



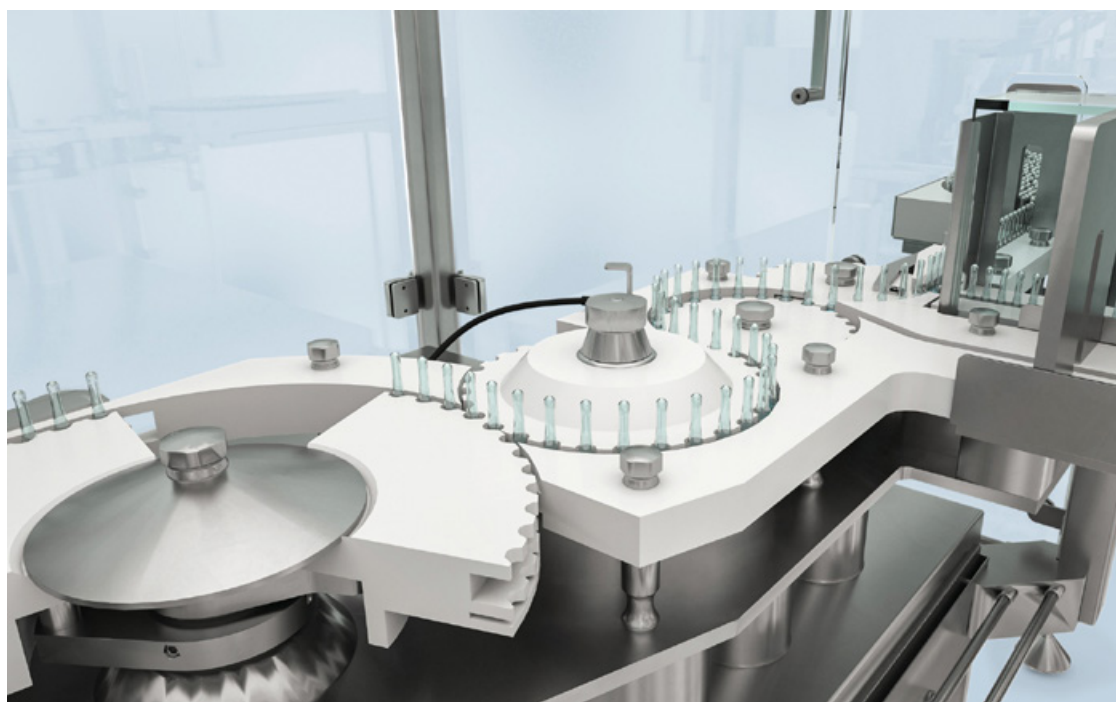
Hans J. Michael GmbH



Increased performance and higher safety

## ALF 5000: new filling and closing machine for ampoules and injection bottles from Bosch

- Output of up to 600 containers per minute
- Flexible use: compatible with all common filling systems
- Optional 100% in-process control



ALF 5000: launch at Pharmatag 2016: Bosch Packaging Technology launched the new filling and closing machine ALF 5000 with an output of up to 600 ampoules per minute at Pharmatag 2016 from 10 to 11 May in Crailsheim, Germany.

Bosch Packaging Technology, a leading supplier of process and packaging technology, presented the latest generation of the ALF series at Pharmatag 2016 on May 10 and 11 in Crailsheim, Germany. In addition to many detail improvements, the new filling and closing machine offers an increased output of up to 600 ampoules per minute. "Not only regarding its output, the new ALF 5000 is situated in the high-performance range," Tobias Göttler, product manager at Bosch Packaging Technology, emphasizes.

### Optimized design, high process safety

The improved pharmaceutical design of the new ALF 5000 is clearly visible: the machine table top is

conceived without steps and interfering edges, providing a better sealing from the sterile area. Moreover, the machine's improved accessibility ensures easy and reliable cleaning. In addition to the common right-hand version, the ALF 5000 is now also available as left-hand version, which enables optimal adaption to existing production sites and workflows such as internal itineraries.

"During the development process, we put special emphasis on even higher process safety," says Göttler. "For instance, the ampoule heads are removed sideways during closing instead of from above." This avoids machine movements above the open ampoules, making the process safer and more reliable. For a particularly gentle processing, it is now possible to use a

## ALF 5000: new filling and closing machine for ampoules and injection bottles from Bosch

carrying rake transport system that slightly lifts the glass containers to prevent them from rubbing against the machine guide.

### Maximum flexibility

Whether four, six, eight, ten or twelve filling points – all established filling systems such as peristaltic pump or time-pressure-filling system can be used with the new machine. In its combi version, the ALF 5000 optionally processes injection bottles in addition to ampoules, which further increases production flexibility for drug manufacturers and contract packers, combined with easy changeovers. As an option, customers can also choose between a statistical or a 100% in-process control, as well as different infeed and outfeed versions.

“We have used our expertise from more than 2,000 delivered filling and closing machines for ampoules and combined it with our successful technology from other machine series,” Göttler explains. “The result is an especially flexible solution that can be tailored to specific customer requirements.” Due to its compact design, the ALF

5000 is suited for wall mounting and integration into barrier systems without difficulty. Following Bosch's pharmaceutical line competence approach, the new filling and closing machine can be combined with upstream and downstream equipment to form a complete line.



