



Hans J. Michael GmbH



New parenteral drug manufacturing laws put focus on cleanroom compliance

New laws aimed at raising the standard required for the manufacturing of parenteral drugs in German pharmacies put the emphasis on cleanroom compliance.

By June 1st, following a transition period of two years, all hospital and independent pharmacies will be required to comply with these new laws as detailed in ApBetrO.

At the heart of the new law is the need for parenteral medications to be manufactured in separated rooms and for all appropriate cleanroom conditions to have been maintained. If there is no sterilization after filling, pharmacies will need a Grade A area in a Grade B or C environment. Isolators can be placed in D rooms.

There will also be a requirement for a hatch between the Grade A area and cleanroom environment to provide a means of passing products safely in and out, minimising the risk of contamination.

Meanwhile, the new laws state that as part of the quality management system, the head of the pharmacy has to ensure self auditing is carried out on a regular basis. It is further recommended that external auditing also takes place.

One company leading the way in the control of microbial contamination in the pharmacy cleanroom environment is Ecolab Contamination Control. The firm produces a fully validated range of sterile products which is produced to the requirements of cGMP and supplied to pharmaceutical, healthcare, biotechnology, and medical device industries worldwide.

Dr Manfred Koranda of Ecolab Contamination Control said: 'We provide contamination control solutions to the pharmaceutical industry and have followed guidelines which are at least as stringent, for more than 10 years. 'With our products, experience and the correct cleaning regime, full compliance with the new legislation should be achievable.' Products include sterile packed syringes, an extensive range of sterile pre-impregnated and sterile dry wipes and a fully validated range of sterile low residue biocides.

The dispensing system for disinfectants incorporates the patented SteriShield Delivery System which

creates a fully closed validated system, preventing 'suck back'. This ensures the integrity of the product is completely protected throughout its entire use and not simply at manufacturing stage.

Dr Koranda said: 'Research has proved that conventional trigger sprays used with cleanroom disinfectants 'suck back' air meaning the contents of the bottle can be contaminated from the first moment of use, leading to a spread of contamination around the cleanroom. This actually happened in a hospital only

eight hours after first use of 70% alcohol: Bacillus subtilis spores were found and survived inside the bottle.

'Our fully validated protected closed trigger spray operates as a closed system due to the vacuum created in use, with the dip tube providing the only point of exit from the bag of sterile liquid, which protects the sterility of the contents indefinitely, with a recommended best practice in-use shelf life of three months.'

All Ecolab Contamination Control products are manufactured in purpose built state-of-the art cleanrooms to the requirements of cGMP, and meet the highest of industry standards.

In light of the new laws, Ecolab Contamination Control is offering its expertise to pharmacy operators.

Dr Koranda said: 'This will be a difficult transition for most German pharmacies who will view the new laws as an added burden to an already busy workload.'

'At Ecolab Contamination Control we are ideally placed to offer expert advice to busy pharmacies, making this transition and future compliance with the new laws as easy as possible, helping them to deliver contamination control, without compromise.'



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Sales planned to reach 1.5 billion euros by 2015

Successful fiscal 2013: Bosch Packaging Technology maintains high growth rate

- Big boost from pharmaceuticals market
- Bosch outpaces the packaging machinery industry
- Contribution to better food supplies

Bosch Packaging Technology continued growing faster than the packaging machinery industry in 2013, breaking the one-billion-euro sales mark for the first time. "We are exactly on track," said Friedbert Klefenz, President of Bosch Packaging Technology. The company increased its sales in fiscal 2013 from 914 million euros to 1.1 billion euros, a rise of 22 percent. Adjusted for consolidation effects, that equates to growth of 6.4 percent. Leaving aside exchange rate effects, internal growth at Packaging Technology reached ten percent. By comparison, figures from the German association of mechanical engineers (VDMA) put growth in the German packing machinery industry at only four percent. In 2013, the company employed around 5,600 people at over 30 locations, 12 percent more

than in the previous year. Bosch Packaging Technology, a market leader in processing and packaging solutions, will present details of its performance in 2013 at its annual press conference on May 8, 2014, 10:00 a.m. at Interpack trade fair in Düsseldorf, Germany.

"We expect to maintain our growth rate in the current business year as well and reach the target we have set ourselves of 1.5 billion euros in sales by 2015," stated Klefenz. Bosch Packaging Technology is among the fastest-growing divisions of the Bosch Group. In addition to its main markets of Europe and North America, the company posted above-average growth in Asia, while the markets of Africa and the Middle East continue to gain in importance as well.



Dipl.-Ing. Friedbert Klefenz has been the President of Bosch Packaging Technology since April 2012. In that capacity, he is responsible for the Business Units Confectionery & Food and Liquid Food as well.

Protecting food with state-of-the-art packaging technology

One of Bosch Packaging Technology's growth drivers is its pharmaceuticals segment, which is profiting from the burgeoning global growth of this industry. "This clearly shows that ever more people around the world are gaining access to pharmaceutical products, and that can be traced back to growth in the market for generic drugs," said Klefenz. What is more, the growing use of appropriate packaging is helping improve global food supplies. "We're proud that our technology can make a contribution toward improving people's quality of life," explained Klefenz. Worldwide, almost a third of all food produced is lost before it reaches consumers, and missing or inadequate packaging is one of the causes. That is why Bosch Packaging Technology was among the founding members of the United Nations' SAVE FOOD initiative launched at the Interpack trade fair in Düsseldorf in 2011.

Bosch Packaging Technology
D 74554 Crailsheim



Hüttlin Gentlewing: Thanks to its special geometry, the Hüttlin Gentlewing mixing device by Bosch Packaging Technology achieves maximum mixing quality while exerting low mechanical stress on the product.

Making Pharmaceuticals, 29-30 April 2014, NMM Exhibition Centre, Birmingham

Cherwell Supports Pharmaceutical Manufacturing

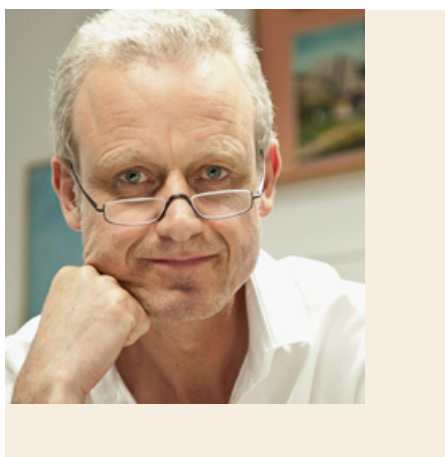
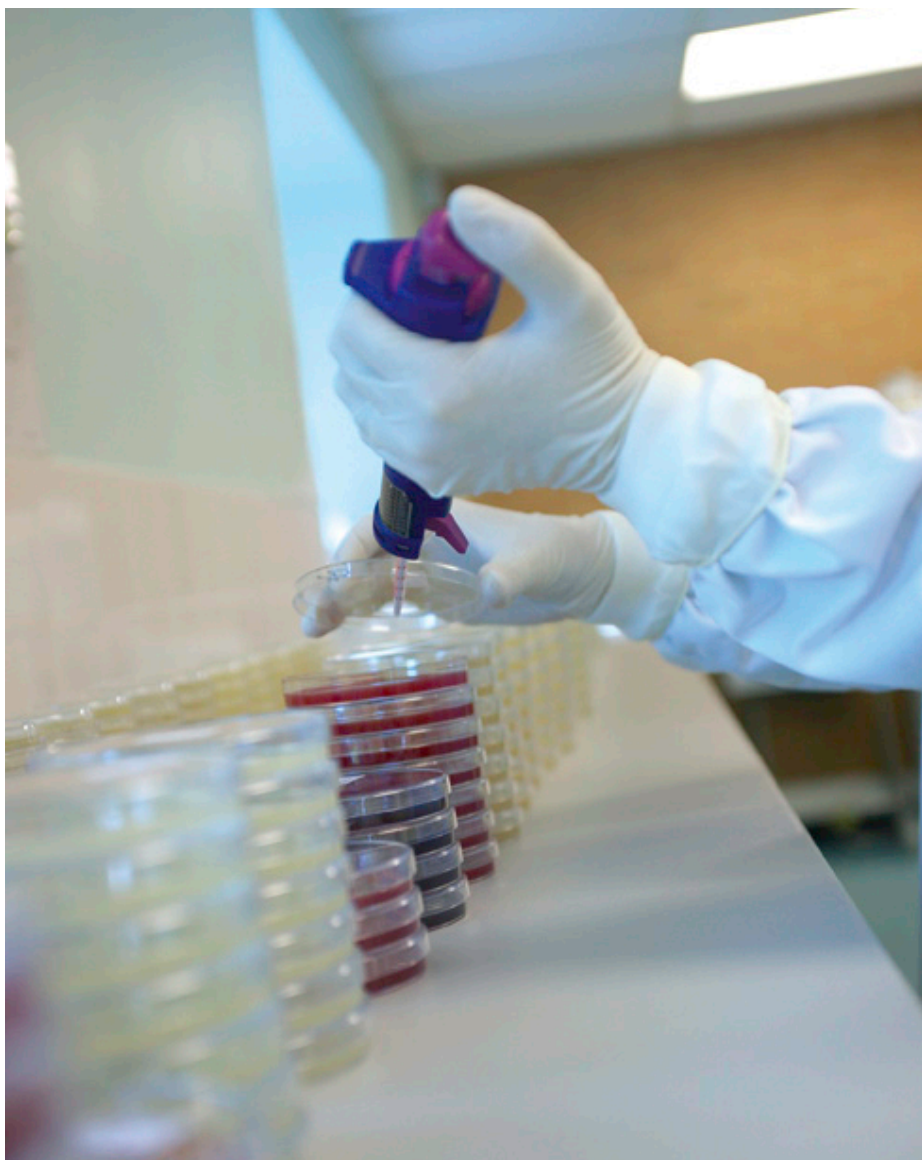
Cherwell Laboratories, specialist suppliers of environmental monitoring and process validation products for the pharmaceutical and related industries will be exhibiting at the inaugural Making Pharmaceuticals event on 29th & 30th April 2014.

