



On mobile cleanrooms and personalized sandals



Hannover Fair



CAPE® is a mobile, tent-like cleanroom system developed by scientists at Fraunhofer IPA which can be put together within less than an hour.
(© Fraunhofer IPA/Photo: Rainer Bez)

The Fraunhofer Institute for Manufacturing Engineering and Automation IPA is set to exhibit across a variety stands at this year's Hannover Messe, showcasing innovations such as a partially automated assembly process of plastic elephants and using robots to manufacture a personalized pair of sandals.

Fraunhofer IPA is to exhibit at a total of five stands in three separate exhibition halls at this year's Hannover Messe, all of which will provide answers to the big questions that have arisen from the societal mega-trend of mass personalization, the mass production of individualized products: How can companies cost-effectively manufacture an increasingly diverse range of products in ever smaller batches? How can production be adapted within a short space of time? How can errors and equipment malfunctions be avoided? How can man and machine work together effectively?

Cleanroom to go

CAPE® is a mobile, tent-like cleanroom system developed by scientists at Fraunhofer IPA which can be put together within less than an hour in both indoor and outdoor weather-proof areas. CAPE® protects sensitive products during the manufacturing process and also safeguards them from cross-contamination. Moreover, the construction provides a suitable area where equipment and products can be sterilized. Thanks to this "cleanroom on demand", manufacturers who need

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to ensure that their finished products are free from contamination no longer need a clean and sterile environment to be permanently available; now, all they require is a mobile, contamination-free production environment which enables air purity in ISO classes 1-9.

The potential application areas of this lightweight construction are endless: Chip production, medical technology, the food industry and satellite installation, to name but a few. The automobile industry can also benefit from the compact “cleanroom on demand”, such as in battery cell or fuel cell production.

“CAPE® can even be used in crisis zones. For example, it can be used to prepare a clean and sterile environment where there is no on-site operating room”, says Udo Gommel, Head of the department Ultraclean Technology and Micromanufacturing at Fraunhofer IPA.

How a shoe is made: Hand in hand with a robot

Mass products are a thing of the past: For years, the industrial sector has had to manufacture products in ever smaller batches whilst at the same time making these products ever more diverse. The result of this development is mass personalization, the mass production of personalized products. Constant sensor improvements have enabled people and robots to enter into a joint collaboration on the factory floor, with man and machine working hand-in-hand, both bringing their own strengths to the table.

At the Hannover Messe, Reutlingen Industrie 4.0 Center, a cooperation between Fraunhofer IPA and Fraunhofer IAO and the ESB Business School at Reutlingen University, will bring together both trends in a single exhibition: Visitors to the stand will be able to manufacture personalized sandals in tandem with a collaborative robot. Using a configurator, they assemble the individual components according to their personal preferences and specify their shoe size before manufacturing the sandals hand in hand with the robot.

Partially automated assembly assistance system

Up until now, many tasks in the assembly process have needed to be completed manually for technical or financial reasons. In order to support workers in these repetitive and physically strenuous tasks, and in order to prevent errors from occurring, Fraunhofer IPA, together with four industry partners, has developed an “adap-



Due to its smart algorithms and powerful 3D sensors, this partially automated assembly assistant system is able to recognize which step of the procedure is under completion and intervene when an error occurs. (© Fraunhofer IPA/Photo: Rainer Bez)

tive assembly assistant and interaction system using 3D scene analysis and intuitive human-technology-communication” (MonSiKo).

Its smart algorithms and powerful 3D sensors enable this partially automated assembly assistant system to recognize which step of the procedure is being carried out and intervene in the event of an error. For example, if the worker picks up the wrong component, a red light appears. “People maintain overall control of the process”, says Christian Jauch from the department Machine Vision and Signal Processing at Fraunhofer IPA. “Should they wish to adapt the procedure, the assistance system does not prevent them.” The worker receives detailed instructions on the touch-screen; he/she simply swipes the screen, and the next step appears, also making this a more straightforward method of learning new processes. As an alternative to the touch-screen, MonSiKo understands verbal commands such as “continue” or “finished” and can provide the information that is on the screen in verbal form.

Visitors to the Hannover Messe have the opportunity to try out MonSiKo for themselves via a demonstrator. Under supervision, they assemble a small plastic elephant comprising three different components. These components undergo ultrasonic welding before a robotic arm steers and shakes the elephant against an acoustic sensor. If no rattling is detected by the robot, everything has been assembled and welded correctly.

SeRoNet – the service robot network

The aim of the joint project SeRoNet is to bring commercial service robotics solutions onto the market in a faster and more efficient manner. An online intermediary platform has been created for this very purpose, which can be used by component manufacturers and systems integrators in order to develop solutions to problems encountered by the end-user. All those involved cooperate via the platform and the hardware and software, which have been developed in line with Industrie 4.0, provide uniform interfaces. As a result, it will be possible to create application-specific robotic systems without the need for repeated iterations.

By way of a simplified logistics task, SeRoNet is to demonstrate how exactly this cooperative development will work and how easy it will be in the future to compile and modify comprehensive solutions using modular components, all thanks to the SeRoNet tools. The central exhibits are the software tools for component and system development and the SeRoNet intermediary platform, where the future providers and users of service robotics solutions have the opportunity to specify and carry out collaborative projects. Visitors to the trade fair can try out in person both the software tools and the platform at two terminals as well as familiarize themselves with



The SeRoNet project consists of an online intermediary platform where component manufacturers and systems integrators develop solutions. (© Ulm University of Applied Sciences/Photo: Dennis Stampfer)

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the user interfaces, with which they can create complete systems by assembling application-specific components.

A platform can only truly exist when lots of people use it. Therefore, SeRoNet is planning a public appeal for as soon as the summer of this year. The aim would be for interested parties to receive grants in order to be able to participate on the platform. Not only will this provide a new sales opportunity for component manufacturers but in addition, system integrators will gain customers for their services and end users will have ready-to-use service robotics applications. The project itself will be carried out using three pilot demonstrators with SeRoNet technologies: A commissioning robot for the pharmaceutical industry, a smart hospital trolley which prepares care utensils when required and a modifiable assembly line in which modular robots combine flexibly automated and manual tasks.

RoboPORT – platform for co-creating service robots

RoboPORT is an interdisciplinary developer platform which enables the development of service robotics on the basis of crowd engineering. The platform helps developers from both the private and commercial sectors to come up with innovations via a collaborative development approach and to effectively implement these in prototypes. In particular, the platform community supports companies through the entire process, from the generation of ideas for robotic applications and conceptual solutions to the creation and validation of the prototype. To this end, RoboPORT offers a pool of talent that is immediately ready to use for project-focused engineering processes. At the Hannover Messe, RoboPORT demonstrates two examples of open-source projects which the platform is helping to advance: The mobile robotic platform “rob@work [mini]” and the humanoid robot “Roboy”.

The entire design and development process is handled by the

RoboPORT platform. Crowd-engineering and co-creation generate ideas and provide the technologies and experts for each project, speeding up the development of robotic innovations. A web platform for robotics projects is due to be completed by 2020, offering developer tools, a library for open-source robotics and project management tools, enabling collaboration amongst all participants.

Fraunhofer Initiative Smart Maintenance

What is the solution for rising consumer demand? The answer is innovative products, efficient processes and seamless production flows in complex systems. An important component of this is maintenance and repair which uses interlinked machines, sensors and artificial intelligence in order to detect errors before they occur, avoiding costly malfunctions. Last year, together with eight additional institutes, Fraunhofer IPA launched the Fraunhofer Initiative Smart Maintenance with the aim of ensuring knowledge transfer of applied industrial research, while there are also future plans for workshops and collaborative research projects. The initiative is introduced at the Fraunhofer production association trade fair stand. Here, visitors to the trade fair can learn about the topic of smart maintenance in a fun way through a quiz duel prepared by the researchers.

01st - 05th April 2019: Hannover Messe, Hannover (D)



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Without YOU we are nothing!

Dear subscribers,

after having sent our Cleanroom Yearbook 2019 to all subscribers as well as distributing it at the Lounges in Karlsruhe, we would like to take this opportunity to thank you for all the extraordinarily positive feedback we received from many directions. We are very touched - and fully motivated to become even better.

But this is not possible without YOU. Without your interesting information about projects, products, companies, events and people, we cannot report anything. This applies to the Cleanroom Yearbook as well as to our monthly newsletter, which you're about to read.

Therefore we would like to invite you to send us your current information in text and picture in due time, preferably on an ongoing basis, and thus make it easier for us to keep the industry up to date - both on the platform www.cleanroom.de and in our newsletter. And finally, of course, in our next Cleanroom Yearbook.