#### Bosch Packaging Technology

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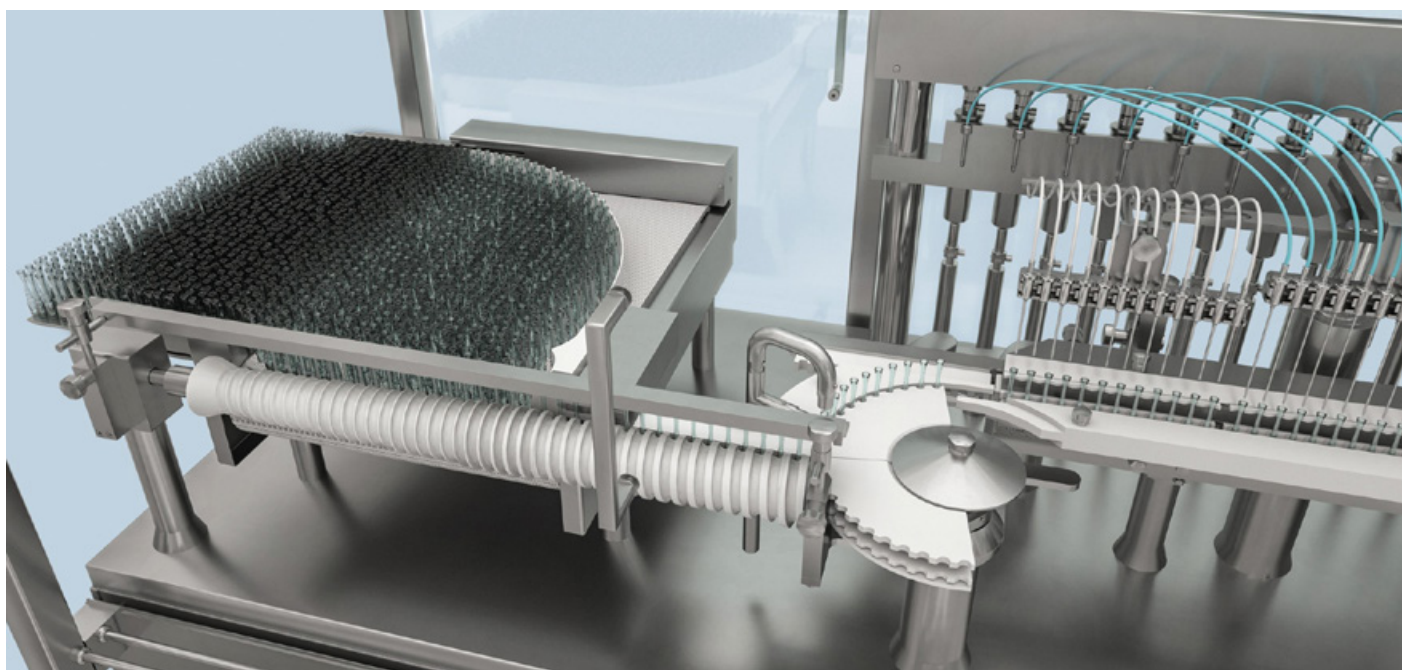
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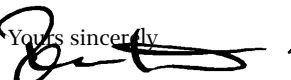
ALF 5000: maximum flexibility: Whether four, six, eight, ten or twelve filling points – all established filling systems such as peristaltic pump or time-pressure-filling system can be used with the new machine.



Dear readers, dear subscribers,

now it's the beginning of July 2016 and we have a lot of interesting news and a lot of interesting events for your appointment calendar.

So the amount of the German and the International newsletters is constantly growing. We hope, we can give you with this information a good help for your daily work and your planning tasks.

Yours sincerely,  
  
Reinhold Schuster



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**NEW**

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Clean and ultra cleanrooms are required for special production methods – especially in medicine and pharmaceutical technology, since particles in ordinary ambient air would have an adverse effect. Other applications of cleanrooms or cleanroom technology are in semiconductor technology, optical and laser technology, aerospace technology, the biosciences, medical research/treatment, research, and germ-free production of food and pharmaceuticals in nanotechnology.

# Cleanroom Monitoring – Reliability for the Toughest Requirements

Author: Dipl.-Ing. Christina Scheer



In a cleanroom, selecting the correct measuring devices for achieving optimum measurement results is paramount. As a rule, particle content, temperature, moisture, and pressure are monitored and recorded. The above stated measurands have a significant influence on quality and productivity. As a result, regular calibrations with measuring devices based on traceable standards are essential. Manufacturers of pharmaceutical products usually have a large number of cleanrooms. The control and recording of temperature, pressure, and humidity have to comply with the stringent rules of GMP (Good Manufacturing Practice).

## One controller for everything

The JUMO mTRON T is the ideal solution for controlling, regulating, and documenting the measured values of temperature, pressure, moisture, and particle content in one or several rooms. The various system input and output modules permit a flexible and decentralized system configuration. In particular, the universal configurable ana-

log input modules for resistance or standard signals such as current or voltage set benchmarks here. The integrated CODESYS V3 PLC, in conjunction with the modules for regulation, measured value recording, and data recording form an optimum combination for highly diverse cleanroom applications.

The networking and data communication for the individual components is performed using EtherCAT – a fast, Ethernet-based system bus that is widespread in measurement and automation technology. The JUMO mTRON T system can be used to operate, control, and regulate several individual cleanrooms while the process measured values are logged for quality assurance. In the past, this required individual control systems.

The multifunction panel (HMI) comprises nine registration groups, including batch reporting, to ensure assignment of the recorded process data. The documentation of the process values measured is tamper-proof, which is very important in cleanrooms. Special integrated functions such as email notification in case of emergency or a web server represent cost-effective and reliable alternatives to com-

## Cleanroom Monitoring – Reliability for the Toughest Requirements

plex visualization systems. Suitable PC software tools for extracting and evaluating recorded data round out the system.