Making Pharmaceuticals, to be held at NMM Exhibition Centre, Birmingham is the only event in the UK dedicated to the detailed and complex issues associated with sourcing, manufacturing, outsourcing and delivering consistent pharmaceutical products to the market.

Experts from Cherwell Laboratories will be available throughout the 2-day event to discuss environmental monitoring and process validation solutions to meet the specific requirements of the pharmaceutical industry. With over 40 years' experience within the industry, Cherwell has developed a fully integrated range of products for environmental monitoring, operator validation and validation of sterilisation processes, a selection of which will be displayed.

Andy Whittard, Managing Director, Cherwell Laboratories commented, "Cherwell's success has been built on our ability to develop products to meet the specific requirements of the pharmaceutical and related industries". He added, "Making Pharmaceuticals provides the opportunity to discuss our products whilst discovering how we can further improve our range to continue meeting the changing needs of industry".

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Dear readers, dear subscribers,

now out – the cleanroom magazine in English. If you didn't get it, please send us an eMail. The next will be printed in September. If you like to be in it, please send us your articles in time.

Reinhold Schuster
Yours sincerely,

Reinhold Schuster



NEW

If you click at this sign in the pdf-document you will easily get more information in the internet

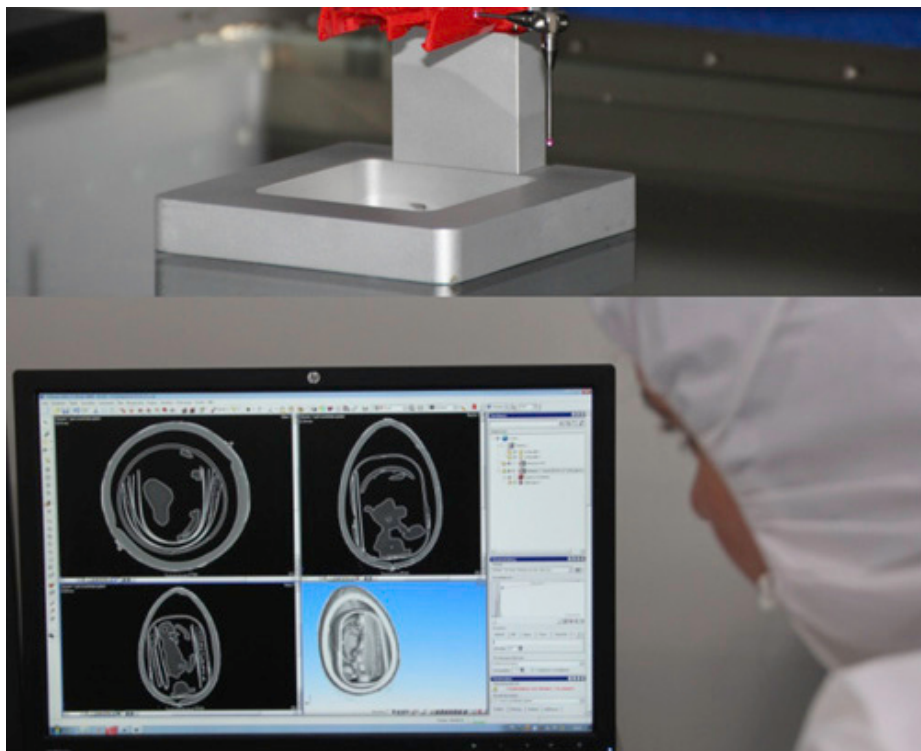


Cleanliness competence center opening ceremony

The Germany based Fraunhofer Institute for Manufacturing Engineering and Automation IPA and the Romanian based company Microelectronica S.A. solemnly opened a Cleanliness Competence Center in Bucharest. This center, co-funded by the European Commission, combines LED research work and production lines in a worldwide unique way. Automotive, Optics and Electronics industries are going to benefit from the collaboration of Microelectronica as an innovative LED manufacturer and Fraunhofer as Europe's largest application-oriented research organization. "We congratulate Liviu Jalba and we need a lot more projects like this one," said Ms. Angela Filote, Head of European Commission's Representation in Romania. Christos Tokamanis, Head of Unit Advanced Materials and Nanotechnologies at the EC Directorate General Research and Innovation added: "It was very clever to team up with Fraunhofer IPA."

Equipped with leading-edge analyses tools such as Computer Tomograph, Scanning Electron Microscope and Contamination Extraction Systems, being operated in extremely clean environments, will identify their potential for improvement regarding cleanliness and lift them to more efficiency and high quality standards.

After a realization time of two years, the facilities were presented in an exclusive Opening Ceremony on Tuesday, March 18th



Multi Sensor Tool and Computer Tomography for determining the dimensional accuracy of components. (Pictures: Fraunhofer IPA / Nicole Göldner)

to representatives of the European Commission, the Romanian Government as well as Industrial Stakeholders.

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Vaisala to Donate Measurement Instruments to the New Children's Hospital 2017 in Helsinki

Vaisala will be contributing humidity, temperature, and carbon dioxide measurement instruments to the new children's hospital to be constructed in Helsinki, Finland in 2017. The equipment is valued at an estimated 225 000 euro and will be integrated into the hospital's building automation solution.

„This project is a very valuable one for Finnish wellbeing, as well as for the future. We at Vaisala are delighted and proud to join in the effort to help build the world's best children's hospital. In a hospital environment, good indoor air quality is an obvious and fundamental requirement for both patients and staff, helping to ensure high quality care and a safe working environment,“ says Vaisala President and CEO Kjell Forsén.

Vaisala's measurement equipment will provide data to control the central heating, ventilation and air conditioning system in the building. These instruments will gather data on temperature, carbon dioxide, and relative humidity. The information will be used to adjust ventilation intensity to meet actual ambient conditions and requirements, which changes based on the number of people in a particular area. This also helps to ensure that indoor air quality is optimized, further improving the overall energy efficiency of the building.

„The new children's hospital is being designed and constructed in accordance with a dozen select and measurable criteria. In addition to medical processes, the child's and family's experience in the hospital are at the

core of this project. Other important factors include the hospital as a work environment, its reliability, safety, and energy efficiency. Vaisala's contribution brings the industry-leading, state-of-the-art technology to the children's hospital, which will help us reach our target, to build the world's best children's hospital,“ commends Chairman of the Board of the New Children's Hospital 2017 Foundation, Anne Berner.

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Connect 2 Cleanrooms Celebrate Amazing Double Win at the Red Rose Awards 2014

Connect 2 Cleanrooms shone at the Red Rose Awards by scooping up two awards; the Engineering Award and Medium Business of the Year. The company were announced double award winners at the glittering ceremony, held at the Empress Ballroom in Blackpool to honour the best in Lancashire business.

The company triumphed despite tough competition in their categories and the double win recognises its commitment to engineering innovation and its committed team.

"It came as a massive surprise to win both awards; we had barely got back to our seats when we were called up again. I was really pleased for the team, both those who attended and the rest of the team at home watching the Twitter feeds. I would like to thank all of the crew in Lancaster, our suppliers and customers - who have all played a part in us achieving these great awards," says Joe Govier, MD.

Winning the double, Engineering Award and Medium Business of the Year is a milestone event for the Lancaster based company, indicating just what the company has achieved and where it is headed.

Connect 2 Cleanrooms Ltd, Winner of Medium Business of the Year 2014:

The judges said, "Connect 2 Cleanrooms

is a business that is going places, with extremely healthy profit margins, a clear business model and a defined future strategy."

