleanrooms, textiles – regardless of whether they are mops, clothing, hoods or cloths – must have some special characteristics. In the showcase area, visitors will be able to view cleanroom suits and mops offered by Initial Rentokil – including CleanVision, the cleanroom suit that was the winner of the Cleanroom Award at Cleanzone in 2014. The fact that high-tech and fashion do not have to be mutually exclusive is demonstrated by Alsico Hightech’s material and design study for a cleanroom suit. Colandis and Clear & Clean are jointly presenting new textile developments for the field of micro-technology production.

“From cleanrooms to outer space” is also one of the top themes at the Cleanzone trade fair on 17 and 18 October 2017 in Frankfurt am Main. This theme will also be addressed as part of the trade fair’s extensive supporting programme, and it is the topic of the “Measurement technology / Project qualification / Aerospace” congress module on Wednesday afternoon, for example.

Cleanzone’s interdisciplinary approach makes it useful for all industries where production is carried out under cleanroom conditions, and focuses equally on life sciences and micro-technology. As a result of increasing digitisation and the associated increase in the complexity and sensitivity of products, cleanroom technology continues to grow in importance worldwide. The products and services on offer at the trade fair cover the entire cleanroom production value chain, extending from the design, planning and construction of a cleanroom to its validation/qualification, operation and monitoring. In October 2017, Cleanzone will be taking place in Hall 1.2.

cleanzone

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Record-Level International Attendance

interpack 2017: 170,500 Visitors filled Exhibitors' Order Books



The avid interest taken by exhibitors in the run-up to interpack 2017 that brought the world's biggest and most important trade fair of the packaging sector and related process industries record attendance of 2,865 companies, was followed by trade fair days from 4 to 10 May with high spirits and further records: 74% of the approximately 170,500 visitors travelled to Düsseldorf from abroad – three quarters of them were decision-makers.

The high percentage of German and international top-notch experts from a total of 168 countries made for highly satisfied faces among exhibitors, who delighted at promising business contacts and even concrete deals concluded in the seven-digit range. Visitors in turn benefitted from an internationally unrivalled multitude of innovations on display and a unique market overview. This was also reflected in the corresponding high scores they gave the trade fair: just under 98% stated in the official survey that they were satisfied or very satisfied with their visit to interpack 2017. They took an interest in all ranges and segments of interpack but packaging media received significantly more attention than at the previous event.

"interpack is an absolute must-go event for companies in this industry and provides unique momentum. Every three years it is not only a one-of-a-kind performance showcase but also the place where suppliers and customers from all over the world get together to network and do business," underlines Friedbert Klefenz, President of interpack 2017.

Commenting on this Hans Werner Reinhard, Managing Director at Messe Düsseldorf, explained: "interpack has again impressively confirmed its claim of being the world's most important event and innovation platform for the industry every three years. Due to the concept of the newly created global 'interpack alliance', interpack as its flagship has also obtained more exposure in the growth markets abroad thereby attracting even more high-calibre experts to Düsseldorf."

Top Trends: Digitalisation, Industry 4.0 and Sustainability

Proving a top trend at many stands was the further digitalisation of production processes on the way to Industry 4.0 applications. Production linked along these lines makes it possible to manufacture personalised packaging efficiently or to guarantee traceability, to name but two options. Furthermore, the modular design of packaging machines and process lines and optimised digital operating concepts play a pivotal role in order to reduce complexity in manufacturing and achieve the highest degree of flexibility possible for changing batch sizes or product versions. Some companies even focused on virtual reality applications that allow ma-

chines or equipment to be experienced historically in order to manage complexity better even in the manufacturing process of machinery and equipment as well as in training and operation. The sustainability theme also remained "omnipresent" at interpack 2017. Companies presented improved resource efficiency in terms of both the material used with ever smaller wall thicknesses and of manufacturing processes. Moreover, alternative packaging materials are gaining ground.

Successful Special Features

Not only the exhibitors had innovations in store for Industry 4.0 – the interpack special show of the same name organised in cooperation with the German Engineering Federation VDMA (Verband Deutscher Maschinen- und Anlagenbau e.V.) also showcased the latest ideas and approaches and was received extremely well by visitors. Proving one of the major attractions here was the Demonstrator "smart4i" that produced and packaged personalised powerbanks. Here, not only the entire workflow was digital from online ordering to tracking and tracing, but the machine itself was also installed in record time thanks to a virtual twin and the networked planning in cooperation with several universities.

SAVE FOOD Congress and innovationparc

Six years after SAVE FOOD was launched, the initiative has grown into a broad-based alliance of over 850 international members from industry, associations, NGOs and research institutes. One of the milestones of the Initiative is the SAVE FOOD Congress at interpack; its third edition held on 4 May was highly praised by delegates for its broad thematic coverage. The Congress pursued a multi-dimensional approach in order to address the issue of food losses and waste comprehensively. Participants included high-ranking political representatives as speakers such as Vytenis Andriukaitis, EU Commissioner for Health and Food Safety, and Gargi Kaul, Joint Secretary & Financial



Photo: Messe Düsseldorf, Constanze Tillmann

interpack 2017: 170,500 Visitors filled Exhibitors' Order Books

Adviser at the Indian Ministry for Food Processing Industries, as well as committed NGOs activists and representatives from business. Over the course of the Congress the perspective changed, focusing either on global views or national details and conditions – with India as a focal theme this time. The Food and Agriculture Organization of the United Nations (FAO) presented results of a study in India funded by the Initiative; it had been carried out with the aim of identifying the mechanisms involved in losses of important base foodstuffs and of finding approaches for solutions.