With its modular system concept and integrated PLC, the JUMO mTRON T automation system can be adapted optimally to applications for controlling and regulating cleanrooms. Since the control tasks are handled independently in the multichannel controller modules, the PLC is available above all for individual control tasks. The integrated CODESYS PLC V3 is key to the system's flexibility. Plant engineers have the option, for instance, to program functions that are adapted to the existing tasks and visualize user-specific process screens on the HMI. In this way, manufacturers can provide custom screens for basic status, automatic or manual mode, system images, and even configuration screens for their customers. Freely definable user rights can be issued through a user management system with up to 50 users. This prevents operating errors and ensures reliable equipment operation.

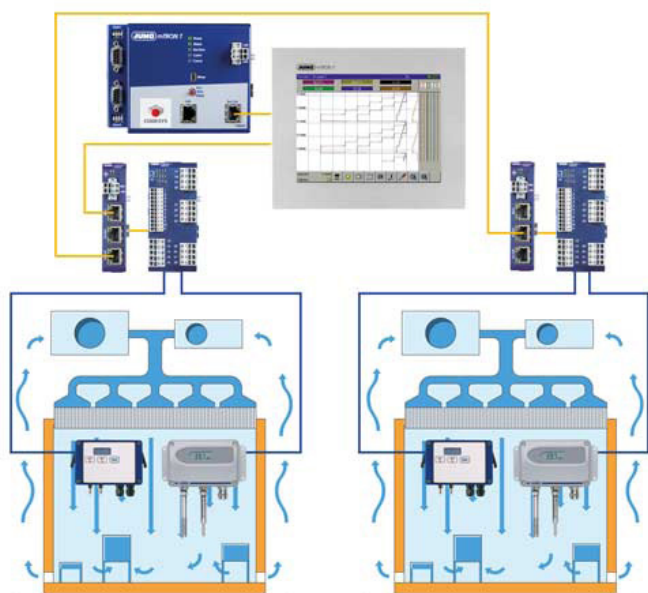


Fig. 2: Pressure, moisture, and temperature measurements in cleanrooms with the JUMO mTRON T automation system

### Visualization and recording for optimized security

The TFT touchscreen and integrated recording function allows the historical trend to be viewed directly on the system next to the current values, status/alarm messages. This gives the user a high degree of transparency and the option to directly optimize and/or adjust running processes. In this manner, irregularities can be detected at the outset and the corresponding measures can be taken.

The recorded data can be extracted, archived, and evaluated via the interface or USB flash drive using the JUMO PCC and PCA3000 software. These program functions also offer an automatic print-out of the measurement data as a PDF or CSV file. Upon request, this data can be sent directly as an email.

More detailed documentation is possible with the JUMO SVS3000 visualization software. It supports batch-related reporting following the input of corresponding data at the relevant system as soon as the program is started. The software can also operate all connected units. This data can be filtered and extracted by date and time as well as by up to three entered batch information units. The reports generated during this process can be printed and/or exported automatically at batch end. They can also be printed and/or exported manually at any time.



Fig. 3: Capacitive hygrothermal transducer with intelligent interchangeable probes

### Save time and costs thanks to perfect moisture and temperature measurement

To be able to ignore external influences when producing sensitive products, reproducible climatic conditions are required in the cleanroom. With the capacitive hygrothermal transducers of the 907027 series from JUMO, moisture and temperature can be determined by just one device. The devices have intelligent interchangeable probes with internally stored calibration data and performance logs. When required, these probes allow the user to carry out a sensor exchange in seconds without any loss in accuracy.

Precision calibration procedures and the latest microprocessor technology guarantee reliable measuring accuracy across the entire temperature operating range. The exceptional long-term stability is based on many years of experience gained from proven humidity sensors. For high-temperature applications (up to +80 °C) or if space is restricted, the probes can be relocated by means of plug-in connecting cables without having to readjust the device.

Voltage outputs 0 to 10 V or 4 to 20 mA (two-wire) are available as output signals. The temperature scaling can be easily adapted in the factory to suit the application. An optional display permits the display of current rF and T values.

### Adapted to the process

Reproducible or standardized climatic conditions can be ensured in cleanrooms through measurement, controlling, and monitoring of temperature, moisture, and pressure. Use of the automation system offers the user time and cost benefits, since the modular system opens up all possibilities.

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Innovation lab for work, people and technology opens in Stuttgart-Vaihingen

## Future Work Lab makes the Future tangible



With the Future Work Lab, the Fraunhofer Institutes IAO and IPA are opening a center that will let visitors experience the future of manufacturing. The center will offer tangible demonstrators, expertise development and training programs as well as a platform for scientific exchange, and targets industry, employee associations, politics, science – and future production workers.

Digitalization is not only revolutionizing work on the factory floor. New technologies are also transforming processes and other indirectly related activities – and raising new questions. In what direction will our work develop? Will intelligent machines tell us what to do and set the pace in the future? Or will people determine the workflow, with machines giving them optimum support? The division of labor isn't the only area where completely new ways of organizing work are emerging. Another example is how shift workers are reaching for their smartphones to coordinate processes, as already demonstrated in the "KapaflexCy" project. At the same time, companies need to find new ways to both qualify their staff for the digital work environment and put the full potential of these technologies to best use. Not only do they offer the possibility to speed up and improve production in a way that motivates production workers; in many cases they also prompt disruptive innovations and totally new business models. This is illustrated for instance by "Virtual Fort Knox", a cloud-based IT platform that makes production data and IT services available for any type of device via app. In this dynamic market environment, only those who systematically harness and strategically integrate innovation processes will be able to survive in the long term.