Connect 2 Cleanrooms Ltd, winner of Engineering Business of the Year 2014:

The Judges said, "Connect 2 Cleanrooms had a strong analytical focus and turn their products into a service, providing a full business package."

After a move in 2013 to much larger premises, Connect 2 Cleanrooms has developed its product offering and expanded its already successful enterprise, both in the local and international cleanroom markets. Now with a 26 strong workforce, the company is on an exciting journey that is showing no signs of slowing down; driving growth each year since its inception over 12 years ago.

As this innovative era brings new and emerging technologies an increasing number of processes are getting smaller and cleaner, so the cleanroom market is forecasted substantial growth. Connect 2 Cleanrooms' solutions have huge market potential due to their flexibility and quality and the company is committed to providing customer focused contamination control solutions for the growing market.

Connect 2 Cleanrooms has advanced into a big player in the cleanroom market and

this award is in recognition of its drive and ambition.

The Red Rose Awards is designed to celebrate Lancashire business, to provide the best possible platform to promote success, and to encourage inter-trading in the county. The Red Rose Awards is hailed as the event where Lancashire business, commerce and industry are celebrated.

Connect 2 Cleanrooms is an industry leader, creating modular cleanroom solutions for critical environments, both in the UK and internationally. The company designs and manufactures hard and soft wall cleanrooms in-house and delivers quality cleanroom solutions to meet the ISO 14644-1 standard required. Its consumables division, Cleanroomshop.com, supplies a full range of consumables, equipment and furniture to the cleanroom industry worldwide.

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The Connect 2 Cleanrooms' team collecting one of its two awards at the Red Rose Awards 2014.

Cross-technology expertise under one umbrella

Interpack 2014: Bosch presents training concept of new Bosch Packaging Academy

- Global network of competence centers and country academies
- Central knowledge pool for Bosch equipment
- Step-by-step integration of all training units

08.05. - 14.05.2014
interpack 2014, Duesseldorf (D)

At Interpack 2014, Bosch Packaging Technology, a leading supplier of process and packaging technology, presents its new concept for technical trainings. The division has begun to establish a worldwide training platform under the umbrella brand Bosch Packaging Academy, offering customers and employees a standardized knowledge pool for the entire machine portfolio from Bosch Packaging Technology. "The centrally bundled program makes it easy for customers to choose their suitable training product, especially for topics covering different technologies," explains Severin Diepold, project manager, Bosch Packaging Services.

First centers of competence in Crailsheim and Beringen

The Bosch Packaging Academy will comprise individual centers of competence and local country academies. The sites in Crailsheim, Germany and Beringen, Switzerland are the first centers of competence to offer specific technical trainings for the product divisions Pharma and Confectionery and Food under the Academy umbrella. Bosch will integrate further sites into the comprehensive training concept step by step, in order to make standardized trainings for the entire product portfolio available worldwide and from a single source. In the coming years, Bosch will further add local country academies for basic trainings to the Academy, amongst others in China and Egypt.

Modular training program

Customers have the opportunity to choose from three different training modules: basic trainings for the safe and efficient operation and maintenance of Bosch machinery, advanced trainings for increased productivity, as well as specific programs for specialist topics such as Good Manufacturing Practice (GMP), servo technology or IT. With



New training concept: Bosch Packaging Academy: Under the umbrella of the new Bosch Packaging Academy, customers and employees have access to a uniform knowledge pool for the entire machinery portfolio from Bosch Packaging Technology.

a combination of different training methods such as theoretical lessons, multimedia training and hands-on experience, Bosch offers customers maximum flexibility.

On-site training

In addition to training sessions at individual Academy sites, Bosch also offers trainings at customers' premises. Depending on the module, different trainers manage the courses: while country trainers are available as experts for basic machine knowledge in the respective local language, specialist trainers from the individual centers of competence teach in-depth content. "When new machinery is installed, Bosch informs custo-

mers about relevant security aspects during general machine startup. Our machinery training aims at imparting technical and machine-specific knowledge for individual customer situations," Severin Diepold emphasizes. "This way we make sure that our customers receive uniform trainings for their entire lines and obtain optimum results."

At Interpack 2014, visitors can learn how to increase the efficiency of maintenance and machine operation through trainings. In addition, Bosch presents its tailor-made services portfolio focusing on solutions for a higher flexibility, Overall Equipment Effectiveness (OEE) and productivity.

Bosch Packaging Technology D 74554 Crailsheim

Despite a pilot strike, visitors from around the world flocked to the trade-fair center in Munich during the past four days. The reason: the 24th analytica. The trade fair for laboratory technology, analysis and biotechnology attracted more than 34,400 visitors to Munich (compared to 30,481 in 2012). The fair also had a record number of exhibitors: 1,142 companies from 40 countries participated, which is an increase of 11.3 percent.

analytica closes with outstanding results in all areas

**10 May - 13 May 2016
analytica, Munich (D)**

The increase in foreign visitors was higher than the increase in those from Germany. A total of 12,000 international visitors came to Munich for the fair, an increase of 25 percent over 2012. Dr. Reinhard Pfeiffer, Deputy CEO of Messe München, sees that as a clear sign: „The larger share of international visitors confirms and strengthens analytica's character as a leading international trade fair.“ The countries with the largest number of visitors were (in this order) Austria, Switzerland, Italy, Great Britain, the United States and China. The most significant increases were among non-European countries such as China, Korea and the United States.

According to a survey by the market research institute TNS Infratest, visitors were very satisfied with the results of the fair: 98 percent gave the exhibition a rating of good to excellent.

1,142 companies from 40 countries is the largest number of exhibitors in analytica's history (2012: 1,026). The increase was primarily the result of growth in the sectors for biotechnology and laboratory technology: The share of international exhibitors increased by 4.8 percent to 39.8 percent. Besides Germany, the countries with the largest number

of exhibitors were the United States, Great Britain, China, Switzerland and France. A larger number of international exhibitors were represented at the industry gathering in Munich by upper management. According to a survey by TNS Infratest, satisfaction among exhibitors was also at record levels: They primarily praised the fair's character as a leading exhibition and the advantages that it offers over other events. Exhibitor statements from analytica 2014 are available in the press section of the analytica website.

International growth at the analytica Conference

The analytica Conference, which had a larger number of participants, also contributed to the fair's record-breaking results. Professor Dr. Wolfram Koch, Managing Director of the German Chemical Society (GDCh) and a member of the team that organizes the analytica Conference: „Right now, the analytica Conference is certainly one of the most important conferences in the context of analytical sciences—and not just in the German-speaking region, but also in Europe and increasingly at the global level. Among other things, that is noticeable by the fact that the number of participants from non-European countries continues to increase.“ Chairs and spokespeople from Europe, China, Australia

and the United States made presentations on hot topics such as leading coupling and separating techniques, drug and food analysis and chemometric methods. Despite larger rooms, many of the lectures were filled to capacity. One highlight was the session titled „Service to Mankind: The Changing Faces of Analytical Chemistry“, which was possible thanks to transatlantic collaboration between the German and American trade associations, i.e. the GDCh and the American Chemical Society (ACS).

Related events program creates added appeal

The special show on Occupational Safety/Health and Safety at the Workplace was a huge success from the very beginning. 14 percent all visitors attended the show to find out how to protect themselves from hazards in the laboratory. The Live Labs, which were already a popular event among visitors in 2012, saw even more visitor traffic at this year's fair.

The next time the industry meets will be in Shanghai on September 24, 2014—for analytica China. Besides China, the global analytica network is also represented in the future markets of India and Vietnam.

Messe München GmbH
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Provides VWR access to more Merck Millipore products and reagents for chemical and microbiological analysis

Merck Millipore and VWR Extend Western European Distribution Agreement

Merck Millipore, the Life Science division of Merck, today announced a new non-exclusive, preferred distribution agreement for Western Europe with VWR a global provider of laboratory supplies, equipment and services. The contract includes a range of Merck Millipore products and reagents for chemical and microbiological analysis, which are mainly used in quality control solutions for the pharmaceutical, food and beverage and chemical industries, as well as products for research in the field of organic synthesis and biosciences.

„The new contract continues an important relationship with one of Merck Millipore's largest distributors and rein-

forces our commitment to providing our existing customers easy access to high quality products,“ notes Robert Yates, Head of Merck Millipore. „We will give VWR access to more Merck Millipore products and expect with VWR's wide geographic coverage across Western Europe we will be able to reach a larger customer base.“

The contract replaces an exclusive chemical distribution agreement between Merck Millipore and VWR covering Western Europe originally signed in 2004. Under the new preferred agreement, Merck Millipore is free to engage with other organizations, but VWR will remain the distributor of choice through December 2018.