As part of the congress the SAVE FOOD partners Messe Düsseldorf and FAO also signed a memorandum of understanding, in order to fix the cooperation for the coming four years. "It is an absolute hallmark of interpack to focus on attention-grabbing special topics. We are therefore delighted to be able to also fight food losses and waste with our partner, the FAO, and in cooperation with the industry and other supporters in future, too. This means we are committed to a good cause and communicate the potential that the packaging industry and related process industries hold in this context at the same time," explains Werner Matthias Dornscheidt, President & CEO of Messe Düsseldorf.

innovationparc, the special show organised as part of interpack 2017, also addressed the theme of SAVE FOOD and presented very practical solutions for minimising food losses and waste. These also included the finalists and winners of the WorldStar Awards of the World Packaging Organisation (WPO). Awards went, for instance, to plastic bags for fruit that can enormously prolong shelf life thanks to built-in ripening-gas absorbers.

components: New Concept Received Very Well

The concept of "components – special trade fair by interpack", which had been revised for interpack 2017, was received very well by visitors. According to the feedback received from the extremely satisfied exhibitors the quality of visitors was also high. "The decision to place the second "components" after a more subdued debut three years ago, in a central location of

the exhibition centre now and to hold it in parallel with the complete interpack, proved absolutely right. There had never been any doubts about the importance of this theme anyway since upstream suppliers with their components and software for packaging and process technologies play a key role for the digitalisation of manufacturing processes all the way down as Industry 4.0 approaches. We will therefore also establish "components" at trade fairs of interpack alliance abroad in future," added Bernd Jablonowski, Global Portfolio Director Processing & Packaging at Messe Düsseldorf.

The coming interpack will be held in May 2020 in three years' time at Düsseldorf Exhibition Centre – then with a completely new South entrance and a new Hall 1. The exact dates will be published at a later date.

May 2020: interpack 2020, Duesseldorf (D)

Messe Düsseldorf GmbH
D 40001 Düsseldorf

Optimized Can Filling and Seaming Machine

As specialist in building individual machines and complete lines to fill and close cans and jars with powder or dry products Swiss Can Machinery AG (SCM), Berneck/St. Gallen, presented itself on the trade fair Interpack. The company has a leading market position concerning can filling and seaming machines that work under modified atmosphere.

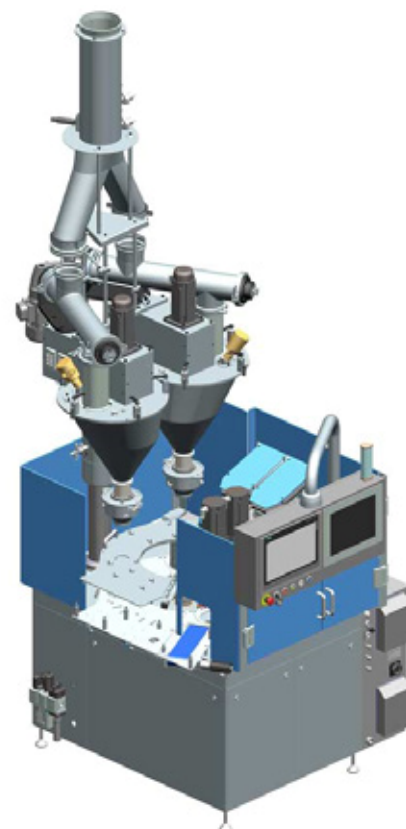
With the help of the innovative gassing systems V-Matic including evacuating and G-Matic cans with less than 0.5 respectively 2 per cent residual oxygen can be manufactured. Moreover the facilities fulfill high hygienic standards and possess all necessary certificates. By replacing mechanical aggregates with electrical ones, cleaning and changeover times are considerably minimized.

At this year's Interpack, SCM showed a further developed model of type G-Matic 127. New technical features of this can filling and seaming machine are more precisely operating level indicators and a simplified

gassing control by self-calibration. Also integrated are Oxymats by Siemens for permanent supervision of residual oxygen, eventually causing a production stop. Another novelty: all steel components now are made of best V4A- respectively AISI 316 quality.

The other production program of Swiss Can Machinery AG includes semi-automatic can seaming machines, empty can cleaning and disinfection machines and cappers including lid destacker, for example. Moreover, conveyors and additional transport equipment are offered. The most important customer group are producers of baby food, especially manufacturers of milk powder. Other clients come out of the coffee, sweets, snacks and pharmaceutical industries. Beside Europe the Asian area is a constantly growing market for the extremely export-oriented company.

Swiss Can Machinery AG
CH 9434 Au



Graphic view of can filling and seaming machine G-matic 127 by Swiss Can Machinery (Foto: Swiss Can Machinery)

Bosch presented connected solutions for higher process and product safety at interpack 2017

Industry 4.0: a new level of quality

- Focus on highest product quality for end consumers and patients
- Transparent and safe processes thanks to machine data in real-time
- Future-proof serialization – for pharmaceuticals and food products

At interpack 2017, Bosch Packaging Technology showed how Industry 4.0 solutions help to achieve higher process safety and product quality. “Especially in the pharmaceutical and food industries, both manufacturers and end consumers expect absolutely safe products,” said Dr Stefan König, president of Bosch Packaging Technology. “The key to this safety are transparent and controllable manufacturing processes, which comply with international guidelines. Our Industry 4.0 solutions are designed to support customers in optimizing their processes – and in making their products even safer for end consumers and patients.”

Consistent process safety

Detailed information about each machine, line or process status is provided by the Condition Monitoring platform. It records data in real-time, enabling maintenance staff to react before cost-intensive process deviations or downtimes occur. An example shown at interpack is the monitoring of filters, which ensure the consistent sterility of production processes. Special sensors within the machine control the sterilization status of these filters. In case pre-defined parameters are infringed, operators receive a notification. This enables them to initiate maintenance activities quickly, and to prevent product loss due to non-sterile processes.