### Source of ideas for industry, associations, trade unions and politics

Headed by the Fraunhofer Institute for Industrial Engineering IAO, the Future Work Lab – an innovation laboratory for work, people and technology – is therefore being established at the research campus in Stuttgart-Vaihingen. For this project, the Fraunhofer Institutes IAO and IPA are consolidating their expertise in the area of industry 4.0 in order to offer industrial companies and their employees a point of contact for questions related to the digital factory.

"We want the Future Work Lab to be a source of ideas for what work in industrial companies might look like in the future," summarizes Prof. Wilhelm Bauer, director of Fraunhofer IAO. "With this, we are directly targeting employees and managers in companies, as well as associations, trade unions, politics and research," Bauer explains. The director of the Fraunhofer Institute for Manufacturing Engineering and Automation IPA, Prof. Thomas Bauernhansl, is convinced: "The digitalization of our value creation will radically change the role of employees. Many indirect tasks are now being automated and factory workers are becoming conductors of production. With the Future Work Lab we are responding to this change."

### Companies can utilize the Future Work Lab in three ways:

- At the Demonstration Center, three circuits illustrating the future of work show technologies and applications that are already available today, along with possible scenarios of the future division of labor between people and technology. The initiators' aim is to demonstrate tomorrow's industrial work from different angles. "On these three circuits, companies can directly experience and identify what industrial work will look like in the future," says Dr. Moritz Hämmerle from Fraunhofer IAO, who is director of the Future Work Lab. At the same time, they have the possibility to establish direct contact with potential partners and to benefit from their experience.
- Future work will demand totally different skills from today. The "Fit for Future Work" expertise development and consulting center therefore offers seminars, workshops and training options for employees of manufacturing companies. Collaborating with corporate partners, the center's experts also develop special individual training concepts for industry 4.0.
- The "Work in progress" ideas center for work research is a central platform for promoting scientific dialog and further research into production work. By setting it up directly in the Future Work Lab, the project partners want to guarantee rapid transfer from academia into practice. "The goal of the ideas center is to strengthen networking relations with the national and international research community. In this context, the Future Work Lab serves on the one hand as a point of contact for external partners and research centers, while on the other providing a basis for completely new research projects," explains Thilo Zimmermann, who will coordinate the project for Fraunhofer IPA.

The project is being funded by the German Federal Ministry of Education and Research (BMBF). The official opening will probably be in fall 2016.



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Enhances Leading Position in Drug Delivery Device Solutions and expands Global Design and Services Network to Over 500 Best-in-Class Engineers Across Six Facilities Worldwide

# Phillips-Medisize acquires Medicom

Phillips-Medisize Corporation (the “Company”) today announced that it has acquired Medicom Innovation Partner (“Medicom”), a leading provider of device strategy, product design and development services with particular focus on personal connected health drug delivery device solutions to meet the needs of the rapidly growing biopharma and specialty pharmaceutical markets. Terms of the transaction were not disclosed.

Through this acquisition, Phillips-Medisize will bolster its leading position in drug delivery device solutions. Together, the combined company will have over 500 engineers across facilities in Hudson, WI; Mountain View, CA; Hillegom, Netherlands; Struer, Denmark; Cambridge, United Kingdom; and Suzhou, China. The addition of Medicom’s capabilities expands Phillips-Medisize’s end-to-end injectable and inhalation device innovation service solutions for biopharma customers, including early device strategy, human factors engineering, product development, clinical production, full scale production and integrated supply chain management.

Matt Jennings, Chairman, CEO and President of Phillips-Medisize, said, “This transaction is consistent with our strategic focus on serving the rapidly growing diabetes, biologics, specialty pharmaceutical and personalized oncology markets that need these products and reinforces our leading position in drug delivery device solutions. Medicom’s impressive solutions, 25 years of expertise and 100+ state-

of-the-art technology accelerators, coupled with Phillips-Medisize’s scale in design to manufacturing of high to low volume production drug delivery devices, will provide customers with end-to-end integrated service solutions, resulting in increased speed to market. We are excited to welcome the talented Medicom team to Phillips-Medisize and look forward to working together to deliver services and solutions that improve patient compliance and outcomes.”

“We are pleased to partner with Phillips-Medisize, a recognized global leader with an impressive track record of delivering a broad and deep set of capabilities to customers. We are confident that customers of both companies will benefit from an enhanced offering of end-to-end integrated service solutions across a global network while continuing to receive the same best-in-class service that they have come to expect,” said Morten Nielsen, CEO of Medicom. “Importantly, our companies are culturally aligned and we share the same deep-rooted passion for innovation which improves our customers’ competitiveness.”

Medicom will continue to be led by Mr. Nielsen and Medicom’s existing management team. Mr. Nielsen will report to Bill Welch, Phillips-Medisize’s Chief Technology Officer and global leader of pre-production services.

Phillips-Medisize Corporation CH 8309 Nürensdorf

# New Member in the HURTZ family



“HURTZ” is specialized in the processing of aluminium (in particular the high-quality welding) for decades (already since 1960s) and for more than 20 years the quality products made of aluminium for transport and warehousing solutions in the areas of hygienic productions is well-known.