„VWR is proud to renew its agreement with Merck Millipore, to provide customers with high quality chemical and analysis products,“ said Peter Schuele, President European Lab Business, VWR. „We enable science with our assurance of supply through an excellent logistic infrastructure and our ability to combine the chemical offering with consumables, equipment, instrumentation and our rapidly growing service business. Merck Millipore is a very important part in our chemical portfolio and the high value we can bring to our customer base“.

Merck Millipore GmbH
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Printing 3D geometries versus molding them – new perspectives for design and function

Metal laser melting is changing the future of manufacturing

The magic word in industrial manufacturing these days is 3D printing. The shift from mold-based component concepts to additive geometric freedom is not just a fad, it's a major trend. The advantages are striking: faster processing times, lower-cost components and a level of design freedom that is so far unheard of. This dynamic market development has spurred two-digit growth rates in the industry. Dr. Florian Bechmann, Head of Development at Concept Laser, reports on trends and increased quality requirements.

The main forces behind this momentum include the automotive, medical technology and aerospace industries. These technology drivers demand high standards, not only in terms of quality and choice of materials but also with regard to quantitative aspects such as increased productivity. Customers like these require faster construction times or more parts in a single build chamber. To meet the needs of the automotive industry, Concept Laser developed the X line 1000R, which currently offers the largest build chamber. The transition from a 400W laser to a 1000W laser represents an important

milestone for the process. It was developed in close cooperation with laser specialists from the Fraunhofer Institute. The goal was to develop quicker processes that are also more affordable. Very large laser melting systems serve as time-saving solutions for developing modern vehicle engines or large-scale aerospace components.

Aerospace relies consistently on additive processes

The aerospace industry is the source of an increasing amount of innovation that de-

mands high-quality solutions. Many of these involve the use of reactive materials such as titanium or aluminum-based alloys, which must be produced in closed systems to ensure reliability and quality. Customers such as NASA, the German Aerospace Center (DLR), Honeywell, Snecma, Aerojet/Rocketdyne and EADS subsidiary Astrium Space Transportation see the additive process as the next broad-scale step in the evolution of modern production. NASA engineers are even considering using additive manufacturing to produce components on the ISS – in orbit. The advantage of this would be the ability to produce parts in space using CAD data. In the US, we are seeing major investments in capital and human resources, not only in research and instruction but in industry as well. The Europeans can contribute their research and mechanical engineering capabilities mainly in the US and Europe. In Europe, the EU is promoting this process through projects like AMAZE due to a strong belief in its sustainability and innovative capacity.

Medical technology as an important cornerstone

Metal laser melting is revolutionizing medical technology: traditional process chains are being completely reconceptualized. LaserCUSING parts are in demand for implants since their porous surfaces incorporate well into the body while providing the necessary elasticity. One rising application is the affordable and rapid production of den-



Dr. Florian Bechmann: „Customers are currently heavily focused on quality requirements. This requires the right combination of optics, mechanics, control technology and software.“ (Photo: Concept Laser GmbH)



Dr. Florian Bechmann: „This type of 3D imaging will increase the transparency of the process in the future by capturing the component in its structural entirety. This creates transparency in a fast, highly dynamic process, which operators can only master with special aids.“ (Photo: Concept Laser GmbH)



Cover Picture LaserCUSING (Photo: Concept Laser GmbH)

Metal laser melting is changing the future of manufacturing

tal prosthetics from biocompatible materials. These are highly adaptable, long-lasting dental solutions, as opposed to dental prosthetics that must be handcrafted.

Value retention through retrofitting

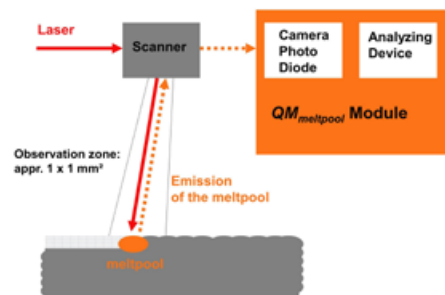
The process is suitable for retrofitting as well: worn-out turbine parts from power plants or aircraft can be quickly and affordably regenerated. In this hybrid technique, layers of the exact same material can be applied additively to the existing part. In addition to regeneration, new whole parts are also produced for turbine technology applications.

R&D efforts are ramping up

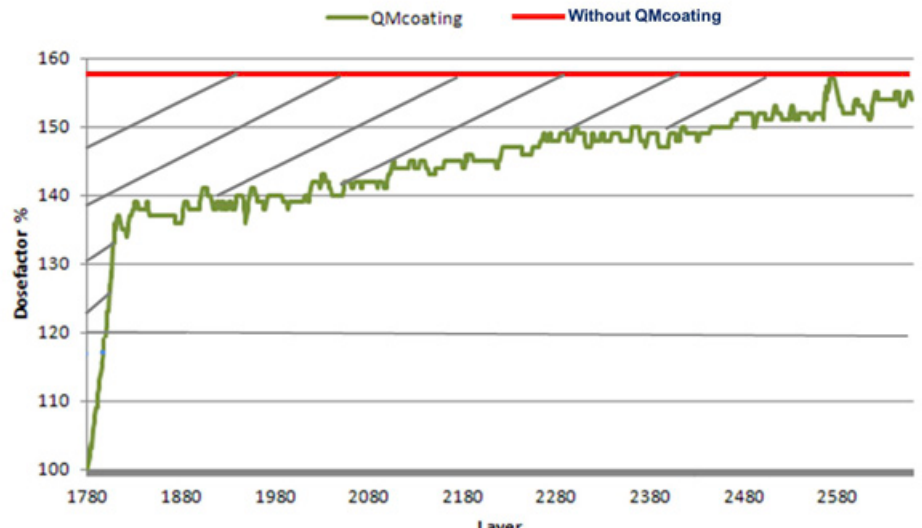
In an effort to boost its development activities and meet the increased demands of the market, Concept Laser opened a new development center in late 2013. For design and development engineers from a variety of different industries, metal laser melting offers a fascinating range of solutions. The company's goal is to meet this market trend head-on through innovation. When it comes to complex systems, the right combination of optics, mechanics, control technology, software and powder material is the key. The engineers at the new Concept Laser development center are working on „discreet innovations“ that have not yet been revealed to the public.

New options for designers

LaserCUSING allows the incorporation of features such as cooling channels, important for components exposed to high thermal loads or for reducing injection molding cycle times in the plastics industry. The off-shore industry is considering installing laser melting systems on drilling platforms, which



„Inline Process Monitoring“ with the QMmeltpool QM module: the system uses a camera and photo diode to monitor the process within a very small area of 1x1 mm². The process is then documented. (Photo: Concept Laser GmbH)



QMcoating: Use of QMcoating can save up to 25% of the powder quantity required compared to manual operation (potential savings = shaded area). (Photo: Concept Laser GmbH)

would allow for independent, on-site production of certain components. The technology is not fixed to a specific location and can be operated locally.

Ensuring quality in real-time

Concept Laser offers quality management modules for laser melting systems. Two modules are available with two different approaches: QMmeltpool and QMcoating. Dr. Bechmann explains the difference: „With QMmeltpool, the system uses a camera and photo diode to record signals during the process. This data can then be compared to reference values. The optical system is designed coaxially. It allows the camera to record a very small area, about 1 mm², of the melting pool. It can detect impaired laser performance due to contamination of the F-theta lens or natural aging of the laser, as well as deviations in the dosing factor.“ The second approach is that of the QMcoating module, which ensures that the optimal powder quantity is used, thus reducing the amount of unnecessary material (by up to 25%) and allowing faster set-up times. QMcoating monitors the layer surface while powder is being applied. If too little or too much powder is dosed, the dosing factor is adjusted accordingly, i.e., actively counteracted. The two QM modules monitor and document the process in real-time, thereby ensuring reproducible quality.

Key factors for improved quality are in the details

With Concept Laser, there is always a characteristic division between build chamber and handling area. According to Dr.

Bechmann, this ensures maximum work safety and ergonomics. The systems transport powder automatically in containers. In metal laser melting technology, a closed system offers many advantages, not only in terms of component quality, as oxygen contamination is avoided, but also in terms of safety when working with reactive materials like titanium or titanium alloys. The safety requirements for the system are defined by the EU's ATEX directive.

The future of laser melting

Excellent prospects

The scope of applications for metal laser melting is growing, as is the range of materials. As the market becomes more complex, Concept Laser must be ready to provide customers with expert advice. „With these new types of materials, the technology must be exactly right,“ says Dr. Bechmann. „At the same time, design requirements for components are also becoming more complex. They include everything from lightweight construction or foam-like structures to integration of elements such as cooling circuits in components.“ With so many applications in so many industries, the need to develop innovative solutions is higher than ever. Another aspect is the growing importance of quality among users. Customers expect active process monitoring and series production capability, i.e., reproducibility at an industrial level.