To ensure constant product quality, all process steps are subject to strict regulations. This is particularly true in the pharmaceutical industry, for instance regarding electronic records and signatures. The Bosch Pharma Manufacturing Execution System (MES) enables pharmaceutical companies to take the step towards a transparent, paperless production. To this end, Bosch works with the software provider Parsec Automation Corp. and configures the MES software TrakSYS according to the requirements of the pharmaceutical industry. Together with a complete audit trail, it includes all necessary functionalities to manage machines and processes, and to generate electronic batch records (EBR), thus facilitating the approval for

batch releases by qualified persons. The Bosch Pharma MES can be integrated into any Bosch or third-party machines and lines, as well as into complete manufacturing facilities.

Counterfeit-proof packaging

When it comes to packaging, pharmaceutical manufacturers must also comply with strict regulations. The unambiguous serialization of secondary packaging aims at protecting patients from counterfeit medicine, and ensures the traceability along the production chain. The Track & Trace solution from Bosch fulfills both requirements. It consists of the CPI software and machine modules, which are connected within the serialization process. At the machine level, CPS modules print data matrix codes onto folding cartons, verify the codes and, if required, equip the packaging with a tamper-evident seal. The CPI software integrates the CPS modules into the company IT. This ensures a reliable serialization – from the allocation of the serial numbers through to the last aggregation step.

“In the food industry, the requirements regarding product safety are also rising continuously,” says König. “While we already drew on the comprehensive know-how of the Bosch Group during the development of our Track & Trace solution, for instance from the automotive division, we can now transfer this expertise to the food industry.” At interpack, Bosch showcases such an application for yoghurt packaging for the first time. The packaging machine is connected with the CPI software. The software transfers the information directly into the Bosch IoT Cloud. Thanks to the QR code printed onto the lid of the yoghurt cup, end consumers can verify whether they have bought an original product. “The cloud further enables producers to actively communicate with their customers,” König explains. “In case of a faulty product, consumers can immediately inform the manufacturer – and support them in securing the quality of their products.” Apart from product verification, manufacturers also make use of well-known online marketing possibilities via the code by adding further, product-specific information such as ingredients, allergens or recipes.

May 2020: interpack 2020, Duesseldorf (D)



BOSCH
Technik fürs Leben



Protecting patients: The Track & Trace solution from Bosch for the pharmaceutical industry ensures the unambiguous serialization of secondary packaging, as well as the traceability along the production chain. (Picture: Bosch)

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Ideal for developing new packaging materials and process technologies

KCP: Highest levels of flexibility



The latest developments by Bausch+Ströbel in the field of space-saving equipment offering highest levels of flexibility in small-batch production are precisely targeted at market needs – as evidenced not only by the positive feedback from pharmaceutical companies and manufacturers of packaging materials but also by an award the southern German company received for its KCP filling and closing machine in the “Interphex Efficiency Champion” category at the Interphex trade show (International Pharmaceutical Expo) in the US.

The KCP owes its flexibility not only to the robots which allow containers to be transported in any direction required. The machine has also been designed for up to four workstations that can be arranged in flexible configurations and easily interchanged by the operators. The KCP is capable of processing virtually any type of standard containers, such as vials, syringes or cartridges, with a minimum of changeover time. A wide variety of processing steps, such as crimping, inspection, etc., can be integrated into the work sequence.

As the machine employs the same control and filling technologies as high-speed machines, developed processes can easily be scaled up to large production lines. This makes the KCP a particularly attractive investment for the development of new packaging materials and process technologies. West Pharma (Exton, Pennsylvania, US), a packaging material manufacturer, is currently cooperating with Bausch+Ströbel to greatly expand the range of applications in this specific field.

Erik Anderson, Principal Product Development Engineer at West Pharmaceutical Services, is very pleased with what has been achieved so far:

“To characterize the performance of all fill finish process variations as well as all closures, seals, vials, cartridges and syringes (commercial and prototype) requires the use of an extremely robust, innovative, and flexible filling platform. After much scrutiny via a West user requirements matrix vetted against a wide range of well-established OEMs, this project was ultimately awarded to Bausch+Stroebel because of their ability to meet the majority of user requirements, innovative culture, track record of proven performance, and technical competency.

Since project inception, multiple challenges have been overcome, processing capabilities have increased, and new applications for the use of this custom filling platform have been identified. Some of these applications include performance characterization of containers and closures, machinability performance evaluations, and testing of novel fill finish process improvements. West is very pleased with the progress to date with Bausch + Stroebel and is looking forward to continued success.”

How exactly does the machine work?

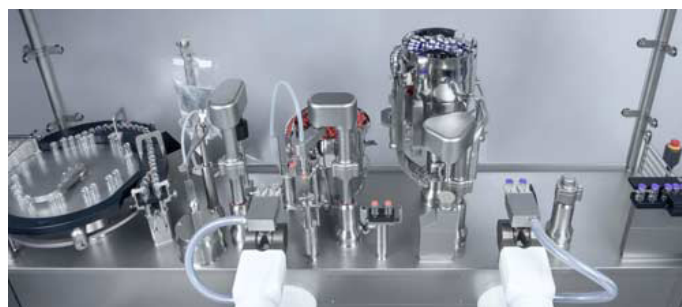
One example of a possible application is vial filling: here, the machine is set up with a filling station, a stopper insertion station and a closing station for crimp caps; in addition, it has an IPC scale.

The vials are conveyed to the individual workstations by two cleanroom robots which can transport up to four containers at the same time. It is possible to process not only individual containers but also containers in nests.

The machine is capable of in-process control (either 100 percent or at regular intervals). Faulty containers are automatically discharged as rejects. In this configuration, the KCP processes up to 1,000



KCP: With its two clean room robots, this filling and closing machine provides a wide range of applications for small-batch production. The special feature of the B+S machine design: the robot arms are never above the container but always below it, thereby ensuring an optimal laminar air flow.



An example of the possible equipment: this machine has been set up with dosing, stopper insertion and cap crimping stations. IPC scales are also integrated.

containers per hour.

This is just one example from a wide range of features and configurations. Customers can choose from various dosing systems for liquid or powder products and from a number of closing units.