HURTZ Alu-Pallets are used worldwide by partners.

Now they have their tried and tested portfolio (consisting of aluminum-pallets, -containers, -cages + special constructions) expanded and supplemented by a new product: aluminium wave grid boxes.

Hereby the walls are finely woven executed as the previously produced skeleton boxes/cages - which still continue in the program, of course.

High hygiene requirements are provided in the areas of pharmaceutical, biotechnology, cosmetics and food. A further very important point in the daily business is the tamper-proof storage of certain substances. This is even better now, through the use of finely woven wire mesh

#### The advantages of the new series:

- various mesh sizes available (20<sup>2</sup>, 30<sup>2</sup> and 40<sup>2</sup> mm)
- tamper-proof
- light weight
- ideal for use for sterilization
- 100% stainless
- customized construction and dimension available

ANTON HURTZ GMBH & CO. KG  
D 41334 Nettetal

## Labels with Additional Benefits for Clinical Trials

# Optimized Information for Medical Professionals: Schreiner MediPharm Develops Together With Sanofi an Innovative Solution for Blinding Syringes during Clinical Studies

During clinical trials it is important to neutralize investigational products to ensure that active drug and placebo cannot be distinguished from one another, in order to guarantee valid and compliant results. At the same time, there is a legal obligation to provide extensive product information in different languages for the drug being tested. This presents a particular challenge for labeling, especially when transparent containers with small radii are involved. Schreiner MediPharm has developed a special solution for syringes in close cooperation with the Clinical Trial Supplies Unit of Sanofi, Montpellier.



For use in clinical trials, the label must provide sufficient space for compulsory text. In addition, it must ensure that each investigational product has the same appearance, even in transparent syringe barrels. Depending on the required amount of text, a one- or two-layered wrap design is used for the syringe, each of which allows double sided printing per layer of film. Extensive, high opacity printing of the transparent material is required to do this.

The product solutions are based on a particularly long, one-layered wrap-around label named Pharma-Wrap and a two-layered label, the so-called Euro-Label. Very flexible film material is required, so that the label can be easily wrapped around the syringe with a small radius. The part of the label that is directly glued to the syringe consists of a tinted transparent film. This enables reliable neutralization of the syringe without obstructing the view of the contents. The remaining part of the label is printed on a white background, so that product information can be provided on both sides. The integrated peel-open tab enables easy opening and closing of the label.

These specialty labels increase flexibility, efficiency, and safety for the execution of clinical trials, because one single label variant can be used globally for marking the respective product, while blinding it at the same time.

## Aseptic Manufacturing Training

Supported by  
Cherwell Laboratories

Cherwell Laboratories, specialists in products for process validation and environmental monitoring, have confirmed their continued support for the education and training of personnel engaged in the aseptic production of medicines. Cherwell will be exhibiting a selection of their comprehensive cleanroom microbiology product range at the Aseptic Preparation and Dispensing of Medicines (APDM) Training Course to be held at Leeds Trinity University.

Starting on 4th July 2016, this 4-day residential course is organised by the NHS, Technical Specialists Education and Training (TSET) Group and the University of Leeds. The course is designed to meet the needs of pharmacy staff who work in licensed and unlicensed aseptic units. It covers the principles and practice of asepsis and provides an update on knowledge of standards, practices and quality assurance arrangements relating to the aseptic preparation and dispensing of medicines.

Representatives from Cherwell Laboratories will be on hand during days 2 and 3 to discuss how their products can help provide the ideal solution for both active and passive environmental monitoring and meeting standard methods for process validation. Cherwell's exhibition stand will present some of the quality tools and materials they offer for these critical applications. These include the Redipor® prepared media range, which includes agar plates, bottled media, broth bags, vials and ampoules; plus SAS microbial air samplers for active environmental monitoring.

Andrew Ramage, Microbiology Product Specialist, Cherwell Laboratories, who will be attending the events and available to advise on applications and associated products, commented, "Supporting and attending this well respected course allows us to maintain our levels of expertise, ensuring we can continue to offer up-to-date products, services and advice to those involved in the aseptic processing of medicines."

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Gerresheimer presents new COP syringes produced in Germany

# Gx RTF ClearJect

On the occasion of this year's customer trade show, Gerresheimer Pharma Days held in Chicago, Illinois, the company pre-sented the first product of its newly developed Gx RTF Clear-Ject brand: a COP syringe with cannula. The prefillable, high-performance plastic COP (Cyclo-Olefin-Polymer) syringes made in Germany are especially suitable for demanding, sen-sitive medications and high-viscosity agents. In the future, American and European customers will be offered a portfolio of COP syringes from a single production location in Ger-many. The new development reflects the combined know-how of experts in prefillable glass syringes in Bünde, Germany and the plastic specialists at the Technical Competence Center in Wackersdorf, Germany.



Gerresheimer currently offers a range of prefillable COP syringes produced by long-time company partner Taisei Medical Co. Ltd. in Japan. Gerresheimer is assuming the sales and technical con-sulting roles for ClearJect syringes for customers in Europe and the US. The company is now expanding its product portfolio of COP syringes and is combining the tried-and-tested RTF (ready-to-fill) concept of glass syringes with ClearJect to create the new Gx RTF ClearJect brand. In close cooperation with the company's Japanese partner, the new syringe will be produced at the German production facility of Gerresheimer Medical Systems. The first product of this line is a 1 ml long syringe with integrated cannula.