Quality requirements increase

„Customers are currently heavily focused on quality requirements. Systems must

Metal laser melting is changing the future of manufacturing

therefore possess the right combination of optics, mechanics, control technology and software," explains Dr. Bechmann. These key factors also depend on comprehensive quality monitoring. The patented QM modules from Concept Laser ensure quality, operability and ability to intervene during the highly dynamic construction process in real-time. Besides geometry, density and productivity, customers today are primarily interested in the quality of the final product. Dr. Bechmann explains: „Two approaches are particularly useful in ensuring a high level of quality: active process monitoring using machine technology and developments in materials. This includes the certification of materials, such as in medical technology, or manufacturer-specific instructions, which must be complied with in the automotive and aerospace sectors.“

Developments in the near future

In process monitoring, Dr. Bechmann sees important developments in the near future. 2D maps are generated during the construction process and will ultimately be representable using 3D models. This is comparable to CT scans in medicine. „This type of 3D imaging will increase the transparency of the process in the future by capturing the component in its structural entirety,“ explains Dr. Bechmann. „This creates transparency in a fast, highly dynamic process, which operators can only master with special aids.“ Dr. Bechmann expects customer demand for speed in component building to grow. „There are two ways to achieve this: one is with higher capacity lasers, i.e., 1000W lasers versus 400W, like the X line 1000R; another is by using multiple lasers.“ In the future, multiple laser sources will increase build rate significantly, in which case the advantages of using known process parameters will have to be weighed against the increasing complexity of optical construction. These concepts will increase not only the number of the lasers

but most of the other optical components as well.

Two additional aspects of laser melting

Green technology: sustainability and the environmental benefits of additive manufacturing

Laser melting is a highly sustainable manufacturing process. Numerous factors makes laser melting a quantum leap in reducing carbon footprint:

- no more molding or casting expenditures
- reduced logistics through local or decentralized manufacturing (such as on off-shore platforms or space stations)
- material savings during the process
- no special noise emissions
- fast prototype or test sample construction
- component retrofitting through hybrid technology
- no oil or coolant emissions as with conventional machine technology
- residual heat from lasers can be used to heat buildings
- low system power consumption
- on-demand production
- one-of-a-kind production
- less waste

A whole range of options for sustainable manufacturing. It's not surprising that laser melting is termed a „green technology“ and has been classified by the EU as Key Enabling Technology for future manufacturing.

Industrial vs. consumer 3D printing

3D printers are the main attraction at all the trade shows. Interested onlookers ask whether they can be used to print Lego blocks or even food. Clearly, there is growing interest in the ability to print three-dimensional objects with laser printers versus simply 2D. For technical components, affordable

printers for less than 1000 euros are already a reality.

Of course, these have nothing to do with metal laser melting in industry. Consumer applications differ from industrial ones: industrial systems are heavily geared toward high levels of quality, precise component dimensions or the parallel construction of many parts in a single space and at different speeds than in the consumer segment. Industrial manufacturers, such as those in the aerospace, turbine, medical and dental technology, automotive, watch and jewelry-making industries, have special quality standards and material requirements, including material and process certifications. These industries expect high-performance metals and alloys as well as reactive materials with high dimensional accuracy, reproducibility and safety. The necessary system technology must possess the right combination of optics, mechanics, control technology and software with QA elements to ensure highly dynamic manufacturing in real-time.

The basic operating principle is the same; however, consumer 3D printing solutions are more like the V-2 rocket developed by Werner von Braun than modern rocket technology. Therefore, we're not talking apples versus oranges, but rather two completely different philosophies and applications.

Keyword: LaserCUSING®

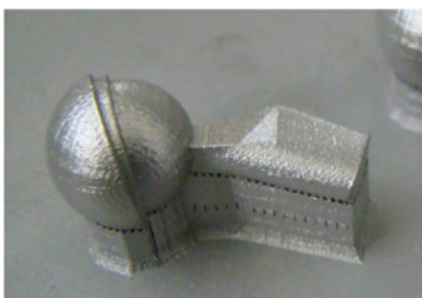
The LaserCUSING® process is used to create mechanically and thermally stable metallic components with high precision. Depending on the application, it can be used with stainless and tool steels, aluminum and titanium alloys, nickel-based superalloys, cobalt-chromium alloys or precious metals such as gold or silver alloys.

Procedures

With LaserCUSING®, finely pulverized metal is fused using a high-energy fiber laser. After cooling, the material solidifies. Component contour is achieved by directing the laser beam with a mirror deflection unit (scanner). Construction takes place layer by layer (with each layer measuring 15-100 microns) by lowering the bottom surface of the construction space, then applying and fusing more powder.

Concept Laser systems stand out due to their stochastic control of the slice segments (also referred to as „islands“), which are processed successively. The patented process significantly reduces tension during the manufacture of very large components.

Reference build job:



Active quality assurance using QMmeltpool: although the human eye is incapable of detecting defects, QMmeltpool nevertheless identifies deviations in component quality. (Photo: Concept Laser GmbH)

Build job with reduced laser power:



Concept Laser GmbH
D 96215 Lichtenfels

Relaunch with added value

Engel now presents its new digital look. Boasting a modern design and an extremely clear navigation structure, the new website guides its visitors intuitively to the information they want. Gerd Liebig, Group Marketing Director at Engel, says: „When the site was being developed, the aim was to get users where they want to be even more quickly. Our website is being used more and more, and our

customers should be able to expect top-quality service from Engel online too.“

The same responsive site design has been used for every country. This ensures that the content and functions are displayed perfectly even on mobile end devices like tablets PCs and smartphones.

ENGEL AUSTRIA GmbH A 4311 Schwertberg



Maintenance-free, highly accurate, compact

CO2 Sensor Module designed for OEM Applications

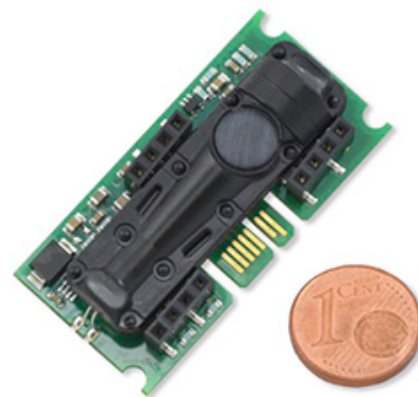
The sensor module EE893 from E+E Elektronik allows highly accurate and long-term stable CO2 measurements in demanding OEM applications. Thanks to its very small size and low power consumption, EE893 can be used in both hard wired sensors and battery operated devices such as wireless transmitters, hand-helds and data loggers.

The dual wavelength NDIR measuring principle is maintenance free and highly insensitive to environmental influences. Aging effects are automatically compensated.

The multiple point CO2 and temperature adjustment ensures excellent accuracy over the entire temperature working range. The CO2 measurements with a measuring range up to 10,000 ppm are available on the digital

E2 interface. The measurement interval can be set individually according to the requirements of the application.

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New safety relay PNOZ c2 from Pilz

Fast light beam device monitoring

Pilz is now supplying the safety relay PNOZ c2 from the product range PNOZcompact for safe monitoring of all standard type 4 light beam devices or sensors with safe switching devices (OSSD outputs) in accordance with EN 61496. The short reaction time of no more than 12 milliseconds provides added flexibility as light beam devices can be mounted nearer to the hazardous movement. The new PNOZ c2 can be used in all fields of mechanical engineering and meets the highest safety requirements up to Performance Level (PL) e and Safety Integrity Level Claim Limit (SIL CL) 3. The safety relay brings benefits for the series production of machines in particular.

The overall reaction time of maximum 12 milliseconds is guaranteed over the whole lifecycle, enabling the light beam devices to be installed closer to the danger source. So depending on the application environment, it may not be necessary to protect against reaching behind the system. The safety relay's reaction time is displayed on the front of the

new safety relay. That saves time during installation and servicing, and during the annual inspection of electrosensitive protective equipment (ESPE inspection). The light beam device transmitter and receiver are supplied with voltage directly via PNOZ c2, enabling them to be installed more quickly. For example, in combination with light beam devices PSENopt and safety gate switches PSEncode from Pilz, the result is a safe, fast solution for electrosensitive protective equipment.

The new PNOZ c2 offers the very highest safety standards up to PL e of EN ISO 13849-1 / SIL CL 3 of IEC 62061 for monitoring type 4 light beam devices and sensors with OSSD outputs.

Fast, cost-saving and flexible to install

Two start options - monitored or automatic - simplify the connection of the preferred start option as there is no need for additional jumpers to be available for selection. The spring-loaded terminals fixed on the



device can be connected without the need for tools, contributing towards a fast, simple installation. So PNOZ c2 not only saves time but also costs, thanks to simplified connection and flexible maintenance.