Stable containers can be loaded into trays after processing, if required.

The choice of alternatives is very wide. The conversion to a different container size or other dosing method takes very little time. As for cleaning, here too the KCP is uncomplicated: the machine structure permits easy but thorough cleaning and the work area including the robots can be decontaminated with H₂O₂. Another special feature of the B+S machine design: the robot arms are never above the container but always below it, thereby ensuring an optimal laminar air flow.

With the KCP, Bausch+Ströbel can supply an extremely flexible filling and closing machine for small batches which shows a high performance (the model described above can process up to 1,000 containers per hour) and at the same time can be converted easily and is therefore soon ready for highly variable production processes.

May 2020: interpack 2020, Duesseldorf (D)

Bausch + Ströbel Maschinenfabrik Ilshofen GmbH+Co. KG
D 74532 Ilshofen

VarioSys: A modular construction system with a wide range of configurations

VarioSys features innovative technology for quick changing of machine modules within a production isolator. Bausch+Ströbel developed this production system in cooperation with Swiss isolator specialist SKAN. The system is suitable for a vast range of applications because a special isolator can be combined with various machine modules. Moreover, several modules can be linked in series with a sterilizing tunnel, cleaning machine or freeze-drier to form a production line.

Combining an isolator with machine modules specifically means that a production module can be moved out of the isolator just like a work bench and can be replaced by another module. A special inflatable gasket ensures that the isolator and production module are connected securely and hermetically sealed.

VarioSys in motion: VarioSys Move

Interchanging modules has been really straightforward already, but a new feature we have added facilitates the machine operators' job even more:

Now, the modules can be interchanged automatically. VarioSys Move brings machine modules fully automatically from the parking position to the isolator and back again. The modules are precisely transported into the PSI-L isolator or into the parking position along an optical track. In the parking position, the transport system is recharged automatically.

At interpack, a full-scale model showed how exactly the system works: a B+S module for processing syringes in nests, SFM 5105, is in-



VarioSys: A highly flexible and at the same time compact and time-saving system suitable for small-batch production. Several components can be linked in series to form a production line, as required.

terchanged fully automatically with a bag-filling module from Harro Höfliger, one of our Excellence United partners. Here, VarioSys Move transports the modules into the isolator fully automatically, following a programmed sequence. Alternatively, the modules can be controlled semi-automatically: an operator uses a remote control panel to bring the modules to the isolator – from there, they are transported into the isolator in a precise and fully automatic manner. One transport system can be used for several machine modules.

Benefits for the customers:

- Easy handling; no physical effort is required
- Precise positioning; no operator intervention is required
- The correct module is in the right place - guaranteed
- Machine modules can be navigated more easily (for safety reasons, the castors on the modules must not be designed to swivel).

At interpack we presented the Harro Höfliger module as well as the Bausch+Ströbel SFM 5105, a fully automatic intermittently operating machine for filling and closing of ready-to-use disposable syringes, vials or cartridges in nests and tubs. The machine operates at a maximum speed of 4,200 containers per hour.

New ampoule processing module presented at interpack

VarioSys is continually enhanced with the addition of new modules. In Düsseldorf, we are presenting a new machine module for processing ampoules. This module achieves up to 6,000 containers per hour at 100 percent IPC.

As with all VarioSys modules, our engineers had to master the challenge of fitting all functions into a narrow, confined space – but the functions still had to be well arranged and operator-friendly. They clearly met their mark with the new AFV 5105 machine module for processing ampoules. The two-head machine features a walking beam transport system, in which the ampoules are clearly visible, and is overall well arranged while offering a wide range of functions and operating at high speeds.



The underlying principle for this new solution is extremely simple in practice: A special isolator enabling production in cleanroom class A conditions can be equipped with individual production modules that fit on the lock-and-key principle.

VarioSys: A modular construction system with a wide range of configurations

The machine version on display processes 6,000 ampoules per hour. It is possible to activate 100 percent IPC – without any speed reduction. The module can be fitted with any of our standard dosing systems, it has an automatic burner ignition device and can handle closed ampoules as well. Moreover, the ampoule tips are actively extracted from the machine. The dedicated extraction device can be set up inside the cleanroom, or in the technical area to save space.

Wide range of VarioSys machine modules

Further examples of VarioSys production modules are:

- a module which can accommodate table-top lab equipment or semi-automatic machines in individual configurations, as required.
- a fully automatic filling and closing machine (KSF 5105) or closing machine (KS 4105) for bottles or vials with a maximum speed of 3,600 containers/hour.

Utmost flexibility is achieved by the number of different dosing

systems which can be provided, for example: peristaltic pumps or valveless rotary piston pumps for liquid products and auger dosing units for powder products. Single-use dosing systems can easily be fitted as well. The air flow pattern in the isolator can be adapted for safe processing of highly potent or toxic products.

VarioSys is a production system suitable for small batches that is very compact and time-saving, can be changed over quickly, can individually combine a wide range of components and can easily be adapted to changing needs by adding enhancements – while keeping investment costs low and qualification and validation periods short because the machines are standardized. This is a decisive advantage when under time constraints for the launching of new products.

May 2020: interpack 2020, Duesseldorf (D)

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The Triple Wow Effect

- **Arburg: Host of “Design Talk” for Design Tech**
- **Renowned industrial designer Jürgen R. Schmid visiting Lossburg**
- **The importance of excellent product design on the example of the Allrounder 1120 H**

On Thursday, April 6, 2017, the “Design Talk” of Ammerbuch-based design office Design Tech was held at Arburg. The event revolved around the question of how much design is required for the making of high-quality capital goods. In front of an audience of high-level representatives from the Baden-Württemberg business community, Juliane Hehl, Managing Director of Arburg, and Heinz Gaub, Arburg Managing Director Technology, talked to Jürgen R. Schmid, Managing Director of Design Tech about the designer’s concept of a triple wow effect.