COP is an interesting plastic alternative to time-tested glass syringes due to the growing demands of novel agents on their primary packaging. Medications for cancer therapy, for example, can be extremely aggressive to the point where the break resistance of a syringe is a decisive criterion for selection. Innovative biotech medications, on the other hand, are often effective in the smallest of doses and are frequently very expensive. Any interaction with the syringe material must be ruled out here. COP meets all of these requirements. Syringes made of this material are resistant to breaking, as transparent as glass and hardly interact with the packaged medications at all. Thanks to the use of injection molding, the design boasts especially tight tolerances. Its precise geometry also reduces dead volume, leaving behind less of the expensive medication in the syringe.

The new Gx RTF ClearJect syringe with cannula offers key advantages with regard to the primary packaging of demanding medications, especially when it comes to biocompatibility. The COP material does not release metal ions into the medication solution. Since the entire syringe including the insert-molded cannula is produced in a single step, the product is also free of tungsten and adhesives. COP has a high pH tolerance and, unlike glass, does not change the pH value while in storage. The oxygen permeation rate is low in comparison to other plastics, and the values for extractables and leachables are

low. The syringes are siliconized with a precisely controlled amount of high-viscosity, and thus low-particle, Dow Corning 360 MD (12,500 cSt) silicone oil to ensure optimum functioning.

Another important advantage of the Gx RTF ClearJect syringe with cannula is its end-user safety. COP is particularly break-resistant, making it suitable for packaging aggressive or toxic materials. In comparison to the similar material COC (Cyclo-Olefin-Copolymer), COP features greater tensile strength, fracture strain, flexural strength and impact resistance. Gerresheimer chose COP as the material for its new syringe due to these superior physical properties. Precise dimensions and siliconizing ensure reliable syringe functioning with low breakaway and gliding forces and minimal force required to pull-off the needle shield. The syringes are also excellently suitable for use in autoinjectors thanks to their rugged-ness and precise geometry.

This syringe system is economical thanks to the fact that the innovative COP syringe body is designed to use commercially available components throughout. This begins with the use of standard cannulas and continues with the piston rods, piston plungers, backstops and closure systems which can be used.

The new Gx RTF ClearJect syringe is available in the 1 ml long size. The design is inspired by ISO 11040-6 and registered. The syringe is equipped with a 27-gauge, 1/2-inch (12.7 mm), thin-walled stainless-steel cannula with three bevels.

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Messe Düsseldorf's interpack alliance and IPACK-IMA are now sharing a platform in Nairobi.

# fppe Kenya and East Afripack are pooling their resources



The food processing & packaging exposium (fppe) and East Afripack are set to form a joint platform at the Kenyatta International Conference Centre (KICC) from 5 to 7 December 2016. The platform will serve companies along the entire food packaging value chain, from the crops to the end product. In this way Messe Düsseldorf's interpack alliance – which also includes fppe – and the Italian trade fair organisers IPACK-IMA (a JV between Fiera Milano and Ucima – The Italian Packaging Machinery Manufacturers Association), the organisers of East Afripack, are bundling their expertise on the East African market. Furthermore, the range of product categories has now been expanded, so that exhibitors include companies along the entire food supply chain.



## 05th - 07th December 2016: Food Processing & Packaging Expsyum (FPPE), Nairobi (Kenya)

“In this new constellation we provide an outstanding basis for both export-focused and domestic companies, enabling them to present their solutions at a local level, on a market which is full of opportunities, while helping them to enter into direct dialogue,” says Thomas Dohse, Deputy Director of Processing & Packaging at Messe Düsseldorf.

“Seeing that our Italian companies are such powerful exporters, we are confident that this partnership will give them an excellent solution on a market that has been rather fragmented until now. fppe and East Afripack together is the best solution for East African Community professional visitors that require rapid technological upgrading in the food process and packaging industry, in all of its aspects” says Domenico Lunghi, Managing Director of IPACK-IMA.

### fppe – combining an exhibition and a conference

fppe will maintain its specific event format, combining two parts: a conference and an exhibition. The main emphasis will be on needs-focused solutions for local food manufacturers, and so the core elements of the conference will be the needs of those producers, suitable products and services from suppliers and also the political framework for companies. Furthermore, a special industry symposium is being planned by VDMA, the German Engineering Federation.

### Solutions to combat food losses

Another major area will be the issue of food losses. The Food and Agriculture Organisation of the United Nations (FAO), the United Nations Environment Programme (UNEP) and Messe Düsseldorf will be responsible for this part of the conference as

partners of the SAVE FOOD initiative. Suitable cultivation, processing and packaging solutions are important tools in combating food losses – a sub-Saharan problem which is frequently caused by the impossibility to ensure the immediate processing, storage and shipping of crops.

### Package deals for easy participation

To make participation as easy as possible for both export-focused companies and local suppliers, considerably less expensive package deals will be available for shell stands than on previous occasions. In addition, a range of convenience packages can be booked which will comprise services ranging from airport transfers and hotel bookings through the organisation of business meetings to guided tours of companies.

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# analytica 2016: The industry's most important trade fair in the world



- Several world premieres enthrall visitors
- Record number of exhibitors thanks to 6.5 percent increase
- Number of participants at analytica conference also up



From May 10 to 13, 2016, a total of 1,244 exhibitors from 40 countries presented their product innovations including a number of world premieres to some 35,000 visitors at analytica. There was a considerable increase in the share of exhibitors and visitors from abroad. As a result, analytica's leading position as the world's most important trade fair for laboratory technology, analysis and biotechnology remains undisputed.