Simplified documentation

PNOZ c2 contains a block diagram showing a connection example, enabling it to be connected without separate documentation. The new safety relay also has a QR code, which can be used to call up further product information. So you always have access to the very latest product data.

Pilz GmbH & Co. KG D 73760 Ostfildern

Drywell 9190A - Ideal for Clean Rooms

Portable Ultra-Cool Field Metrology Well with Extreme Stability

The 9190A portable low-temperature field metrology well made by Fluke offers the highest accuracy and stability of any comparable device in this category. It is ideal for applications where strict requirements apply to quality control and compliance with statutory procedures.

Areas of application include the on-site validation and calibration of resistance thermometers, thermocouples, thermometers and sensors used for process control.

The exceptionally wide temperature

range from -95°C to +140°C makes the Fluke 9190A an indispensable aide in many industries.

The absence of a heat transfer fluid makes it suitable even for clean rooms.

The cooling and heating times of the 9190A are shorter than a conventional calibration bath, saving valuable time as calibration work is completed more quickly.

CiK Solutions GmbH
D 76131 Karlsruhe



Fluke Portable
Ultra-Cool Field
Metrology Well 9190A

Clinically clean – motan-colortronic shows the ULTRABLEND dosing and mixing system during MEDTEC

03rd - 05th June 2014
MEDTEC Europe 2014, Stuttgart (D)

motan-colortronic gmbh, Friedrichsdorf, Germany, a renowned producer of systems for sustainable raw materials handling in the areas of injection moulding, blow moulding, extrusion, compounding and in the chemicals industry, will show the latest version of the ULTRABLEND gravimetric batch dosing and mixing unit during MEDTEC, Stuttgart, Germany, 03rd to 05th June 2014, in hall 5, stand 5F18.

The ULTRABLEND offers clear advantages to manufacturers of thermoplastic medical devices. The processing of raw material compounds that are sometimes extremely expensive in hygienically clean operations (possibly also in cleanrooms) into medical primary packaging, components, implants, instruments and equipment requires the highest levels of cleanliness, precision and cost discipline.

The gravimetric ULTRABLEND blender has been developed for consistently precise dosing and mixing of free-flowing raw materials – plastic granulates and additives. It improves process quality and stability and makes its own contribution towards minimising production costs. With the design in electropolished stainless steel, motan has placed great emphasis on clear functions, minimum

maintenance and easy operation in a hygienically clean production environment. All material hoppers and mixing chambers have been designed without any “dead zones”. All seams are fully welded. As a result, no residual amounts of material can build up and contamination of subsequent batches is therefore eliminated.

The ULTRABLEND 95 is especially suitable for precise dosing of extremely small amounts of material directly into the injection moulding, extrusion or blow moulding machine. A maximum of four raw material components can be dosed by weight, one after the other, precisely as required by the recipe. They are then mixed together homogeneously in the downstream mixing chamber (4,5 litres volume) and fed into the feed throat of the processing machine. The minimum dosing amount is 3 g per component (900 g lot size). When two components are used a maximum throughput of 260 kg/h can be achieved. This gravimetric batch dosing and mixing unit is ideal for applications with frequent material changes: all parts in contact with the product can be rapidly removed and cleaned. In addition, the dosing slider remains closed during material changeover – not even the smallest amount of residual material can run out or be shaken out. The single load cell principle compensates for any vibration from the processing machine. This ensures the highest weighing precision



which is of benefit both to the quality of the end product and the manufacturing cost.

The GRAVInet control system is used to control the ULTRABLEND unit. The full colour display offers menu-based operation via the touch panel. Due to integrated Ethernet technology, operation can also be made via a motan WEBpanel or a PC, from any desired location. A conveying control for up to seven material loaders is integrated into the GRAVInet control as standard.

motan-colortronic gmbh
D 61381 Friedrichsdorf

parts2clean 2014 (24 to 26 June)

parts2clean Expert Forum – the source of knowledge on component cleaning

- Bilingual presentations on a wide variety of cleaning topics
- Expertise in quality assurance and cost optimization

**24th - 26th June 2014:
parts2clean 2014, Stuttgart (D)**

Component cleaning has now established itself as an indispensable step in the manufacturing process. In addition to defined particulate or film residue requirements, economic and ecological aspects also need to be taken into consideration. This frequently requires investment in technology for industrial parts and surface cleaning. At the same time, companies across all sectors are faced with the question of how to achieve the required level of cleanliness in a stable and sustainable way at the lowest possible cost and how to ensure that this cleanliness is maintained until the next process step or until delivery to the customer. "The extensive range of products and services at parts2clean enables users to find out detailed information about various solutions for the range of tasks involved in component cleaning and to make informed decisions," explains Olaf Daebler, director of parts2clean at Deutsche Messe. As at mid-March, around 200 companies from 12 countries have already registered to take part in the 12th leading international trade fair for industrial parts and surface cleaning in Stuttgart from 24 to 26 June 2014.

Added value – extensive cleaning expertise

With the bilingual Expert Forum, parts2clean is one of the most in-demand sources of knowledge when it comes to expertise on industrial parts and surface cleaning. "The Fraunhofer Cleaning Technology Alliance is responsible for technical coordination of the program, which covers various areas of cleaning technology," reports Daebler. "A total of 30 speakers will be giving presentations on everything from the basics to specialist issues." All presentations will be simultaneously interpreted (German <> English).

The four presentations in the first session on Tuesday (24 June) focus on the topic of "Process and engineering knowledge". This includes presentations on knowledge-based process control in industrial parts cleaning, the selection and positioning of nozzles for spray cleaning, the performance range of modified alcohols and the design of workpiece carriers for individually positioned parts. The afternoon program is organized by the Fachverband industrielle Teilereinigung e.V. (FiT) and features the Quality Podium. This includes five presentations on process chain analysis as an approach for avoiding errors, with possible solutions being shown and



best-practice applications presented. The session concludes with a podium discussion of the topic: "Knowledge transfer and competence – supply and demand".

On the second day of the trade fair, the morning session focuses on cleaning processes, pre-treatment and coating. Topics addressed include current trends in precision cleaning with ultrasound and potential applications for laser beam cleaning in the automotive and motor vehicle industry. Entitled "Needs-based deburring with the right process", the afternoon session will see speakers present a variety of deburring solutions as well as their possibilities and limitations. On the third day, the Expert Forum begins with a series of presentations on the maintenance and preparation of cleaning baths. The program includes presentations on avoiding component waste through efficient wash water treatment and on measured value surface tension for the control and management of the surfactant effect in parts cleaning. The afternoon session looks at methods for particle contamination, with presentations on a variety of topics, including systematic manufacturing analysis in order to reduce waste due to contamination, real-time measurement of particle agglomeration on surfaces, and VDA 19, the set of regulations on checking technical cleanliness, the new edition of which is in the final stages of completion.

In parallel to parts2clean, O&S (international trade fair for surface treatments and coating), LASYS (international trade fair for laser material processing) and the AUTOMOTIVE Expo will take place at the Stuttgart Exhibition Centre from 24 to 26 June 2014.

Deutsche Messe AG / Presse
D 70825 Korntal



Arburg présente des machines performantes au salon FIP de Lyon

- **Rapidité : emballages fabriqués en 2,9 sec. sur une presse Allrounder H hybride en version Packaging**
- **Flexibilité : loupe en LSR sur une presse à injecter Allrounder E**
- **Fabrication additive : conférence sur le freeformer**
- **Gestion de production : présentation du système d'ordinateur pilote Arburg ALS**

Le salon « FIP Solution Plastique – Exposition internationale pour l'industrie du plastique » ouvre ses portes à Lyon, France, du 17 au 20 juin. Sur son stand n° F19/G26, Arburg présente deux machines performantes réalisant des applications complexes : une presse à injecter Allrounder 570 H hybride fabrique des barquettes alimentaires et une presse Allrounder 370 E électrique des loupes en LSR transparent.

17.06. - 20.06.2014
FIP Solution Plastique, Lyon (F)

Le salon FIP qui se tient tous les trois ans est le seul salon professionnel français dédié à la plasturgie. Les professionnels du secteur se retrouvent sur ce salon. Des exposés et divers ateliers viennent enrichir cette manifestation.