The “Design Talk” was held in the exclusive ambiance of the Customer Centre Lounge and was moderated by the popular TV host Markus Brock. The audience gained in-depth insight into the significance of machine design and the decision and development phase of the new Arburg injection moulding machine. With visible pride, Jür-

gen R. Schmid declared: “Our goal was to achieve a triple wow effect: The design of the Allrounder 1120 H already draws attention from a distance of 20 meters. Close up, it reinforces the impression of high quality. The third wow comes when the injection moulding machine is used, and users experience its outstanding, innovative technology and ergonomics.”

At Arburg, machine design has been a priority for decades

Juliane Hehl, the managing partner in charge of marketing, pointed out the high priority that design has been accorded at Arburg for decades: “Under our motto ‚ugly doesn’t sell‘, even Arburg’s first standard machine in the 1950s was continuously improved using a wooden model until the engineers had a design that adequately mat-



At the “Design Talk” moderated by TV host Markus Brock (right), Arburg Managing Director Juliane Hehl, Design Tech CEO Jürgen R. Schmid, and Arburg Managing Director Technology Heinz Gaub offered interesting insights into the development of the new Allrounder 1120 H machine. (Photo: Arburg)



The design highlights of the new Allrounder 1120 H machine were presented by Jürgen R. Schmid (4th from the right), together with Arburg Managing Director Juliane Hehl (2nd from the left) and Managing Director Technology Heinz Gaub (2nd from the right). (Photo: Arburg)

The Triple Wow Effect

ched the high-level technology.”

Another milestone was the colour change of the machines from Reseda green to the mint green and canary yellow combination, which she initiated in 1995 and which Arburg is known for all over the world today.

“After another 20 years, the next decisive step was to involve external design experts in the development of the new Allrounder 1120 H from the start, in addition to our in-house technology experts”, Juliane Hehl explains. “As the shareholders, we knew from the beginning that our new flagship product also required a visionary design.”

Arburg stands out for its boldness in design

Jürgen R. Schmid had a clear answer to Markus Brock’s question about the role of product design in mechanical engineering: “Among 100 companies, only ten engage with this topic, and only one at Arburg’s level.” In this context, he highlighted that while machine production is engineering-driven by its nature, it is still necessary to use the full range of options and differentiation factors, including design – just like Arburg did in its cooperation with him.

“Over many discussions, we compiled numerous pieces of information in order to understand not only the technology, but also Arburg as the brand that communicates the design. A great challenge was to include the ergonomics and functionality of this high-end machine in our considerations. We approached the matter carefully



At a walking tour of the company, Arburg CTO Heinz Gaub (5th from the right) explained the technological highlights of the new Allrounder 1120 H machine. (Photo: Arburg)

and really pushed the envelope at Arburg”, the designer said. “I think it’s sensational that Arburg settled for our most daring and visionary proposal.” This is even more relevant when one considers that the new design isn’t just intended for these large machines but will be successively implemented across the entire portfolio.

Great challenge for engineers and designers

CTO Heinz Gaub continued in the same vein: “During development, we always needed to keep an eye on the machine’s performance and feasibility of production. This was a great challenge, which we successfully mastered and that we and our engineers are very proud of.” With a smile, Gaub added that engineers also appreciate good, functional design, an impression that Juliane Hehl was able to confirm by the reactions from the developer teams at the machine’s presentation at the K 2016, the world’s leading exhibition for the plastics industry.

The Allrounder 1120 H wows international experts

“Arburg and Design Tech absolutely nailed it with the Allrounder 1120 H. The machine’s fantastic reception worldwide has become apparent both at the K 2016, the world’s leading exhibition of the plastics industry, as well as at the Arburg Technology Days in March 2017”, Juliane Hehl reports about the thoroughly positive feedback from customers, technical journals, and even the competition.

Design of the future: the Allrounder 1120 H with Gestica controller

After inspecting the Allrounder 1120 H with a Gestica controller as part of a tour of the company, the participants of the Design Talk unanimously subscribed to this opinion. “The machine stands out not only for its size, but also for the leading-edge design of the machine and controller by Design Tech”, said Heinz Gaub, who explained the technological innovations of the Allrounder. At the event, the Allrounder 1120 H showcased its high performance with the fully automated production of the coveted Arburg folding step stool that also was developed in cooperation with Design Tech.

Tour of the company highlights the products and history of Arburg

The walking tour of the company also included the Customer Center and the “Evolution” company museum, where CTO Heinz Gaub explained about the function of injection moulding machines and gave the audience an overview of the family-owned company’s success story. The exhibits of the Evolution museum include Arburg’s first standard machine from 1956, where design already played a role, as well as the Freeformer for additive manufacturing of plastic parts where Arburg collaborated with Design Tech for the first time. This machine was introduced in 2013 and received a Red Dot Award in 2014.

Presentation highlights the importance of product design

The event was rounded off by a presentation titled “From Sales to Being Purchased” by Walter Zimmermann, a renowned business expert, coach, and author. He focused on the complex topic of “perception” and the significance of product design. This topic, as well as Arburg’s new machine and its outstanding design, were among the subjects of intensive discussion at the final get-together afterwards.

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Blow injection moulding on BOY- injection moulding machines

– two processes on only one machine

Whereas injection moulding and air-blowing processes were used on different machine designs up to now, BOY now combines both processes on a BOY injection moulding machine. With the support of the European Regional Development Fund and the State of Rhineland-Palatinate, the development of this combined process was completed. As a pilot project, small bottles for eye drops were manufactured on a BOY 60 E in clean room design.

In the first step, four preforms are injection moulded, rotated 180 degrees around an index plate and then inflated with compressed air to produce the finished bottle contour in the same mould. The finished eye drop bottles are packaged directly after demoulding in the clean mould area of the clamping unit and carried off by a conveyor belt.