If you have any questions, please feel free to send us an e-mail.

Sincerely,

Reinhold Schuster



Cleanroom – the final cleanliness ...

An overview of mk's product portfolio for working under cleanroom conditions

Working under cleanroom conditions has largely become the industry standard in the fields of electrical and medical technology as well as in the pharmaceutical, food and semiconductor industries. Due to the increased use of microelectronics in the automotive sector and the resulting rise in demands for technical cleanliness, cleanrooms are also set to become more common throughout the automobile industry and its suppliers in the future. A cleanroom facilitates the manufacturing and packaging of highly technical or particularly sensitive products, while at the same time offering suitable environmental conditions for a wide range of research and development work.

Cleanrooms are defined as a room in which the concentration of airborne particles is kept to a minimum. The air purity is classified according to cleanliness classes and the equipment in a cleanroom must fulfil the strict requirements of the respective particle purity class. This means that gaps, holes and rough surfaces must be avoided in order to facilitate removal of particle deposits and thereby reduce contamination.

In a cleanroom environment, constructions such as machine frames, protective device guards, workstations or work platforms must meet the relevant requirements of the room's cleanliness class. To meet these requirements, mk offers a comprehensive portfolio of cleanroom profiles and corresponding accessories.



Aluminium cleanroom profiles

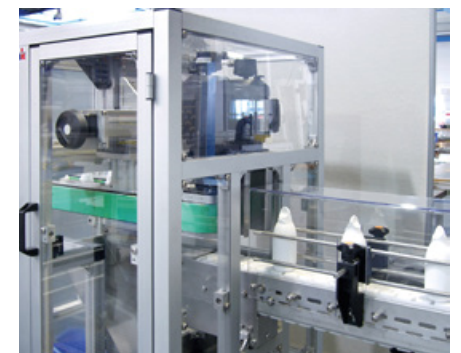
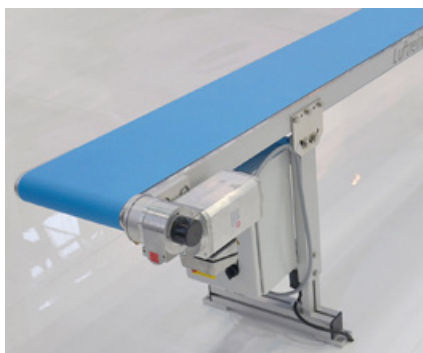
mk cleanroom profiles feature a smooth, flat surface that prevents dirt from accumulating. The typical mk edge radius of just 1 mm ensures smooth connections between profiles, with virtually no gaps or spaces. Thanks to its clean, smooth design, a construction made of cleanroom profiles has the added advantage of having a high-quality, attractive appearance.

A range of profiles are available with one to four closed sides and rectangular cross sections of 40 x 40, 40 x 80, 80 x 80 and 50 x 50 mm, as well as two round profiles with a diameter of either 28 mm or 40 mm.

Traditionally, the open system slot is one of the most important product features in aluminium profile technology. It gives engineers the necessary flexibility to construct an infinitely adjustable profile frame. In cleanroom profiles this slot is closed, but it can be partially or fully opened if needed. The opened slot can then be used to attach connecting elements or to mount other attachments.

Connecting elements

In order to ensure proper cleanroom-standard connections between profiles, a connection must be created with as few obstructing contours as possible. It must be easy to clean properly with no un-



Cleanroom – the final cleanliness ...

necessary edges or corners where particles might accumulate.

The mk cleanroom fastener is the perfect component for this job. It is made of stainless steel and connects Series 40 cleanroom profile components cleanly without any twisting. The anti-twist device is clipped into the face of a profile fitted with a threaded insert and tightened through a $\varnothing 10$ mm drill hole in the opposing profile. The hole is then sealed cleanly with a plug or sticker.

Likewise, the tension plug with thrust part is also suitable for use in a cleanroom as it does not need to be inserted into the face of a profile. It is simply inserted into the opened slot in a cleanroom profile and tightened through a $\varnothing 10$ mm drill hole in the opposing profile. The hole is then likewise sealed with a plug or sticker.

It's easy to mount attachment parts with the stainless steel swivel-in nut 1. The spring sheet fixes the nut into the opened slot in the cleanroom profile so that it can also be used in a vertical position. In addition to this, the ESD function ensures that the connection is conductive.

Closure strips and end caps

As an alternative to cleanroom profiles or as a retrofit solution, the system slot of a standard profile can also be sealed with closure strips. This also acts to prevent the accumulation of dirt. Aluminium closure strips sit seamlessly in the slot after being hammered. Closure strips are available in a range of different coloured plastic, providing visual highlights and/or drawing attention to the supply lines that might be located beneath the strip.

Plastic end caps are used to seal the face of a profile. The end cap is fastened to

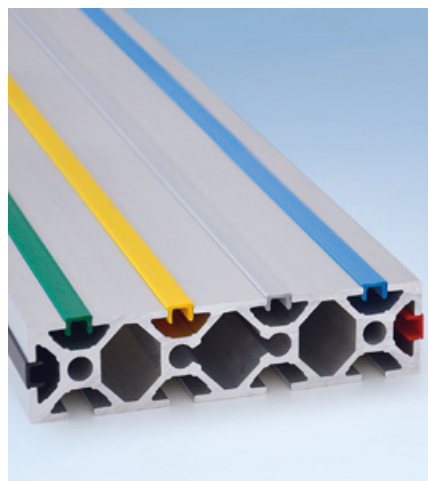
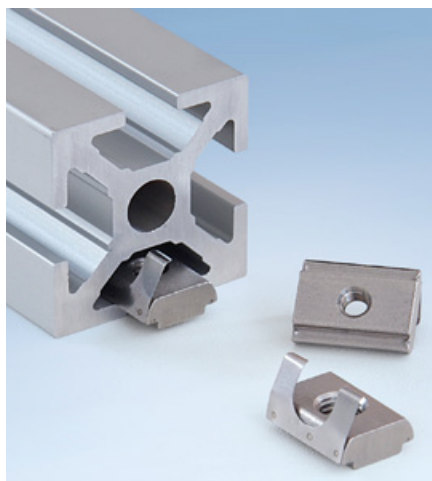
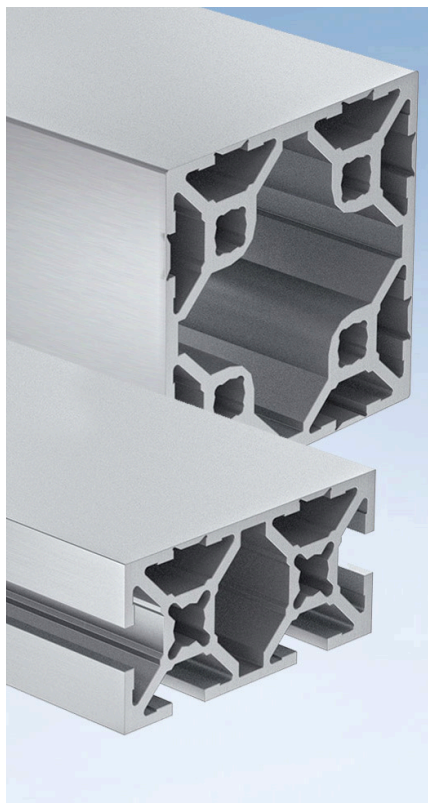
the profile simply by inserting it into the end, thus creating a clean closure and an attractive appearance. End caps also protect against sharp-edged cut surfaces.

GUF-R 2000 cleanroom belt conveyor

To complete the construction kit for cleanroom-standard factory automation, the product range also includes a certified belt conveyor system for use in cleanrooms. The GUF-R 2000 cleanroom belt conveyor has been optimised on the basis of the GUF-P 2000 conveyor system to ensure the lowest possible levels of particle emissions. Furthermore, the conveyor uses a surface-cooled smooth-surface motor

that produces very little air turbulence during operation. The conveyor is particularly easy to clean thanks to its large, smooth surfaces. The system version with the AF drive has been certified by the Fraunhofer Institute IPA with an air cleanliness class of 4 in accordance with DIN ISO 14644-01 standards. Its modular design and anodised accessories, such as side rails and conveyor stands, make the belt conveyor highly versatile. Series 50 closed cleanroom profiles and stainless steel levelling feet are used to set up the conveyor. As a result, it is easy to integrate into existing cleanrooms.

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How medicine, physics, computer science and sociology shape the digital future together

With its establishment of four new professorships, the Einstein Center Digital Future (ECDF) is bringing together the most diverse disciplines and taking further steps to advance digitalization research in Berlin. The new appointments are conducting research in areas such as computer-assisted medicine, changes in the world of work, and biomedical imaging techniques.