Marc Schuh, Directeur d'Arburg SAS à Aulnay-sous-Bois, décrit la présence de l'entreprise au salon en ces termes : « Le salon FIP est la vitrine de la plasturgie française, c'est pourquoi nous y présentons deux applications spécifiques des secteurs de l'emballage et de la transformation des LSR. Le premier représente une part importante de la plasturgie française, le second offre un potentiel de développement intéressant. Nous démontrons notre savoir-faire en la matière avec une presse à injecter hybride Allrounder 570 H en version Packaging et une presse à injecter électrique Allrounder 370 E. Le système de gestion de production assisté par ordinateur (ALS) sera également présenté sur notre stand. Arburg montrera par ailleurs sa vision de la fabrication additive avec le freeformer. Martin Neff animera notamment une conférence sur le thème « Fabrication additive avec le nouveau freeformer » dans le cadre de la manifestation « 3D Print » qui se tiendra parallèlement au FIP. Venez vous rendre compte sur place des différents savoir-faire que nous maîtrisons. »

Fabrication de barquettes alimentaires sur une presse Allrounder H hybride en version Packaging

La presse à injecter hybride Allrounder 570 H en version Packaging (P) est tout spécialement conçue pour le secteur de l'emballage. Elle dispose d'une force de fermeture de 1 800 kN, est équipée d'une unité d'injection de taille 800 et d'un robot préhenseur mis au point par Star Automation. Un moule Hofstetter à deux cavités permet de fabriquer des barquettes alimentaires d'une contenance de 1 litre en 2,9 secondes seule-

ment ! Avec cette presse haute cadence, il est tout à fait possible d'agir sur l'efficacité de la production : plus de pièces de qualité, moins chères.

Versión Packaging : la performance allée à la rapidité

Pour répondre aux exigences spécifiques du secteur de l'emballage, Arburg propose une version Packaging pour ses presses hybrides (série Hidrive) et électriques (série Alldrive). Celles-ci allient une forte productivité à une consommation d'énergie réduite et se distinguent notamment par leur combinaison optimale « passage entre colonnes / force de fermeture / course d'ouverture ». À cela s'ajoutent des mouvements du moule rapides, précis et consommant peu d'énergie via les unités de fermeture servoélectriques à genouillère, des débits de plastification élevés grâce aux vis à barrière et aux entraînements de dosage servoélectriques, des vis dynamiques régulées en position et des flux d'injection efficaces.

Presse à injecter Allrounder électrique avec application LSR

La seconde presse exposée au salon, une Allrounder 370 E électrique, fabrique une loupe à partir d'un nouveau silicone liquide très transparent. La matière présente une dureté de 60 Shore A. Cette application fait appel à un moule LSR à quatre cavités, mais aussi des canaux froids spécialement mis au point par Rico. Des systèmes ouverts à canal froid permettent des économies de matière, des temps de cycle réduits et une production sans rebuts.

Edrive, la machine électrique

La presse Allrounder Edrive remplace idéalement les machines standards hydrauliques et se caractérise par sa rapidité, sa précision, son efficacité énergétique et des émissions sonores réduites. Une reproductibilité maximale et une qualité de pièces optimale, une réduction de la consommation d'énergie allant jusqu'à 50 % par rapport aux

presses hydrauliques, des entraînements servoélectriques et la récupération de l'énergie au freinage sont autant de caractéristiques qui font de cette gamme une solution économique et efficace.

Les Allrounder 370 E et 570 H exposées éligibles aux Certificats d'Economie d'Energie

Le fournisseur d'énergie EDF Entreprises verse en France une prime significative à l'achat d'une presse à injecter électrique ou hybride. Le Certificat d'Economie d'Energie CEE, transposé en 2005 dans la législation, en est la base et a pour but de réduire significativement la consommation d'énergie industrielle. Il existe depuis fin 2013 un Certificat d'Economie d'Energie spécifiquement élaboré pour les presses à injecter électriques ou hybrides. Cette prime s'applique aux presses Allrounder électriques et hybrides des séries Alldrive, Edrive et Hidrive. « En complément de la campagne EDF, nous offrons en plus la préparation à l'utilisation d'un pique-carottes Integralpicker ou d'un système de robot Multilift à chaque client achetant une presse à injecter Allrounder subventionnée par EDF », indique Marc Schuh.

Des solutions personnalisées assurant l'efficacité de la production

« Avec nos presses à injecter Allrounder, nos applications, la présentation de l'ALS et du nouveau freeformer, nous démontrons aux visiteurs du FIP que nous sommes un partenaire soucieux de l'efficacité de la production, concevant et mettant en œuvre des solutions d'avenir pour la plasturgie », explique Marc Schuh en amont du salon. « Nous sommes en mesure de proposer des solutions de production sur mesure, intégrant des systèmes automatisés, pour répondre aux besoins spécifiques de production de nos clients. Sans oublier bien sûr notre service après-vente, notre savoir-faire et notre expertise afin d'offrir en France un service de premier choix à la hauteur des exigences de nos clients vis-à-vis de leur fournisseur ».

ARBURG GmbH + Co KG D 72290 Loßburg

Five BOYs at FIP 2014

**17th - 20th June 2014:
FIP plastics fair, Lyon (F)**

With five machines, BOY will show again its performance diversity at the FIP plastics fair in LYON (June 17 - 20). In the booth of the French BOY distributor béwé-Plast (booth F 15), the latest BOY injection moulding machines will be presented. The innovative technique of the BOY E-Series - designed to the increase machine efficiency - as well as interesting and versatile applications characterize the BOY fair appearance at FIP 2014. A silicone and elastomer application, a compact cleanroom application as well as the production of a two component part on a BOY 100 E and BOY 2C.XS will surely impress the visitors at FIP 2014.

Integrated peripheral devices

The BOY XS, the smallest BOY injection moulding machine with 100 kN clamping force, will produce a Fresnel stepped lens out of two component liquid silicone. A small mixing pump, which will be positioned on the BOY XS, as well as an integrated four-axis robot will be impressive due to its compactness. The lenses will be removed from the mould by a picker, which will be positioned under the safety gate, and placed on a compact conveyor belt that will be integrated on the rear side.

Compact cleanroom

The BOY 35 E (350 kN clamping force), which is equipped with an antistatic coating, will produce insulin syringe protection caps in a 16-cavity mould in accordance with cleanroom class 7 laminar flow (according to ISO 14 644). For reasons of sterility, the protection caps will be sealed in aseptic packaging immediately following the removal from the mould. Printed with production data for potential retracing, the transparent bags will be sealed air tight. To save space, the packaging machine will be positioned under the cantilevered clamping unit. The harmonious cleanroom concept of the four-tie bar injection moulding machine of the E-Series will be completed through a higher ground clearance.

Flexible multi-component injection moulding

Another highlight will be the addition of an injection unit for a 2nd component. In combination with the new BOY 100 E (1,000

kN clamping force), two-component plastic parts will be produced for the medical industry. The extremely flexible injection unit is based on a BOY XS and is equipped with its own hydraulic drive and Procan ALPHA[®] control. The injection unit provides a plasticizing volume up to 8,0 cm³ and achieves injection pressures up to 3,128 bar. Larger injection units are optionally available on request. The complete control and hydraulic unit will be positioned next to the basic machine. The unit is transportable due to steerable wheels and therefore can also be connected with other injection moulding machines.

Insert moulding machine for elastomer application

The production of technical elastomer parts on a BOY 25 E VV (clamping force 250 kN) will complete the BOY presentation at

the leading French trade fair for plastics technology. The BOY insert moulding machines have been used successfully worldwide for many years for the production of ambitious elastomer products.

Easiest operation, highest precision

A special experience for the visitors of the FIP will also be the high-end BOY Procan ALPHA[®] 2 control. A self-explaining user interface and its ease of use satisfy the highest demands both in speed and precision. Introduced in 2012 and multi-patented, this innovative control has proven itself in practical applications and has become part of the standard equipment of BOY injection moulding machines.

Dr. Boy GmbH & Co. KG
D 53577 Neustadt-Ferenthal



Arburg presents innovative application at Medtec Europe

- **Special: GMP-compliant stainless steel electric Allrounder for production under clean room conditions**
- **Substitute: COP replaces glass in syringe barrels**
- **Comprehensive support: Expert Arburg medical technology team**

Autor: Susanne Palm

**03rd - 05th June 2014:
MEDTEC Europe 2014, Stuttgart (D)**

Arburg will be represented with a high-end application at the Medtec Europe, which is to be held from 3 to 5 June 2014 in Stuttgart: production of syringe barrels from COP as an alternative to glass. The barrels are produced on an electric Allrounder 370 A, which is made from stainless steel for GMP-compliance and which is specially equipped for clean room production. Moreover, the experts from Arburg's medical technology team will be available at Stand no. 5B04 in Hall 5 to present the company's extensive range of products and services and to answer your individual questions.

"The Medtec Europe has developed very positively and is an important forum for us, as this is where all the leading companies in the industry meet. It offers us an opportunity for plenty of in-depth and detailed discussions and also allows us to precisely target medical technology trade visitors, which is where our focus lies," explains Alexander Göhring, sales contact in the Medical Technology Group at Arburg. Sven Kitzlinger, who is responsible for applications technology consulting, adds: "In recent years, contacts have included both familiar customers and partners, as well as new prospective clients. We have also always been able to hold comprehensive project discussions, making the trade fair a valuable event for us, not just from the quantitative perspective, but also in qualitative terms. The exhibit, always plays an important role, as it allows us to demonstrate the potential of our products and our know-how."