Illustration of the preform and fully blown eye drop bottle

  Rhineland-Pfalz

The development of the injection blow moulding process on BOY Injection Moulding Machines was supported by the European Regional Development Fund and the State of Rhineland-Palatinate



Illustration of the injection moulding tool

Air-blowing on an injection moulding machine is suitable for smaller hollow bodies, such as cosmetics, food or pharmaceutical bottles. The cost of the production machine – in this case a BOY injection moulding machine – is significantly below the cost of a pure injection moulding machine. One benefit of air-blowing is the possibility of manufacturing even more complex contours at the bottle neck extremely precisely, which is only possible to a limited extent in traditional blow mould processes.

Using a manifold system developed specifically for this application, the preforms are injected without sprue so that no waste is produced in bottle production. Unlike with blow moulds, the bottle is finished at the end of the blowing process. No material used to seal the mould body needs to be cut and removed.

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Excelling in Continuous Manufacturing

interpack 2017: **Bosch presented Xelum platform**

- Highly precise dosing of smallest amounts of API
- From laboratory to production without scale-up
- Integrated process and quality control

May 2020: interpack 2020, Duesseldorf (D)

At interpack 2017, Bosch Packaging Technology introduced the newly developed Xelum platform for the continuous production of oral solid dosage (OSD) forms. The platform combines dosing, mixing, granulating, and tableting in a continuous process. "Future-proof manufacturing systems must work efficiently, be user-friendly and fulfill the requirements of all pharmaceutical companies. This includes shorter development times with less API consumption, a faster transfer from development to production, more flexible batch sizes, as well as the integration of quality assurance into the process," Fritz-Martin Scholz, product manager at Bosch Packaging Technology, explained. "These requirements, combined with Bosch's process expertise and experience, led to the development of the Xelum platform."

New principle, proven technology

In continuous manufacturing, the typically separated process steps of batch production take place automatically and without interruption in a compact unit. While designing the Xelum platform, Bosch relied on a combination of proven processes and most recent technology: "On the basis of our innovative granulation technology, we developed a new system for continuous production, which also enables manufacturers to precisely dose even the smallest amounts of API," says Scholz.

The Xelum platform offers pharmaceutical manufacturers the accustomed advantages of the granulation technology developed by the Bosch subsidiary Hüttlin. This comprises a unimodal particle size distribution, as well as especially good flow and tableting properties of the granules, and high product yields. Moreover, the integrated Xelum tablet press ensures easy tableting. "As a result, the system significantly simplifies the development and approval process for the user," says Scholz.

Fast transfer from development to production

Transferring processes developed in the laboratory to production machinery is often a big challenge for pharmaceutical manufacturers. The continuous process of the Xelum platform provides either a direct transfer without scale-up from R&D to production or supports the de-

velopment process with an integrated, automated DoE (design of experiments) function.

Thanks to intelligent sensors, all ongoing processes can be recorded inline, and the quality characteristics can be controlled at any stage of production. The design of the system ensures that no complex measurement or control technology is required. Further, up to the final dosage form, all ingredients can be easily traced back thanks to the controlled product flow through the system. "With Xelum, we are taking the decisive step forward from batch production to continuous OSD manufacturing," Scholz summarized.



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Efficient tableting on the Xelum platform: The integrated Xelum tablet press connected to the human machine interface (HMI) of the Xelum platform ensures efficient tableting. (Picture: Bosch)



Granulation technology on the Xelum platform: The Xelum platform offers pharmaceutical manufacturers a unimodal particle size distribution, as well as especially good flow and tableting properties of the granules, and high product yields. (Picture: Bosch)



Spotlight on digital start-ups in Hall 15

The New MEDICA LABMED FORUM focuses on the latest trends in laboratory medicine in Hall 18



The latest trends in laboratory medicine will be zoned in on and discussed at the new MEDICA LABMED FORUM at the world's biggest medical trade fair, MEDICA, from 13 to 16 November 2017 in Düsseldorf. Under the key theme "The Interdisciplinary Fascination", laboratory medicine, molecular pathology, microbiology, medical technology and life sciences present themselves as drivers of innovation, producing new stimuli for the entire medical sector.

Four themed days proffer a range of exciting presentations and panel discussions on the following highlights: Preventive screening tests for cancer, cardiac and circulatory conditions, innovative diabetes diagnostic tools, infection and migration. The events all take place between 11 A.M. and 4 P.M. and are free for trade fair visitors with MEDICA tickets. The Cooperation Partner for the content for the MEDICA LABMED FORUM in Hall 18 is the medical publisher Trillium.

Hall 18 is a modern structure created from lightweight materials, located centrally between Halls 10 and 16. This temporary structure was specifically constructed for exhibitors from the MEDICA sectors of laboratory technology and diagnostics, who have been located in Halls 1 and 2 up until now. Background information: The South Entrance to the Messe Düsseldorf trade fair centre is being completely renovated, due for completion in summer 2019. Equally, the old Halls 1 and 2 will be replaced by a new-build hall. The new Hall 1, measuring 158 metres in length and 77 metres in width, with over 12,000 square metres of floor space, will be around the same size as Halls 8a and 8b once it is completed.

Extensive infrastructural remodelling is also occurring in the world of healthcare, and not just in Germany. The digitalisation of medical care processes is gaining significant momentum. More and

more healthcare applications are available for smartphones, tablets and wearables, and are being used more and more often. 45% of German smartphone owners are already using health apps and another 45% can see themselves using them. Furthermore, 60% of Germans approve of the concept of an electronic patient file that could be used to store their medical data centrally (Source: Bitkom/ Bayerische TelekomAllianz BTA).

These favourable starting points for new eHealth applications have produced exciting business options, especially for creative start-ups, whatever their focus: innovative services, smart products or software applications. The new MEDICA START-UP PARK in Hall 15 brings founders of innovative businesses together with potential business partners, investors and distribution partners. A maximum of 40 start-ups can book their slot in a total area of 500 square metres to participate in MEDICA at an attractive one-off price (apply via email to exhibitor@medica.de).