Professor Dr. Michael Gensch is the new professor of “Terahertz and Laser Spectroscopy” at Technische Universität Berlin and the German Aerospace Center (DLR). Professor Dr. Leonid Goubergrits holds the professorship of “Cardiovascular Modeling and Simulation” at Charité – Universitätsmedizin Berlin. Professor Dr. Tobias Schaeffter is professor of “Biomedical Imaging” at Technische Universität Berlin and the National Metrology Institute of Germany (PTB). Professor Dr. Philipp Staab has been appointed professor of “Sociology of the Future of Work” at Humboldt-Universität zu Berlin.

Professor Dr. Odej Kao, Executive Board member at the ECDF, regards the four new professors as a great enrichment for this center of digitalization research: “We’re getting closer and closer to achieving our goal of establishing 50 professorships at the ECDF, and we’re now able to cover important new fields of knowledge related to digitalization.”

About the newly appointed professors

Professor Dr. Michael Gensch

Since January 2019, Michael Gensch holds the professorship for “Terahertz and Laser Spectroscopy” at Technische Universität Berlin and ECDF. At the same time, he was appointed Head of Department for “Terahertz and Laser Spectroscopy” at the DLR Institute of Optical Sensor Systems in Berlin Adlershof. Born in Berlin, he studied at the University of Manchester and TU Berlin before moving to the ISAS – Leibniz Institute for Analytical Sciences for his doctorate. After various positions at DESY and at the BESSYII storage ring at Helmholtz-Zentrum Berlin (HZB), he became senior scientist and project manager for the setup and the scientific program of the TELBE THz user facility at the ELBE accelerator at Helmholtz-Zentrum Dresden-Rossendorf (HZDR) in 2010. From 2015 until his appointment at TU Berlin he worked as group leader „High-field THz driven Phenomena“ at the Institute of Radiation Physics at Helmholtz-Zentrum Dresden-Rossendorf (HZDR). „My research focuses on instrument development for customized laser-based spectroscopy methods with applications in materials analysis, diagnostics at acceleration-based light sources and, in the future, on robotic missions to explore the solar system,“ says the scientist.

Professor Dr. Leonid Goubergrits

Professor Dr. Leonid Goubergrits, who was born in Moscow, has held the professorship of “Cardiovascular Modeling and Simu-

lation” at Charité – Universitätsmedizin Berlin and the ECDF since 1 February 2019. At the Moscow Institute of Physics and Technology he initially studied applied mathematics and physics with a special focus on fluid mechanics and acoustics before switching to Technische Universität Berlin for his doctorate and Habilitation. “The focus of my work lies in strengthening the research emphasis on ‘cardiovascular computer-assisted medicine’ in connection with patient-specific modeling for the diagnosis and therapy of cardiovascular diseases. It is precisely the interdisciplinarity of this field of research, and the challenges related to it, that fascinate me every day,” says Goubergrits.

Professor Dr. Tobias Schaeffter

The beginning of February also saw Professor Dr. Tobias Schaeffter starting as professor of “Biomedical Imaging” at Technische Universität Berlin and as division head at the National Metrology Institute of Germany (PTB). He was born in Berlin, initially studied electrical engineering and computer science at Technische Universität Berlin, and later moved to Hamburg, where he worked as a researcher at the laboratory of Philips Research Hamburg. Since 2006, he has been professor of “Imaging Sciences” at King’s College London; in 2015 he also took on the role of head of the division of “Medical Physics and Metrological Information Technology” at PTB. “I’m particularly interested in biomedical imaging – such as, for example, imaging and reconstruction techniques in magnetic resonance imaging – for the purpose of measuring biophysical parameters that are used, for example, in the diagnosis and therapy control of cardiovascular diseases,“ says Schaeffter.

Professor Dr. Philipp Staab

On 1 February 2019, Professor Dr. Philipp Staab took up his position as professor of “Sociology of the Future of Work” at the ECDF and Humboldt-Universität zu Berlin. Born in Nuremberg, Staab studied sociology, political science and psychology in Kassel, Germany, and at Paris Nanterre University. After completing his doctorate, he was involved, among other things, in various research projects at the Hamburg Institute for Social Research and at the Institute for the History and Future of Work, with the focus of his interest being technology research, social inequality, digitalization, and social security. In 2018, he worked as visiting fellow in the research group “Globalization, Work and Production” at the Berlin Social Science Research Center (WZB Berlin) and as acting professor of “Technology Studies” at the University of St. Gallen’s School of Humanities.

How medicine, physics, computer science and sociology shape the digital future together

About the Einstein Center Digital Future

The Einstein Center Digital Future (ECDF) is an interdisciplinary project by Technische Universität Berlin, Charité – Universitätsmedizin Berlin, Freie Universität Berlin, Humboldt-Universität zu Berlin and the Berlin University of the Arts. The ECDF sees itself as a cross-institutional nucleus for the research and promotion of digital structures in science, business and society. With a funding of 38.5 million euros, the Berlin-based project aims to create more links in the field of digitalization and to try out new forms of cooperation, while concentrating on innovative, top-level interdisciplinary research and attracting excellently trained young

scientific talent to the capital. The ECDF was approved by the Einstein Foundation Berlin on September 5, 2016.

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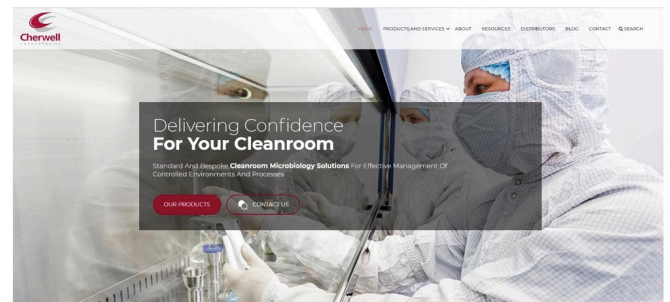
Cherwell Announces New Cleanroom Microbiology Focused Website Launch

Easier navigation for environmental monitoring and sterilisation process validation product information with expert advice

Cherwell Laboratories, specialist suppliers of environmental monitoring and process validation solutions for the pharmaceutical and related industries, announced the launch of its new website at www.cherwell-labs.co.uk. The revamped website features a streamlined and simplified design, improved functionality and enriched content areas. In particular, it is now even easier to gain access to Cherwell's useful and informative library of cleanroom microbiology focused assets. These include eBooks and guides in the resources section and technical tips, product updates, newsletters and industry news in the blog section.

Created with the user experience in mind, the new design will help visitors navigate through Cherwell's extensive product and service offering; expert advice and technical information, quickly and with ease. New features include filters on both the product and blog pages allowing users to easily narrow down the options to rapidly find relevant information to support them in the effective management of their controlled environments and processes. For example, within the new resources section in depth guides on prepared media, environmental monitoring and sterility testing are available to download. Frequently asked questions offering handy hints and tips are also now included at the bottom of all product pages.

Over the past 45 years, Cherwell has built a reputation for offering expert technical advice and support to those working within the pharmaceutical and healthcare sciences industry. "This website redesign is another way we are committed to creating the best possible experience for our customers and website visitors and sharing our cleanroom microbiology expertise," commented Andy Whitard, Managing Director Cherwell Laboratories. "The aim of our



new website is to demonstrate that we understand the needs of our customers and that we are willing to work with them to help them reduce risk in their business."

He added, "We hope the information that we provide, and the ease with which users can access it, will help them make well-informed decisions about their environmental monitoring and process validation requirements. We have also ensured that it remains easy for visitors to contact us, as we are always happy to directly discuss their individual requirements further."

Cherwell's new cleanroom microbiology website will be regularly updated with news on company products, accomplishments and events, as well as pharmaceutical, healthcare and related industries developments and news. Visitors are encouraged to sign up for Cherwell's blog and newsletter to keep informed.

Cherwell Laboratories Ltd
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Pneumatic conveying gets powder and bulk solids moving



Food trends at POWTECH 2019

The POWTECH trade fair, which goes into its next round in Nuremberg from 9 to 11 April 2019, showcases all the diversity and innovative strength of the mechanical processing sector. This makes the international fair the leading forum for the industry in Europe and an unmissable event for developers, planners and production managers from the food and animal feed sectors. As well as mechanical processes, the fair also covers accompanying steps like the transport and handling of powder and bulk solids. POWTECH 2019 is complemented by a comprehensive supporting programme.

In food and feed production, the pneumatic conveying of powder and bulk solids is of key importance for both the quality of the products and the overall cost effectiveness of the processes. Manufacturers of blowers and vacuum systems have responded accordingly and at POWTECH will provide interesting insights into the latest developments in respect of availability, air quality, plug & play solutions, energy efficiency and integration into Industry 4.0 concepts.