COP moulding on an electric stainless steel Allrounder

At the Medtec Europe 2014, Arburg will present an electric Allrounder 370 A with a clamping force of 600 kN and a size 70 injection unit. The exhibit is GMP-compliant and the clean air module from Ionstatex mounted above the clamping unit ensures clean production conditions. Clean room wall dis-

plays will illustrate the options available for production under clean room conditions.

A mould made by Männer will be used to produce two 2.35 gram syringe barrels made from the innovative material COP (Cyclic Olefin Polymer) in a cycle time of around nine seconds. This will involve lateral injection via a needle shut-off nozzle. COP is transparent and has similar barrier properties to glass, but is also almost unbreakable and cost-efficient to produce. In a subsequent step, the syringe barrels can be pre-filled, assembled and packaged ready for use.

Fulfilment of precise production requirements

Particularly in the field of medical technology, the requirements set by the OEMs and users must be precisely met. Here, the modular product range from Arburg has distinct advantages, as it renders production cells configurable and allows them to be precisely tailored to customers' production

requirements. Further benefits include the various clean-room concepts and the comprehensive know-how of Arburg's expert medical technology team, as well as the opportunity to work with competent partners. This means that customer support is fully ensured from the outset through to commissioning of the appropriate systems.

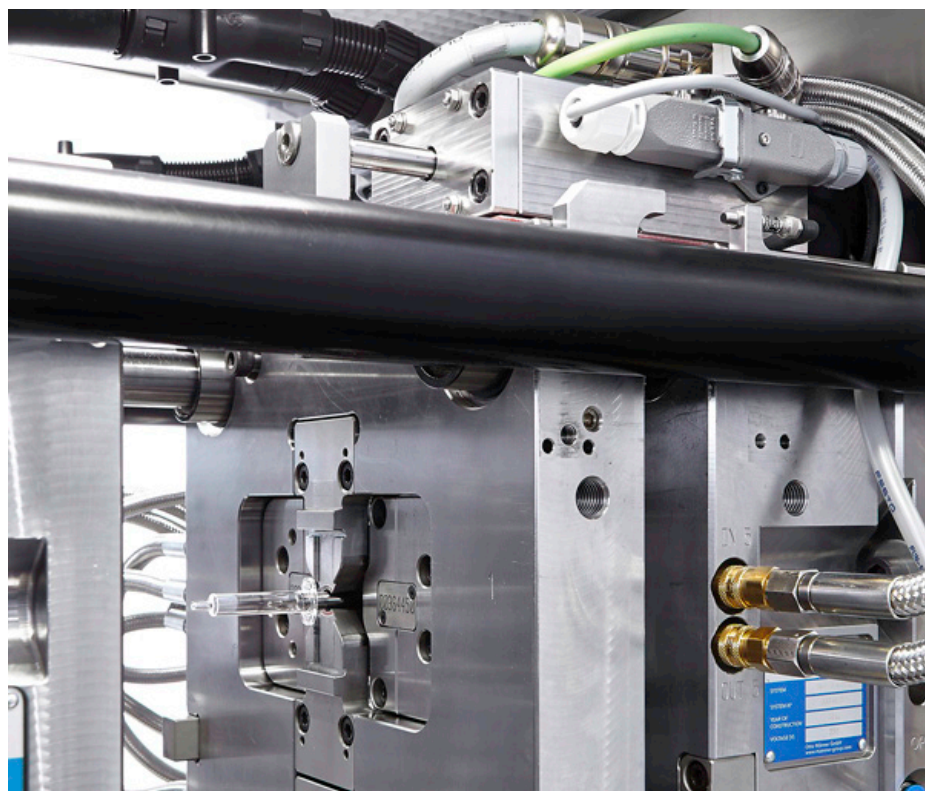
Expert presentation provides a general outline

Addition information on the broad range offered by Arburg is available to the attendees of Medtec Europe during the expert presentation „Arburg machine technology for medical applications“ by Sven Kitzlinger. His presentation is part of PolyOne's „Lunch and Learn Event“, held on Wednesday, June 4, 2014 from 12 p.m. to 1 p.m. at the Mövenpick Hotel Stuttgart, close to the fairgrounds.

ARBURG GmbH + Co KG
D 72290 Loßburg



The stainless steel Allrounder GMP-compliant and is equipped with a clean air module, making it ideal for use in the medical technology sector.



Two COP syringe barrels will be produced on a Männer mould in a cycle time of around nine seconds. This will involve lateral injection via a needle shut-off nozzle.

Decisions by Vaisala Corporation's Annual General Meeting and the organizing meeting of the Board of Directors

Decisions by Vaisala Corporation's Annual General Meeting and the organizing meeting of the Board of Directors

Vaisala Corporation's Annual General Meeting was held on Wednesday, March 26, 2014 at Vaisala's head office in Finland. The meeting approved the financial statements and discharged the members of the Board of Directors and the President and CEO from liability for the financial period January 1-December 31, 2013.

Dividend

The Annual General Meeting decided a dividend of EUR 0.90 per share, corresponding to the total of EUR 16,253,292.60. The record date for the dividend payment is March 31, 2014 and the payment date is April 7, 2014.

Remuneration of the members of the Board of Directors

The Annual General Meeting decided that the annual fee payable to the Board members for the term until the close of the Annual General Meeting in 2015 is: the Chairman of the Board of Directors EUR 45,000 and each Board member EUR 35,000. Approximately 40 percent of the annual remuneration will be paid in Vaisala Corporation's A shares acquired from the market and the rest in cash.

In addition, the Annual General Meeting decided that the compensation per attended meeting for the Chairman of the Audit Committee is EUR 1,500 and EUR 1,000 for each member of the Audit Committee for the term until the close of the Annual General Meeting in 2015. The compensation per attended meeting for the Chairman and each member of the Remuneration and HR Committee and any other committee established by the Board of Directors is EUR 1,000 for the term until the close of the Annual General Meeting in 2015.

Composition of the Board of Directors

The Annual General Meeting confirmed that the number of Board members is seven.

Mikko Niinivaara and Raimo Voipio were re-elected for the term until the close of the Annual General Meeting in 2017. Petra Lundström and Pertti Torstila were elected as new members of the Board of Directors. Due to stipulations of the Articles of Association concerning the term of the members of the Board of Directors Petra Lundström was elected for the term until the close of the Annual General Meeting in 2015. Pertti Torstila was elected for the term until the close of the Annual General Meeting in 2017.

Auditor and their remuneration

The Annual General Meeting elected Deloitte & Touche Oy, Authorized Public Accountants, as auditor of the Company until the close of the Annual General Meeting in 2015. Deloitte & Touche Oy has informed that APA Merja Itäniemi will act as the auditor with the principal responsibility. The Auditor's fee is paid according to their reasonable invoice presented to the company.

Authorization for directed acquisition of own A shares

The Annual General Meeting authorized the Board of Directors to decide on the directed acquisition of a maximum of 160,000 of the Company's own A shares in one or more instalments with funds belonging to the Company's unrestricted equity. The new authorization replaces the previous one and is valid until the closing of the Annual General Meeting in 2015, however, no longer than September 26, 2015.

Authorization to transfer Company's own shares

The Annual General Meeting authorized the Board of Directors to decide on the transfer of a maximum of 319,150 own A-shares. The transfer of own shares may be carried out in deviation from the shareholders' pre-emptive rights and may be transferred as a directed issue without payment as part of the Company's share based incentive plan. The authorization can also be used to

grant special rights entitling subscription of own shares, and the subscription price of the shares can instead of cash also be paid in full or in part as contribution in kind. The new authorization replaces the previous one and is valid until March 26, 2019.

Donations

The Annual General Meeting authorized the Board of Directors to decide on donations of maximum EUR 250,000. The authorization is valid until the close of the Annual General Meeting in 2015.

The organizing meeting of the Board of Directors

At its organizing meeting held after the Annual General Meeting the Board elected Raimo Voipio to continue as the Chairman of the Board of Directors and Yrjö Neuvo to continue as the Vice Chairman.

The composition of the Board committees was decided to be as follows:

- Maija Torkko was elected as the Chairman and Petra Lundström and Mikko Niinivaara as members of the Audit Committee. The Chairman and all members of the Audit Committee are independent both of the Company and of significant shareholders.
- Raimo Voipio was elected as the Chairman and Yrjö Neuvo and Maija Torkko as members of the Remuneration and HR Committee. Raimo Voipio is independent of the Company. Yrjö Neuvo and Maija Torkko are independent both of the Company and of significant shareholders.

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