Dr. Reinhard Pfeiffer, Deputy CEO of Messe München, sums things up: „Thanks to presentations of several world premieres in particular, analytica demonstrated that it is Number 1 and therefore the most important driving force behind innovations in industry and research. Siegbert Holtermüller, Chairman of the Technical Advisory Board for analytica and Managing Director at Olympus, confirmed the fair's character as a leading exhibition: „The industry needs analytica to present its innovations to an international audience and discuss ongoing developments.“

The euphoric atmosphere at the fair was the result of warm weather and, above all, full halls and crowded stands—a clear sign that the industry is doing well. Mathis Kuchejda, Chairman of the SPECTARIS Trade Association for Analytical, Bio- and Laboratory Technology, feels that the industry's main growth opportunities lie in increasingly complex regulatory requirements as well as the networking and automation of laboratory processes and sample preparation, not least of all due to increasing globalization in sectors such as food safety.“ Growth is also being generated by recent developments in the health-care sector such as in-vitro diagnostics. For 2016, the trade association expects the German industry's domestic sales to improve, increasing by 6.5 percent to approximately 3.75 billion euros.

## Share of international visitors higher than ever

Approximately 35,000 visitors, 40 percent of whom came from abroad, attended analytica 2016. The countries with the largest contingents of visitors were Austria, Switzerland, Italy, Great Britain and

the United States (in that order). There were significant increases in the number of visitors from countries including Great Britain, Iran, Thailand and Turkey.

According to a survey by the market research institute Gelszus Messe-Marktforschung, visitors were extremely satisfied with the outcome of the fair: 99 percent gave the exhibition a rating of good to excellent. Nearly 60 percent also feel that analytica is increasing in significance.

A total of 1,244 companies from 40 countries—a 6.5 percent increase over the record-breaking results from 2014 (1,168)—participated in analytica. Above all, that growth was due to an increase in international exhibitors, which rose four percent to a total share of 44 percent. Besides Germany, the countries with the largest contingents of exhibitors were China, the United States and Great Britain.

## Full rooms at the analytica conference

The scientific highlight of the fair was the three-day analytica conference. A total of 1,839 visitors—an increase of twelve percent over 2014 (1,638)—filled the rooms of the ICM - Internationales Congress Center München to capacity. Prof. Marion Thevis from German Sport University in Cologne: „The analytica conference is extremely important. It promotes an international exchange and allows us to meet the manufacturers of analysis devices that are important to our work. After all, progress in this area is the only thing that allows us to offer modern and adequate test methods.“

## Unique the world over

analytica's Live Labs and the special show on Occupational Safety/Health and Safety in the Workplace continued its success story at this year's fair. All seats were taken and it was „standing room only.“ According to Prof. Markus Fischer, Director, Hamburg School of Food Science and moderator of the Live Lab on Food Analysis: „Manufacturers and laboratory experts can discuss situation-oriented challenges and potential solutions at the fair, which makes this format ideal and unique.“ Günther Rossdeutscher, Managing Director and shareholder at asecos, continues: „Our presentations on the topic of occupational safety and health and safety in the workplace also generated a great deal of attention among visitors. We are also thinking about analytica 2018 and considering which aspects of occupational safety we should present there to attract large numbers of visitors again.“

**10th - 13th April 2018: analytica, Munich (D)**

Messe München GmbH  
D 81823 München

Booking demand confirms a high level of satisfaction with the event's new schedule

# MEDICA 2016 + COMPAMED 2016: Trend barometer of a dynamic market



When top decision-makers in the healthcare business meet in Düsseldorf again in the middle of November at the world's leading medical trade fair, MEDICA 2016, (scheduled date: 14 – 17 November 2016; Monday to Thursday), 5,000 exhibitors from around 70 countries will be presenting themselves once more as partners in unchanged enthusiastic innovation – offering tailored solutions for outpatient and clinical care. According to the European Patent Office, in 2015 no other technological sector submitted as many patent applications worldwide as the field of medical technology.

„The course of registrations up until now is showing that the incredibly high level of participation seen in the previous year can be expected again, thereby indicating a high level of satisfaction among exhibitors with the new schedule of the event, running from Monday to Thursday,” explains Joachim Schäfer, managing director of Messe Düsseldorf. He is also pleased about the development of the trade fair for medical technology suppliers being held in parallel, COMPAMED. „Here as well, the change of schedule has been positively accepted by the exhibitors, and the extension of COMPAMED by an additional day has been expressly welcomed. This can also be seen by a high rate of repeat bookings. Once again, we expect a turnout of more than 800 exhibitors in the fully booked COMPAMED halls, 8a and 8b.“

Concerning innovations, the market at the moment is characteri-

sed by a special dynamic of important supplier trends.

The digitalisation of healthcare is progressing at an unstoppable rate, and this concerns all fields, outpatient and clinical care, as well as patients and physicians alike. With reference to Germany, the latest enacted E-health Act should ensure that the networking of stakeholders within the scope of the healthcare process is considerably optimised by means of a more effective collection and utilization of patient data – at least this has been stated as its clear goal. The predominant „digital patchwork“ up until now pertaining to intrinsically sophisticated, but poorly compatible solutions could now be woven into a better overall system using a better integration of data.

## **Innovations in focus and great prominence “waiting in the wings”**

MEDICA 2016 visitors will be able to see for themselves what the digital future in the healthcare sector will be like via the exhibitors' many innovations as well as the lectures and presentations at the MEDICA CONNECTED HEALTHCARE FORUM (with the MEDICA App COMPETITION) or the MEDICA HEALTH IT FORUM (each in hall 15).