Rugged, energy-saving conveying

Wolfgang Hartmann, Head of Marketing at Kaeser Kompressoren, says: "For the pneumatic conveying of bulk solids in the food industry we are seeing the continued widespread use of rotary lobe blowers. This is no doubt due to the fact that rotary lobe blowers are ideal for this application thanks to their rugged design, reliability and durability, exactly what the industry demands of these components." Hartmann also had this to say about energy requirement and cost efficiency: "Because energy efficiency is of course also playing an increasingly more important role, our rotary lobe blowers fitted with our efficient, low-pulsation three-lobe OMEGA rotors are the ideal solution for these requirements."

Performance and status at a glance

For the transport of bulk goods in food production, increasingly more stringent requirements are being imposed on the quality of compressed air. This is why POWTECH exhibitors like Kaeser



The transport and conveying of powder and bulk solids is a key topic at POWTECH.

offer a specially designed range of accessories for air drying and cooling. In addition, many exhibitors are focusing on complete solutions in keeping with the trend towards plug & play for pneumatic conveying. At POWTECH, Kaeser will be showcasing its compact rotary lobe blowers up to 200 kW with integrated electrics and electronics. "These compact solutions offer plant operators ease of commissioning and maintenance. Blowers with integrated controls achieve considerable savings for planning, installation, commissioning, data communication and certification," says Hartmann. "Another major benefit is the integrated Sigma Control 2 controller. It not only makes the entire machine efficient, but continually monitors and transmits its performance and status data, completely in keeping with Industry 4.0 concepts. This guarantees maximum reliability and availability combined with high energy efficiency.

Another 415 exhibitors at POWTECH will be presenting their innovations specifically for food and feed production. A total of 800 companies in the six exhibition halls at POWTECH provide a globally unrivalled range of technologies and solutions for processes like pulverising, mixing, separating, filtering, agglomerating and associated work flows.

POWTECH – meeting point for food production experts

Developers, planners and production managers from the food industry will also benefit from a comprehensive supporting programme that is highly tailored to their sector. On three days of the fair, the "Expert Forum Chemicals + Food" in Hall 2 will provide a non-stop programme of presentations on topics like dosing, explosion protection, compressed air supply or handling. The same hall is also the venue for the special show "Dust knows no borders" organised by the VDMA Group Air Purification and Drying Technology. It will demonstrate that there are indeed options available for limiting dust using innovative filtering and separation systems that are often digitally supported. A new feature at POWTECH 2019 is the Networking-Campus for bulk solids technologies and markets of the future. The international PARTEC Congress for Particle Technology will take place parallel to POWTECH 2019 and expects to welcome more than 500 delegates. It is sponsored by VDI-GVC (Association of Process and Chemical Engineering).

09th - 11th April 2019: POWTECH, Nürnberg (D)

Act responsibly with conviction

Textile sustainability firmly in sight



Werner Moser, Sales Director Mattes & Ammann GmbH & Co (@ Mattes & Ammann GmbH & Co)

In the age of climate change and environmental protection, the pressure on manufacturers, brands and retailers in the textile sector is growing. More and more consumers are calling for compliance with minimum social standards in the manufacture of their textiles. The OEKO-TEX® Association, together with Hohenstein as one of the founding members, has developed a comprehensive product portfolio to provide everyone involved in the textile value creation chain with the best possible security and extensive transparency.

The product label MADE IN GREEN by OEKO-TEX® in particular offers a clear statement: the textiles labelled with it are manufactured under environmentally friendly and socially acceptable production conditions and offer safety regarding potential harmful substances. Consumers can immediately find out in which production facilities and countries the finishing of the textile article took place via the product ID or QR code on the end product. But MADE IN GREEN also benefits retailers and businesses that are searching specifically for socially responsible partners and suppliers along the textile supply chain. Here the OEKO-TEX® Buying Guide facilitates the selection of MADE IN GREEN labelled products. It is available for free at www.oeko-tex.com/products.

The knitwear manufacturer Mattes & Ammann GmbH & Co. KG was one of the first companies to be found in the Buying Guide in the MADE IN GREEN by OEKO-TEX® section. This is no surprise as the principle of acting responsibly with conviction is strongly anchored in the company philosophy of Mattes & Ammann. The family owned company from Swabia based



MADE IN GREEN by OEKO-TEX® is a traceable consumer label for sustainable textiles. Each textile product awarded the label has a unique product ID and/or a QR code which enable the manufacture of the article to be tracked. Each product ID makes the different production stages visible along with the countries in which the textiles were produced. (© OEKO-TEX®)

in Meßstetten-Tieringen has made a name for itself as a manufacturer of fine knitted fabrics for the automotive industry and the mattress industry. "When it comes to certifications in the areas of quality, environmental protection, occupational safety and social matters, we are a true business of conviction," reveals sales director Werner Moser, "and, most importantly, we live and breathe certifications." Already in the summer of 2013, Mattes & Ammann was the first textile facility to be certified in the European Economic Area by Hohenstein according to Sustainable Textile Production STeP by OEKO-TEX® in order to be able to communicate their own sustainable production conditions to the outside world. In the summer of 2015, the company was one of the first companies in the B2B sector to receive MADE IN GREEN labels for its textile products for the hygiene market. In the meantime, the assortment of fabrics for the mattress industry has also been added. "We have practically doubled our production capacity in this area over the last years," Moser adds. With currently around 270 employees and a total production area of around 36,000 square metres, Mattes & Ammann produces



From the widely diverse product range of Mattes & Ammann GmbH for technical applications and the furnishings sector, functional knitwear for the production of hygiene products as well as the range of fabrics for the mattress industry were awarded with the MADE IN GREEN by OEKO-TEX® product label. (© Mattes & Ammann GmbH & Co)



A successful team, from left to right: Nicole Hajdu, (Environmental coordination assistant M&A), Christoph Larsen/Mattes (Management M&A), Jürgen Purc, Hohenstein, Gudrun Volm (Environmental coordination M&A) (© Mattes & Ammann GmbH & Co)

Act responsibly with conviction

more than 46 million square metres of textile fabrics annually in circular knitting, round knitting and warp knitting - with sufficient scope for expansion. The traditional guiding principle is always in focus: "We set ourselves the goal of acting flawlessly in every respect. Alongside the quality concept, the environmental and social ethos also belong to this." In fact, hardly any other supplier of the textile sector in Europe has certified its facility in the areas of quality, environment and operational safety so comprehensively. Moser explains: "It is our aspiration to always be one step ahead. For this reason, we always look for certification opportunities that suit us." At Mattes & Ammann, one is convinced that the benefits of the certifications far outweigh the disadvantages. "Of course, you have to spend a lot of money to carry out a project like this, not to mention in-house infrastructure or work capacity requirements. However, for use, it has become clear that the certificates

also pay off economically. It is not only the sales promoting aspect that comes into play, but also the potential to be able to account cost savings through the optimisation of in-house processes such as goods flows." Furthermore, sales director Werner Moser assumes that in the medium term, consumer awareness will change regarding the manufacturing conditions of textile products. "Today one can clearly see how the demand for articles produced under fair conditions is growing from year to year. We, as a company, have already made our advance contribution and are well equipped." In the future, Mattes & Ammann will by no means want to let up in their own efforts to do the right thing. Werner Moser emphasises: "For us, Hohenstein with the product label MADE IN GREEN by OEKO-TEX® is the right partner when it comes to showing business partners and consumers demonstrable product safety and comprehensible transparency regarding value creation."

Hohenstein Laboratories GmbH & Co. KG D 74357 Hohenstein

New CO2 Sensor for Railway Applications



The EE8915 complies with the relevant railway standards. The CO2 sensor automatically compensates for temperature and pressure effects.

The EE8915 from E+E Elektronik meets all relevant railway standards for reliable CO2 measurement in railway vehicles, e.g. in the passenger compartment or driver's cab. On-board sensors ensure high CO2 measurement accuracy independently of temperature, altitude or weather conditions. Due to excellent measurement performance in harsh environment, the sensor is also suitable for demanding process and climate control.

Long-Term Stable CO2 Measurement

The E+E NDIR dual wavelength infrared measuring principle is particularly insensitive to contamination and automatically compensates for ageing effects. The EE8915 thus offers excellent long-term stability even under harsh conditions. The multi-point CO2 and temperature factory adjustment ensures high measuring accuracy over the entire temperature range from -40 °C to +60 °C (-40...+140 °F).