Given the successful development of the previous years, it is assumed that over 5,000 exhibitors will be a part of MEDICA 2017. Last year, there were 127,800 trade visitors from 135 countries at MEDICA and the supplier trade fair COMPAMED, which was held simultaneously.

13th - 16th Nov. 2017: MEDICA, Duesseldorf (D)

Messe Düsseldorf GmbH
D 40001 Düsseldorf



Sample parts are produced on six Freeformers in the new Arburg Prototyping Center in response to customer inquiries.



As an example of an aerospace application, a Freeformer produces air ducts made of PC specially approved for the aviation industry at the Rapid.Tech 2017.

Rapid.Tech 2017: Freeformer produces aviation component made from original material



- **Arburg Plastic Freeforming: Industrial additive manufacturing with qualified original materials**
- **Freeformer: Functional parts for aviation, medical technology, telecommunication and more**
- **Prototyping Center: Rapid production of prototypes**

Arburg Plastic Freeforming (APF) and the Freeformer will be presented by Arburg in Hall 2, Stand 2-801 at the Rapid.Tech trade fair and user convention from 20 to 22 June 2017 in Erfurt (Germany). The industrial additive manufacture of functional components from the original material Lexan 940 (PC), which is approved for the aerospace industry, will be demonstrated.

20th - 22nd June 2017: Rapid.Tech 2017, Erfurt (D)

„Functional replacement parts, medical implants and functional spare parts are just three of the many areas for which our Freeformer and Arburg Plastic Freeforming are the ideal choice,“ explains Eberhard Lutz, Arburg’s Director of Freeformer Sales in summary. „The new Arburg Prototyping Center with six Freeformers recently opened its doors at our headquarters in Lossburg and is now available for the manufacture of sample parts from qualified and certified original materials. This means that our APF experts can now respond even more promptly to customer inquiries and produce sample parts practically around the clock.“

Functional parts made from qualified original materials

One major advantage of Arburg Plastics Freeforming (APF) is the option for processing the same qualified standard granulates as used for injection moulding. The Freeformer is equipped with two discharge units as standard. This enables it to process an additional component in order to manufacture a part in different colours, with special tactile qualities or as a hard/soft combination, for example. In order to implement complex geometries, support structures can be used as the second component. Air ducts made from the original material PC Lexan 940 authorised for the aerospace industry will be produced at the Rapid.Tech 2017. Small batches of nine functional components each will be produced in a build time of around 24 hours.

The advantages of the open system

As the Freeformer and APF are open systems, the process parameters can be specifically optimised for the relevant application. Arburg has already used many sample parts to show how many areas

- of application can be served with the Freeformer, including:
- individually adapted implants made from medical grade PLA that can be absorbed by the body after a defined period of time,
 - flame-proof PC/ABS connectors for the electronics industry,
 - assembly tools, grippers for automation and other equipment, e.g. from PA in combination with soft TPE,
 - an articulated rope pulley, the housing and fastening hook of which are made from robust Bio-PA (Grilamid).

New support material from Arburg

In addition to the water-soluble support material Armat 11, Armat 21, which is soluble in sodium hydroxide, is also available from Arburg from May 2017 onwards. This support material, which is also used at the trade fair, can be processed with ease and is thermally stable. It has very good droplet formation and adhesion properties, as well as excellent edge definition in relation to the build material.

Individualisation of high-volume parts

Above and beyond the additive manufacture of one-off parts and small batches, high-volume parts can also be enhanced and customer wishes incorporated directly in the value chain by combining additive manufacturing, injection moulding and Industry 4.0 technologies. Arburg demonstrated how such customer-specific individualisation of high-volume parts works in the Efficiency Arena at the K 2016 and the Hannover Messe 2017, based on the example of digitally integrated, spatially distributed production of „smart“ luggage tags. The Freeformer additively applied previously selected, one or two-colour graphic motifs in ABS to the tag.

ARBURG GmbH + Co KG D 72290 Loßburg



„More attendees, more solutions, more international!“



Making the benefits of digitalization tangible – that was the declared objective of HANNOVER MESSE 2017. After five action-packed days at the world's leading trade fair for industrial technology, the organizers spoke of a thriving event. A large number of solution-seekers gathered in Hannover to immerse themselves in the potential of intelligent robots, adaptive machines and integrated energy systems, taking attendance to new heights.

„More attendees, more solutions, more international – that aptly sums up HANNOVER MESSE 2017,“ commented Dr. Jochen Köckler, Member of the Managing Board at Deutsche Messe. „Over the past five days, Hannover has served as a global hub for all things related to Industrie 4.0. Every sector involved in the digitalization of industry was on hand to showcase its answers to the key question faced by industrial enterprises everywhere: How can I best get my company into shape for the digital future? HANNOVER MESSE has resoundingly underscored its value as a prime source of orientation for decision-makers from around the globe,“ he added. The show's chosen lead theme of „Integrated Industry – Creating Value“ put a major spotlight on the benefits of Industrie 4.0 and the role of humans in tomorrow's integrated factories. As this year's featured Partner Country, Poland called added attention to the need for close cooperation throughout Europe, while impressing attending professionals with its credentials as an innovative partner to global industry.