High Protection Class and Short Response Time

Due to its innovative design, the CO2 sensor offers a unique combination of short response time and high protection class IP65 / NEMA 4.



EE8915 CO2 sensor for railway applications. (Photo: E+E Elektronik GmbH)

Active Pressure and Temperature Compensation

On-board sensors allow for active temperature and pressure compensation. The EE8915 therefore provides accurate CO2 readings even under changing environmental conditions.

Versatile and Configurable

The CO2 measured data in the range 0...2000 / 5000 / 10000 ppm is simultaneously available as current and voltage output. The USB service interface facilitates the configuration and adjustment.

Easy Mounting

The EE8915 is available for wall or duct mount, with M12 connector or fixed cable. The robust polycarbonate enclosure remains closed during installation, which optimally protects the electronics.



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Festive inauguration at motan-colortronic in India

motan-colortronic India Private Limited, a wholly owned subsidiary of the motan group moved to their modern larger premises in Chennai, India. In the presence of Karin Stoll, the Consul General for the Federal Republic of Germany, the new company building was festively inaugurated.

“With the move to the larger building we have tripled our production and storage space and have increased our product portfolio. Now, we not only cover the increasing demand for high quality peripheral units and systems, but also provide shorter delivery times”, explains Srikanth Padmanabhan, Managing Director of motan-colortronic Plastics Machinery India Private Limited. “Also, with the new products we can now also serve additional segments

such as extrusion and compounding.”

In the presence of Mrs. Karin Stoll, the Consul General for the Federal Republic of Germany in Chennai and Mr. T. R. Gopalan, the Regional Director of the Indo-German Chamber of Commerce Chennai, Mrs. Füllsack, CEO of motan group, inaugurated the new production and distribution building with a celebratory speech, which made clear that the quality standard “made by motan” is being realized globally. The local suppliers play a big part in this and they, as well as the other guests, then had the opportunity to view the new building. The team of motan-colortronic India were available for the guests and well-wishers throughout the day. Exhibited



At the opening ceremony of the new motan-colortronic site in India from left to right: Srikanth Padmanabhan, Managing Director of motan-colortronic Plastics Machinery India Private Limited, Karin Stoll, Consul General for the Federal Republic of Germany in Chennai and Sandra Füllsack, CEO of motan group. Srikanth Padmanabhan, Managing Director of motan-colortronic Plastics Machinery India Private Limited, greets the guest of the opening ceremony of the new location.



Exterior view of motan-colortronic Plastics India Private Limited in Chennai, India.



Sandra Füllsack, CEO of motan group is lighting the traditional opening ceremony lamp.



A look at the new production floor of motan-colortronic Plastics Machinery India Private Limited.

Festive inauguration at motan-colortronic in India

units and the new METROVAC SG blower station were explained and illustrated by the employees.

Sandra Füllsack talked about commitment in India at the inauguration: "For a long time we have been convinced that India is the market of the future. Increasing wages and increasing demand for quality products will not only lead to an increase in plastics consumption, but will also provide new potential for automated production processes and thus also for motan. It was always our goal to be on site when the market is ready for our products. With the expansion of our production and the additional expansion of our sales network we are at the right place at the right time."

Active in India since 1993

With the move to the larger building in 2019, the motan group is once again expanding their presence in India. Since 1993 motan products have been produced in India through a technology collaboration agreement. 1998 a Liaison Office was opened, and in 2009 a wholly owned production and distribution center was founded in Chennai, India. Chennai is located on the Bay of Bengal in eastern India.

motan-colortronic gmbh D 61381 Friedrichsdorf

More flexibility, precision and ease of maintenance for filling processes

The ever-increasing variety of beverages, liquid foodstuffs and pharmaceuticals presents major challenges for plant operators and plant designers. Manufacturers are placing more and more emphasis on customized solutions when it comes to container shapes, in order to stand out from the competition. This also applies to plant design. Maximum flexibility is often incompatible with low conversion and maintenance costs.

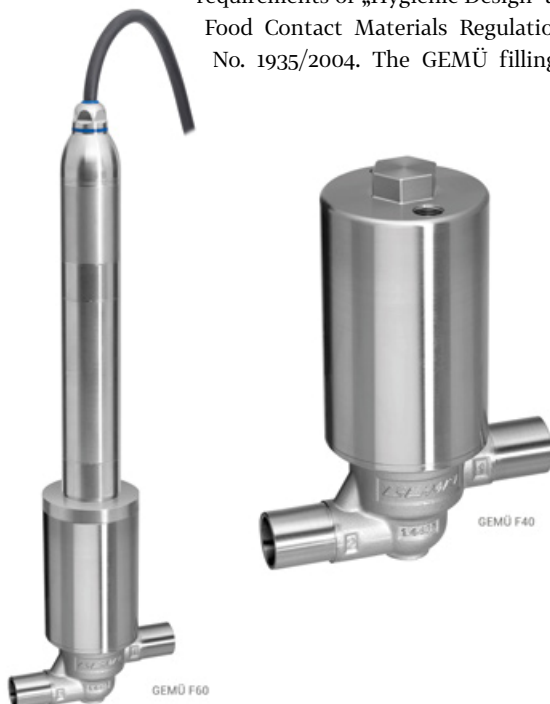
The valve specialist GEMÜ is reacting to these increased requirements by bringing an innovative filling valve platform to the market. It is based on the GEMÜ PD design that won the „ACHEMA Innovation Award“. This new sealing concept comprises a highly resistant plug diaphragm (PD) made of modified PTFE (TFMTM). This enables hermetic separation of the actuator parts and the product area, a high number of switching cycles and extremely precise dosing. At the same time, the patented cartridge spare parts system makes maintenance very simple and fast, eliminating long downtimes. The valves are FDA- and USP Class IV-compliant and meet the requirements of „Hygienic Design“ and the Food Contact Materials Regulation (EC) No. 1935/2004. The GEMÜ filling valve

platform currently comprises a pneumatically operated GEMÜ F40 filling valve and a motorized GEMÜ F60 filling valve.

The pneumatically operated GEMÜ F40 filling valve meets the high standards expected of an aseptic valve for use in the pharmaceutical and foodstuff industries. High Kv values and precise, fast activation in conjunction with a compact design mean that the GEMÜ F40 filling valve is suitable for any pneumatically operated filling processes. Where necessary, a variety of accessories from GEMÜ's wide range, such as a stroke limiter or positioner, can be adapted for use with the GEMÜ F40 filling valve.

The GEMÜ F60 filling valve can be actuated in real time and is controlled electronically, meaning that it will be significantly easier for users to adjust or rearrange the filling machine when changing the medium or filling container in the future. By precisely following freely programmable filling curves, it is possible to implement optimal quantity control and filling speed for each medium and filling container. The servo actuator is particularly impressive thanks to its high positioning accuracy of up to 10 µm and a travel speed of up to 200 mm/s. A controller can be used to connect the motorized filling valve directly to the software-controlled central machine control for the filling machine. This makes it particularly suitable for use in linear or circular fillers, for filling medicinal products or for filling infusion bags. The GEMÜ F60 filling valve generates no exhaust air; as a result, it can even be used in cleanrooms or insulators.

Together, the GEMÜ F40 and GEMÜ F60 filling valves represent the foundations of the new GEMÜ filling valve platform. The range is currently being individually expanded in order to create a modular platform that can be combined with individually designed filling stations.





Focused on business

International decision-makers get together at Cleanzone

Numerous national and international market leaders have already signed up for Cleanzone 2019 and will be presenting their product innovations on 19 and 20 November. Visitors' high level of decision-making authority, international make-up and readiness to invest highlight this platform's status as a place where business deals are struck and new contacts made.

On 19 and 20 November 2019, the Cleanzone trade fair will once again be bringing to Frankfurt decision-makers from all the high-tech industries that are focusing on contamination control to protect their products and personnel. Cleanzone is the place where business deals come into being. This is underscored by a visitor survey conducted at the last event which revealed that over 85 percent of trade visitors are involved in buying decisions. Roughly half of the people who visited the trade fair came with the intention to invest, and approx. 13 percent of these said that they would be investing even more than five million euros in cleanroom technology over the next five years. The large international component of visitors – more than 38 percent – highlights this trade fair's significance as the

most important trade fair for contamination control in Europe.

Kerstin Horaczek, Group Show Director for Technology at Messe Frankfurt: "With trade visitors from nearly 40 countries, Cleanzone offers exhibitors the opportunity to come into contact with customers from the key growth markets for cleanroom technology. And with our global sales network linking more than 170 countries around the globe, Messe Frankfurt is in the perfect position to promote an international exchange."

The event is still nine months away, yet numerous market leaders from eleven countries have already registered for the trade fair in November. Alsico High Tech, Asgard Cleanroom Solutions, Asys, Block, Briem Steuerungstechnik, Centrotherm

Clean Solutions, cleanroom.de, Cleanroom Future, Colandis, Contec, Daldrop, Dittel Engineering, Edins, Fisair, Gerflor, Hydroflex, IAB Reinraum-Produkte, Kemmlit, Klima-Systeme 2000, KWP, MEC, Metisafe, Opikar, Ortner Reinraumtechnik, pure11, Ritterwand, ROM, Siemens Building Technologies, Spetec, Trespa, protect2clean, Viessmann Technologies, VWR part of Avantor, and many more will be on hand to showcase their products and services. The German Cleanroom Institute (DRRI), the Austrian Cleanroom Society (ÖRRG) and Verein Interessengemeinschaft Pharmabau 3000 (VIP3000), a group promoting the interests of those involved in pharmaceutical construction, will also be exhibiting here. Cleanzone is supported by the Asenmco, Dechema, ICCCS, SwissCCS, Silicon Saxony and VDI multipliers and networks. Cleanzone covers all of the product groups where high-tech production processes are required and contamination control is essential.

The next Cleanzone will be taking place on 19 and 20 November 2019 in Frankfurt am Main. The second Cleanzone Middle East is being held on 18 and 19 September in Abu Dhabi.



Cleanzone visitors (Photo: Messe Frankfurt/Sandra Gätke)

19th - 20th November 2019: CLEANZONE 2019,
Frankfurt am Main (D)

cleanzone

cleanzone
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parts2clean 2019 – prime industry get-together and source of parts cleaning solutions and more



- Ever greater demands being placed on cleanliness
- Best-fit solutions – present and future
- Full topic coverage, with new display categories to be featured in 2019

In many sectors of industry, companies are facing new or more stringent challenges in industrial parts and surface cleaning. New manufacturing and fastening techniques call for new coating technologies and suitably adapted cleaning solutions. When it comes to removing particulate residues and surface films in such applications, the demands are on the rise. Also in fields such as the semi-conductor industry, medical technology and mechanical engineering, the specifications for parts cleanliness are becoming more and more stringent. Mastering these challenges is the name of the game at parts2clean, the International Trade Fair for Industrial Parts and Surface Cleaning, which is being staged for the 17th time from 22 to 24 October 2019 at the Stuttgart Exhibition Center.

In the face of global competition, companies need to offer cleaning solutions capable of delivering consistently high results, both quickly and cost-effectively. To an ever greater extent, the levels of cleanliness achieved need to be documented on a continuous basis, and the results stored until the next processing stage or even up through delivery to the customer. “The exhibitors at parts2clean will be presenting solutions for every requirement,” says Olaf Daebler, Global Director of parts2clean at Deutsche Messe. “parts2clean is the top international get-together for the industry, and a prime showcase for best-fit solutions and the latest technological advances and trends.”

International source of know-how and purchasing options

parts2clean is the premier international source of know-how and purchasing options for industrial parts cleaning, and the show’s visitors come in search of solutions for highly specific requirements. “Parts cleaning is a key issue in medical technology. As parts2clean is the only trade fair covering every aspect of parts cleaning, that’s where we go to showcase our products and services.

Those who came to see us at the show were industry professionals armed with a keen interest in finding answers to very specific questions,” reported Dr. Dagmar Martin, head of the working group “Interface analytics in the production process” at the Natural and Medical Sciences Institute (NMI) at the University of Tübingen.

It is also clear from the visitor survey that visitors to the 2018 show were well prepared to invest in new technology: 85 percent stated that they were directly involved in their company’s purchasing decisions. And 82 percent of the professionals who attended last year’s parts2clean had come with firm investment plans. “41 percent were considering purchases totaling €100,000 euros. So exhibitors not only generated valuable leads, but also a lot of sales,” remarked Daebler. Demand for stand space at this year’s show is high: By mid-January, more than 75 companies had booked their stands for 2019, among them virtually all the market leaders and innovators. Even at this early stage, the total amount of space booked (currently over 3,300 square meters) has already reached approximately 50 percent of the total for 2018.

All-encompassing array of exhibits, with new display categories

With a cross-disciplinary range of solutions addressing every industry and every stage of the industrial parts and surface cleaning process, parts2clean enables users from a huge array of manufacturing and reprocessing backgrounds to gather the information they need about processes, cleaning media and ways of optimizing processes and costs. Major emphasis will also be placed on medical technology cleaning applications, as well as the automation of cleaning processes, e.g. by means of robots. As the removal of surface film contaminants and the selective cleaning of functional surfaces are destined to become more and more important over the years to come, these topics will also be prominently featured at parts2clean



(Source: Deutsche Messe AG)



(Source: Deutsche Messe AG)

parts2clean 2019 – prime industry get-together and source of parts cleaning solutions and more

2019. Visitors will also be inspired by the special QSREIN 4.0 showcase, which this year will explore the future of process control in water-based parts cleaning. Here suppliers and users of cleaning technology will be examining innovative, best-fit, cost-effective approaches to process monitoring and control capable of meeting consistently high standards of cleanliness.

Attractive supporting program

parts2clean also excels as a source of know-how, for example in the form of its three-day Industry Forum staged in association with the Fraunhofer Cleaning Technology Alliance – a forum that will offer added value thanks to its co-staging of the Innovations and Future Forum as organized by the German Industrial Parts Cleaning Association (FiT). Among the key topics to be covered there are technology basics, strategies for optimizing processes and costs plus quality assurance. The forum will also treat visitors to first-

hand reports on best-practice applications, as well as discussion of the latest trends and innovations. The entire parts2clean Industry Forum will be simultaneously translated (German->English/English->German).

Twice a day, Guided Tours (in English and German) to the stands of selected exhibitors will highlight notable offerings for the cleaning of industrial parts and surfaces, making it easy to find promising innovations and suppliers for their specific needs. For participating exhibitors, the Guided Tours serve as an excellent chance to impress a highly receptive audience with their innovative products. This adds up to valuable leads and excellent business prospects.

22nd - 24th October 2019: parts2clean, Stuttgart (D)

Deutsche Messe AG
D 30521 Hannover

Contactless and precise roughness measurement in the lab or directly in the production process



- KRÜSS presents the Surface Roughness Analyzer – SRA, a confocal microscope for optical analyses of surface textures
- Optical and micro-mechanical innovations combine speed with high resolution
- The SRA works as a lab instrument or as a robot-controlled measuring head

Whether a surface must be very smooth or show a certain texture or degree of roughness, the new Surface Roughness Analyzer – SRA precisely pictures the topographic condition of a surface and provides information for optimizing the material or production process. Contactless, quickly, and with an extremely high resolution, the SRA delivers a 3D image of a sample's surface and the correlating data which exactly

describe its topography. Analyses with the SRA also help to evaluate the contribution of roughness to the wettability of a sample or to the adhesion of coatings.

Technical innovations for precision and speed

The SRA uses the confocal microscopy technique to create the spatial representation of the surface. This happens by stacking layers of 2D images, each one with a very small depth of focus, while lowering the optics with extremely tiny increments, leading to a height resolution of down to 10 nanometers.

To scan an area of the sample, usual confocal microscopes use a rotating pin-hole disk to create an image at each height level. The disk inside the SRA has micro lenses instead of just holes, increasing the light yield and making it possible to analyze low-reflectivity or even transparent surfaces.

The vertical transport of the measuring head uses an ultrasonic instead of a common piezo drive. Thus, while combining speed with a high resolution, the usual height range of the measurement is widely exceeded. To reach a vast scope of tasks from roughness analysis to imaging the exact shape of whole products such as

screws or tooth implants, lenses with magnifications from 2.5 to 100-fold can be exchanged quickly and easily.

Measuring head for robotic systems – ready for in-line quality control

With its small size and low weight, the SRA can be used at almost any place as a lab instrument, but is also available as a measuring head to be used for automatic processes in the production line. This makes real-time sample evaluations for QC checks of work pieces possible. Adding to the versatility of the SRA itself, the software can be linked to programs such as Matlab® in order to integrate it in information systems.

The Surface Roughness Analyzer – SRA is immediately available. KRÜSS will also present the instrument together with other solutions in the area of non-destructive surface analysis at the Control trade fair from May 7 to 10 in Stuttgart (Germany): Hall 6, Stand 6419.

07.05. - 10.05.2019: CONTROL, Stuttgart (D)

Krüß GmbH Wissenschaftliche Laborgeräte
D 22453 Hamburg



Surface Roughness Analyzer – SRA by KRÜSS as a robot-controlled measuring head.