In his summation of the event, Thilo Brodtmann, Managing Director of the German Engineering Federation (VDMA), said: „HANNOVER MESSE 2017 has served as an unsurpassed showcase for the mechanical engineering sector. Industrie 4.0 is now well past the trial

stage, and is already generating real benefits in application. The show clearly reflected the industry's buoyant mood – a mood powered by having exactly what it takes to get the job done for the benefit of people everywhere. And when it comes to international competition, we are definitely among the frontrunners. In short, HANNOVER MESSE 2017 has been nothing short of outstanding.“

Dr. Klaus Mittelbach, CEO of the German Electrical and Electronic Manufacturers' Association (ZVEI), remarked: „Industrie 4.0 is booming, and Hannover Messe has been promoting the topic from the very start. Moreover, the fair has made it amply clear that digitalization calls for a European identity. The pressing task at hand is to build the digital union at top speed.“

Of the show's 225,000 attendees (up from 217,000 in 2015 as the most recent comparable event), more than 75,000 came from abroad. „This is an unprecedented figure in the 70-year history of HANNOVER MESSE,“ commented Köckler, adding: „This impressively proves that decision-makers from around the world rely on HANNOVER MESSE as their definitive source of Industrie 4.0 orientation and solutions.“ The largest number of foreign visitors came from China (9,000), followed by the Netherlands (6,200), India (5,300) and Poland, whose 5,000 visitors set a new Partner Country record. The long-term impact of Partner Country participation was underscored by an impressive 3,000 visitors from the U.S. as last year's Partner Country.

„In close collaboration with our exhibitors, we succeeded in making this year's lead theme tangible in the truest sense of the word,“ remarked Köckler. „With an array of more than 500 application scenarios, the show gave real shape to the promise that digitalization holds for industry and the energy sector.“

Triumph of the cobots

A new generation of robots was also in the limelight: the so-called „cobots“, i.e. collaborative robots, which are about to fundamentally transform the way we work in factories. Their connectivity, artificial intelligence, innovative sensors and intuitive operation allow them to communicate directly with humans, as they learn autonomously and swap instructions with other cobots. As Köckler pointed out: „There was huge interest in the displays in the robotics halls. Not only are cobots an exciting prospect for large companies – many SMEs were also at HANNOVER MESSE to find out about these new helpers for



„More attendees, more solutions, more international!“

their manufacturing operations.“

From sensors to platforms

Previously sensors were viewed as the main technology item connecting up different machines, but this year's event put platform solutions to the fore. Concretely, this refers to cloud-based network connections for the entire production operations, including data collection and analysis. „The trend towards the 'digital twin' concept in the production environment is opening up entirely new vistas for industry,“ reported Köckler. If testing can be carried out in virtual reality – for example, to see whether a new production line is going to work out – this makes it possible to bring products onto the market faster, at lower cost.

Energy systems of the future

Exhibitors in the energy halls showed how the energy systems of the future might well operate. According to Köckler, „our Integrated Energy Plaza created a central hub for the energy industry. The exhibits showed how the revolution in power generation can segue into a true energy transition, including the heat and mobility markets.“ The main focus was on new energy storage technologies, which included serial production-ready electrolysis stacks, making hydrogen solutions a viable alternative even today. Some totally new approaches were also in evidence in the solar technology area, with several companies displaying ultra-thin, flexible solar foils that generate electricity even in low-light conditions, opening up new options for the practical application of the technology.

SMEs gearing up for digitalization

With almost every passing week, another consultant study is published with dire warnings that SMEs are not ready for digitalization. „HANNOVER MESSE 2017 has told a different story,“ said Köckler, pointing to the numerous component supplier companies exhibiting at HANNOVER MESSE. „These companies are now digitalizing their processes and establishing connectivity with their partners, because they know that their customers – from the automotive industry, for example – expect the end-to-end digital tracking of each and every part every component.“ Another example consisted of Salzgitter AG, which presented a coordinated display at HANNOVER MESSE underscoring how Industrie 4.0 and digitalization have changed the way they see their business, and the solutions that are already in place.

Growth in the startup segment

Following on the heels of last year's successful launch, the „Young Tech Enterprises“ segment of the fair enabled young businesses to introduce themselves to potential investors, customers and partners. More than 150 startups were on hand, exhibiting storage devices for renewable energy networks, operating systems for augmented reality

and mini-wind power plants for cars and trains: „The startup area of the fair is going from strength to strength. We are confident that many of them will decide to take the plunge next year with their own stand at HANNOVER MESSE,“ added Köckler.

Partner Country Poland

Featured as this year's Partner Country, Poland sent a total of 200 companies to Hannover, highlighting the country's strong credentials as a dynamic and innovative industrial location. Research and startups are a special priority for the Partner Country. This was the message conveyed by Polish Prime Minister Beata Szydlo in her address at the HANNOVER MESSE Opening Ceremony, and these themes were also at the forefront of the exhibits during the event. Poland also succeeded in underscoring its leading position in eMobility. The high degree of interest in HANNOVER MESSE among Polish political circles was confirmed by the presence of such high-ranking delegates as Jaroslaw Adam Gowin, Polish Minister of Science and Higher Education, and Mateusz Morawiecki, Minister of Economic Development and Finance.

HANNOVER MESSE 2018 features CeMAT and IAMD

Beginning in 2018, the annual Industrial Automation (IA) show will merge with the biennial Motion, Drive & Automation (MDA) – both representing leading fairs staged under the HANNOVER MESSE umbrella. IA and MDA will then take place jointly under the new name of „Integrated Automation, Motion & Drives“ (IAMD) – reflecting the entire spectrum of industrial automation, power transmission and fluid power at HANNOVER MESSE.

Beginning in 2018, CeMAT, the world's leading intralogistics trade fair, will be staged every two years in parallel with HANNOVER MESSE. „Production and logistics processes are in the process of becoming intelligently integrated, enabling even more efficient, flexible production processes. At CeMAT we will be making this integration tangible and will demonstrate the resulting potential,“ said Köckler. Additional display sectors at CeMAT include logistics solutions for retailing and logistics services. „Efficient logistics processes are of critical importance to the business success of online retailers or bricks-and-mortar retailers. At CeMAT they'll find the right logistics systems for omni or cross-channel solutions,“ reported Köckler.

CeMAT and HANNOVER MESSE will be a strong duo next year, providing a unique platform for international decision-makers from industry and logistics.

**23rd - 27th April 2018: HANNOVER MESSE 2018,
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