Pharma trends at POWTECH 2019: faster development time from laboratory to process



At POWTECH 2019 from 9 to 11 April in Nuremberg, trade visitors will experience the entire range of innovations in mechanical processing technology. This also makes this international trade fair the leading forum for decision-makers involved in the development, manufacture and analysis of pharmaceutical, cosmetic, dietary and health food products. In these product groups, manufacturers that can respond the fastest to changing customer needs have the advantage. With the over 800 exhibitors from 32 countries at POWTECH 2019, solutions to provide more speed and efficiency in production are therefore an important focus.

One of the biggest challenges in the pharmaceutical, cosmetic and health food sectors has always been to cut development times. Bosch, for example, has developed a solution for manufacturers of solid oral dosage forms and will showcase this approach for the first time in Germany at POWTECH 2019. The Xelum R&D laboratory solution substantially reduces the time from laboratory to continuous production. The exhibitor says that this is the first laboratory system that enables various excipients and active ingredients to be dosed, mixed, granulated and dried. It is also the first system that lets pharmaceutical engineers develop formulations for both continuous and batch production.

Fritz-Martin Scholz, Product Manager for Xelum at Bosch Packaging Technology, explains the details: "In continuous production, one of the biggest challenges is the precise dosing of the starting materials. Our new approach means that in contrast to the usual continual mass flow, the Xelum R&D doses excipients and active ingredients as a discrete mass. To this end, individual packages known as X-keys are dosed, mixed and granulated in batches which run continuously through the process chain. They are then removed successively from the system and transferred to bins. This not only reduces the complexity of the process but also improves the accuracy and quality of the end product. Moreover, the starting materials are traceable at all times."

The goal: shorter development cycles and time to market

Bosch uses the fluid bed processors developed by its subsidiary Hüttlin for granulation in the Xelum R&D. There is no need to transfer wet granulate, as granulation and drying take place in the same process area. This means that production volumes ranging from less than 250 g through to 10 kg per hour can be processed in automatic cycles. As a result the system is not just ideal for R&D purposes but also for pilot production or the manufacture of orphan drugs. It is optionally available as a completely self-contained unit and can also be used for the development of potent active ingredients. Scholz stresses: "The new labo-

ratory system works with identical components and process parameters as our Xelum production platform, which means process parameters can be directly transferred 1:1. As a result, no scale-up is necessary and pharmaceutical specialists achieve shorter development cycles and time to market."

At the trade fair, more than 380 other exhibitors offer innovations specifically for pharmaceutical production. A total of 800 companies in the six exhibition halls at POWTECH provide a diverse range of technologies and solutions for pulverising, mixing, separating, filtering, agglomerating and associated processes that is unrivalled worldwide.

Supporting programme for pharmaceutical experts

Experts from the pharmaceutical sector can also look forward to a special highlight – the Pharma.Manufacturing.Excellence Forum in Hall 3. Organised by the APV (International Association for Pharmaceutical Technology), the forum comprises a series of presentations by experts focusing on solid dosage forms, offering added value to those seeking professional development opportunities. The (English language) programme can be downloaded from www.powtech.de. Directly adjacent to the forum and APV lounge, suppliers of pharmaceutical excipients will have their own dedicated area for the first time and will thus provide a fitting complement to the range on display for pharmaceutical experts at POWTECH. The international PARTEC Congress for Particle Technology will take place parallel to POWTECH 2019 and expects to welcome more than 500 delegates. It is sponsored by VDI-GVC (Association of Process and Chemical Engineering).



At POWTECH, more than 380 of the around 800 exhibitors in total will be presenting innovations for pharmaceutical production.

09th - 11th April 2019: POWTECH, Nuremberg (D)

NürnbergMesse GmbH
D 90471 Nürnberg



Intelligent solutions combine maximum efficiency with excellent performance

ENGEL at Plástico Brasil 2019

25th - 29th March 2019: PLÁSTICO BRASIL, Sao Paulo (Brasil)

ENGEL is making its customers more competitive with reliable, flexible and efficient machines and automation from a single source. At Plástico Brasil 2019 from 25th to 29th March in São Paulo, Brazil, the injection moulding machine manufacturer and system expert headquartered in Austria will be demonstrating what this can look like in practice with two sophisticated applications from the fields of packaging and technical moulding. It will be clearly demonstrated how digitalisation, and machine and system networking can unlock even more efficiency and quality potential.

Packaging: Thin-wall with IML in 2.2 seconds

Flexibility and high performance play the main roles in ENGEL's packaging exhibition space at Plástico Brasil 2019. An ENGEL e-motion 440/160 will be used to produce polypropylene ice cream cups using thin-wall technology in a 4-cavity mould with a total shot weight of 14.8 grams. Thanks to in-mould labelling (IML), the cups are ready-to-fill when they leave the integrated production cell. The cycle time is 2.2 seconds.

Two main factors are responsible for the high efficiency and economy of the production process. On the one hand, in-mould labelling makes it possible to change the decor without interrupting production. Even with very small batch sizes, this guarantees the lowest unit costs. On the other hand, ENGEL has consistently geared its all-electric ENGEL e-motion injection moulding machine for high-performance operation with injection speeds of more than 500 mm per second. The closed system for the toggle lever and spindle ensures optimum and clean lubrication of all moving machine components; the e-motion thus meets the strict purity requirements not only of the food industry, but also of the cosmetics, medical technology and pharmaceutical industries.

ENGEL is implementing this exhibit together with partners. The mould is provided by SIMON from Saint-Lupicin, France. BECK automation (Oberengstringen, Switzerland) is responsible for the IML automation. The labels come from Verstraete in Maldegem, Belgium, and the polypropylene from Borealis, who are headquartered in Vienna, Austria.

30 years of ENGEL tie-bar-less technology

Compact manufacturing cells, efficient automation and fast set-up processes: with



ENGEL is implementing this exhibit together with partners. The mould comes from SIMON, France, the IML automation comes from BECK automation, Switzerland. (Photo: Engel)



ENGEL has consistently equipped its all-electric ENGEL e-motion injection moulding machine for high-performance operation with injection speeds of more than 500 mm per second. (Photo: Engel)



Barrier-free access to the mould area ensures the great overall efficiency of the ENGEL victory. This year marks the 30th anniversary of ENGEL tie-bar-less technology. (Photo: Engel)

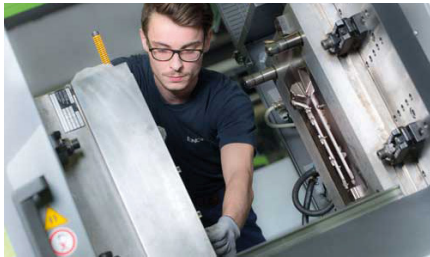
their fully usable platen areas and free access to the mould area, tie-bar-less injection moulding machines fulfil the need for high efficiency and cost-effectiveness in production in a particularly good way. To mark the start of the 30th anniversary of ENGEL tie-bar-less technology, the machine manufacturer is presenting a tie-bar-less victory 1060/220 injection moulding machine at Plástico Brasil 2019, on which technical parts are produced in a multi-cavity mould. With its tie-bar-less technology, ENGEL still has a unique selling proposition today.

Barrier-free access to the mould area makes it possible to fully utilise the mould mounting platens up to the edges. This means that large, bulky moulds can be mounted on relatively small machines. This translates into efficiency factor, especially when multi-cavity moulds are used. Multi-cavity moulds, although large, require relatively little clamping force for the precise moulding of fairly small component surfaces. Where a tie-bar-less injection machine is deployed, therefore, the machine size is determined not by mould volume, but by the clamping force required for the moulding process. Thanks to tie-bar-less technology, much smaller injection moulding machines can be used for many applications; this keeps investment and operating costs low while facilitating compact manufacturing cells.

The patented force divider in the tie-bar-less clamping unit enables the moving mould mounting platen to follow the mould exactly parallel while clamping force is building up, and ensures that the applied force is evenly distributed across the whole surface. This means both outer and inner cavities are kept closed with precisely identical force, which leads to extremely consistent wall thicknesses. Even where very low viscosity materials such as liquid silicone rubber (LSR) are used, flash is reliably prevented.

Intelligent solutions combine maximum efficiency with excellent performance

Other advantages of tie-bar-less clamping units include improved ergonomics, mould set-up time savings and highly efficient automation concepts. The robots have maximum freedom of motion and unrestricted access to the mould area from



The fact that employees do not have to bend down to reach between the bars facilitates manual work on the mould. (Photo: Engel)

the side, thus reducing the handling times. In São Paulo ENGEL is demonstrating this with a viper linear robot.

inject 4.0: compensating for process fluctuations before rejects are produced

A third topic for ENGEL at Plástico Brasil is inject 4.0. ENGEL already offers a range of mature products and solutions for the digitalisation and connectivity of manufacturing processes, and new ones are constantly being added. The modular approach of ENGEL's inject 4.0 program makes it particularly easy for processors to take advantage of the new opportunities that industry 4.0 opens up. Even small-scale individual solutions promise considera-

ble benefits. As an example, ENGEL will be presenting its iQ weight control assistance system in São Paulo. During the injection process, the software analyses the pressure profile in real time and compares the measured values with a reference cycle. Individually for each shot, the injection profile, switchover point and the holding pressure profile are automatically adapted to current conditions and the injected melt volume is kept consistent throughout the whole production operation. In this way, fluctuations in environmental conditions and in raw materials are automatically recognised and readjusted before even a single reject is produced.

ENGEL AUSTRIA GmbH A 4311 Schwertberg

NFC-Label by Schreiner MediPharm for Ypsomed's SmartPilot™ Supports Smart Self-Medication

Innovative Patient Support Using NFC Technology

Schreiner MediPharm in cooperation with Swiss-based Ypsomed developed an NFC-Label that is applied to the YpsoMate® autoinjector and transmits stored information about the medication to its electronic add-on – the novel SmartPilot™. Thus, the data recorded about the use of the autoinjector logged by the SmartPilot™ are ideally complemented. The resulting connected device enhances the safety of patients and assists them in the self-administration of medicines in order to better comply with prescribed therapies.

YpsoMate® is an autoinjector for self-medication of a wide range of pharmaceutical substances and in diverse therapeutic areas. To turn this injection platform into a smart device, Ypsomed developed the SmartPilot™ – a reusable add-on with embedded sensor technology that is easy to handle: The autoinjector is pushed into the SmartPilot™ and automatically recognized by means of the NFC-Label applied to the injection aid. The information about the medication stored on the NFC chip is used by the SmartPilot™ and transmitted to a related smartphone app via a Bluetooth con-

nection.

At the heart of the technology behind this connected device is the interlinking of diverse sensors and the label with an integrated NFC chip which Schreiner MediPharm adapted to YpsoMate®. The NFC chip identifies and authenticates the medicine and checks its expiration date. According to the prescribed therapy, the patient can be guided in real time through the injection process by means of the SmartPilot™ sensors or feedback on the correct administration of the medicine can be transmitted. It is also possible to store the entire injection history in detail—from the injection time and its success through to the patient's well-being—and to share it with other stakeholders. The attending physician, for instance, is then able to use this information to adjust the continuing therapy plan.

"The integration of NFC technology, which has to ensure reliable reading, in a very small space posed the primary challenge in this label development.

Subsequent ease of processing was another specified objective," explains Arne Rehm, Product Manager RFID/NFC Solutions at Schreiner MediPharm. "The result of the development cooperation between Ypsomed and Schreiner MediPharm is an innovative complete solution for pharmaceutical manufacturers who are now able to provide patients with the SmartPilot™ as a valuable tool supporting them in their self-medication," adds Andreas Schneider, Innovation & Business Development Manager at Ypsomed.



Schreiner MediPharm's NFC-Label is applied to the YpsoMate® autoinjector and serves as communication interface to the SmartPilot™.

#empowerthefield – unleashing the potential



Efficient utilization of unused device data

At the 2019 Hannover Messe (1 to 5 April 2019 in Hanover, Germany), Endress+Hauser will highlight the intelligent utilization of data and information from field devices and show how the vast potential hidden in plants can be unleashed. The foundation of this strategy is innovative diagnostic information generated by Heartbeat Technology, a wide selection of digital interfaces and connectivity modules, as well as the Netilion IIoT ecosystem. With this approach, the People for Process Automation are catering to companies constructing new plants, as well as the operators of existing systems.

01st - 05th April 2019: Hannover Messe, Hannover (D)

Netilion – cloud-based IIoT ecosystem

Every user is looking for ways to carry out predictive maintenance and avoid unplanned system downtime. As a leading provider of measurement instruments for industrial applications, Endress+Hauser wants to offer current and future customers solutions that exploit the untapped potential in their field devices. While the data already exists, the Netilion applications allow users to take advantage of it. With the Netilion cloud-based ecosystem, Endress+Hauser is showcasing intelligent and connected applications for the Industrial Internet of Things (IIoT).

Heartbeat Technology – constantly feeling the pulse

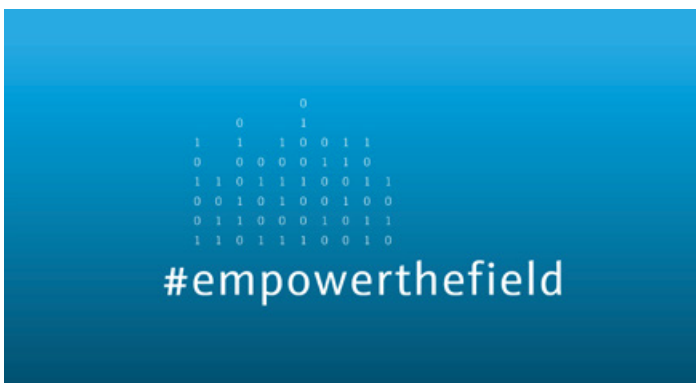
Endress+Hauser offers a wide range of instruments equipped with Heartbeat, a technology that provides a high level of system availability with minimal effort. The integrated Heartbeat Technology delivers concise, standardized diagnostic notifications and monitoring data that allow users to service and maintain their systems precisely when needed. In combination with the Netilion applications, this data enables predictive maintenance. The information also provides an indication of operational reliability and process safety. Since the instruments automatically monitor their own condition, manual inspection cycles can be reduced.

Solid measurement instruments for efficiency and reliability

One of the product highlights at the Hannover Messe is the new Liquiphant FTL51B, which follows in the footsteps of the tried-and-tested tuning fork-based Liquiphant level switches. This robust point level switch is suitable for use with all liquids and now comes with the integrated Heartbeat Technology for documented proof testing without removing the instrument or interrupting the process. Another new product that is also equipped with Heartbeat Technology is the Gammapilot FMG50, a radiometric level transmitter that can be deployed where other measurement principles run up against their limits. Additional highlights that visitors can check out at the Endress+Hauser exhibit booth are the Proline 300/500 flowmeter and a new Promass A flow sensor for measuring smaller flows, which is also available in two-wire technology. And with the 113 GHz concept, Endress+Hauser is also illustrating that it offers the right frequency for every application when it comes to radar-based level measurements.

Visit our booth C43 in hall 11 and experience firsthand all the new innovations from the People for Process Automation. We look forward to many interesting discussions.

Endress+Hauser AG
CH 4153 Reinach BL 1



Endress+Hauser demonstrates the intelligent utilization of data and information from the field level.

Netilion, a cloud-based ecosystem, supports users with intelligent and connected applications.

Digital CO₂, Humidity and Temperature Sensor

The EE850 sensor for CO₂, humidity and temperature features now RS485 interface with Modbus or BACnet protocol.

The EE850 duct mount sensor from E+E Elektronik combines the CO₂, relative humidity (RH) and temperature (T) measurement in a single device. The sensor can be easily integrated into a bus system via the RS485 interface (Modbus RTU or BACnet MS/TP). The 3-in-1 device is dedicated for building automation as well as for demanding process control.

The EE850 features the E+E dual wavelength NDIR CO₂ sensing cell, which is particularly insensitive to contamination. The CO₂ auto-calibration and temperature compensation lead to high accuracy and long-term stability over the entire working range of 0...10,000 ppm CO₂ and -20 °C to +60 °C (-4...140 °F).

The RH and T sensing element located inside the probe is optimally protected from dust, dirt and corrosion by the proprietary E+E coating. The coating improves the measurement performance and long-term stability in harsh environment by preventing stray impedances caused by deposits on the active sensor surface.

The CO₂, RH and T measured data as well as the calculated dew point temperature (Td) are available on the RS485 interface with Modbus RTU or BACnet MS/TP protocol. Alternatively, the EE850 features current and voltage outputs. The digital interface provides also other parameters such as absolute humidity (dv), mixing ratio (r), water vapor partial pressure (e) or enthalpy (h).

Configuration and adjustment can be performed with an optional adapter and the free EE-PCS configuration software.

The functional enclosure facilitates mounting the EE850 with closed cover. This protects the electronics from construction site pollution during installation. A mounting flange is included in the scope of supply.



Digital EE850 transmitter for CO₂, humidity and temperature from E+E Elektronik. (Photo: E+E Elektronik GmbH)

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