In particular, “wearables” and smartphones in combination with special health apps, which can also be used by patients themselves,

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have the potential of becoming an indispensable element of networked health in the future. Numerous new products relating to this topic have been already presented at the MEDICA 2015, and countless other mobile health applications are currently under development, whereby many focus on cardiovascular diseases, diabetes as well as the remote monitoring of therapies. Here a particularly high level of user potential can be expected in the future with regard to patient numbers.

The topic of big data also continues to be a focus of visitors' interest. At its core, it has to do with compiling and evaluating enormous amounts of patient data in order to be able to gain knowledge with regard to the development of and effective therapy for certain diseases.

The MEDICA ECON FORUM will also be dealing with the opportunities and consequences of healthcare digitalisation. The forum (in hall 15), organised as a joint effort between the Techniker Krankenkasse (a German statutory health insurance company) and Messe Düsseldorf, has been firmly established as a platform for health policy dialogue, shown by the confirmations of prominent guests to again attend this year's event. Those who have already confirmed their participation include, among others: The Federal Minister of Health, Hermann Gröhe, the NRW Minister of Health, Barbara Steffens, or also Maria Klein-Schmeink, health policy spokeswoman of the Bundestag parliamentary group Alliance 90/The Green Party (Bündnis 90/Die Grünen).

### The third dimension is finding its way into operating theatres

Not only bits and bytes are affecting the healthcare business, however. Medical technology also has exciting topics to offer. At the moment, innovations for interventional procedures are seen as particularly important. In the case of modern surgery procedures, an „integrated“ approach is in demand. Data deriving from medical imaging flows into the controls of surgical assistance systems. They can even be generated during surgery by imaging systems directly available in the operating theatre, ensuring that the intervention can take place in a precise and gentle manner. Here, above all, progress in the field of endoscopy and instruments for minimally invasive surgery translate into great benefit.

Currently, the third dimension is increasingly finding its way into operating theatres. In the case of so-called 3D laparoscopy systems, there are two image sensors that are precisely aligned with each other at the end of the endoscope, providing the surgeon with a lifelike endoscopic 3D image during the course of minimally invasive surgery.

### Conferences directly integrated into the specialist trade fair

Such important medical technology trends will not only be represented by exhibitor innovations at the MEDICA, but will also be reflected within the scope of the programmes of the accompanying conferences.

For example, these include the MEDICA MEDICINE & SPORTS CONFERENCE, dealing with the use of applications in close proximity to the body and „wearables“ for monitoring vital signs, or the MEDICA EDUCATION CONFERENCE.

This conference is being organised this year for the third time by the German Society for Internal Medicine (DGIM) and offers participants an excellent opportunity to gather and exchange information on new technologies and their medical use as part of a scientific training event held in parallel to the world's largest medical trade fair. Of the four conference days, each individual day offers a particular thematic focus. Along with innovations in the field of 3D laparoscopy, among other things, the event will be started off with „New operative

techniques during surgery“.

On the other days, the MEDICA EDUCATION CONFERENCE will be dedicated to imaging and interventional procedures (e.g. magnetic resonance tomography and sonography), future technologies for internal medicine (e.g. remote monitoring in the case of chronic disease) as well as, on the event's last day, „Diagnostics in the fields of internal medicine, laboratory medicine, toxicology and hygiene“.

With reference to the MEDICA conference programme, furthermore, the 39th German Hospital Conference as a leading event for the directors and management of German hospitals, the international DiMiMED conference for specialists from the field of disaster and military medicine as well as the MEDICA PHYSIO CONFERENCE will be forming a close content-oriented link to the topics of the specialist trade fair – aimed toward the specific interests of their respective participant target groups.

Now, and in the future, a central strength of the MEDICA continues to be that it does not just deal with solutions for one individual medical specialist discipline at a time, but that it offers solutions for the complete „workflow“ of patient treatment.

The individual focuses of the MEDICA trade fair, which are clearly structured according to hall, include: Electromedicine/medical technology (more than 2,500 exhibitors), laboratory technology/diagnostics, physiotherapy/orthopaedic technology, commodities and consumables, information and communication technology, medical furniture and specialist furnishings for hospitals and doctors' offices.

### COMPAMED – hotspot for complex high-tech solutions

This year, once more in parallel to the MEDICA, the COMPAMED with approx. 800 exhibitors will be taking place for the 25th time. Always scoring top annual results with reference to the number of exhibitors and visitors, it has long since developed into the leading international marketing communication platform for suppliers of the medical technology industry. Where, at one time, simple parts, components and equipment for technical devices and medical products had primarily been presented, today, COMPAMED is a hotspot for complex high-tech solutions.

Here, the microsystem technology solutions for mobile diagnosis, monitoring and therapy systems are particularly in line with the current trend. These include, among others, smart sensors and energy storage systems for use in „wearables“, microtechnology applications for intelligent implants or printed electronics. In addition, the subcontracting and outsourcing of services for all elements of the process chain (R&D, production, supply chain management, quality management, spare parts handling, etc.) are continuing to gain in importance.

With 18,800 visitors last year, the COMPAMED broke its best record so far. A total of 130,000 specialist visitors from around 120 countries toured the MEDICA and COMPAMED in 2015.

This unique combination allows MEDICA and COMPAMED to represent the entire process chain and the full range of medical products, devices and instruments. Together, they keep the Düsseldorf trade fair complex (19 halls) fully booked.

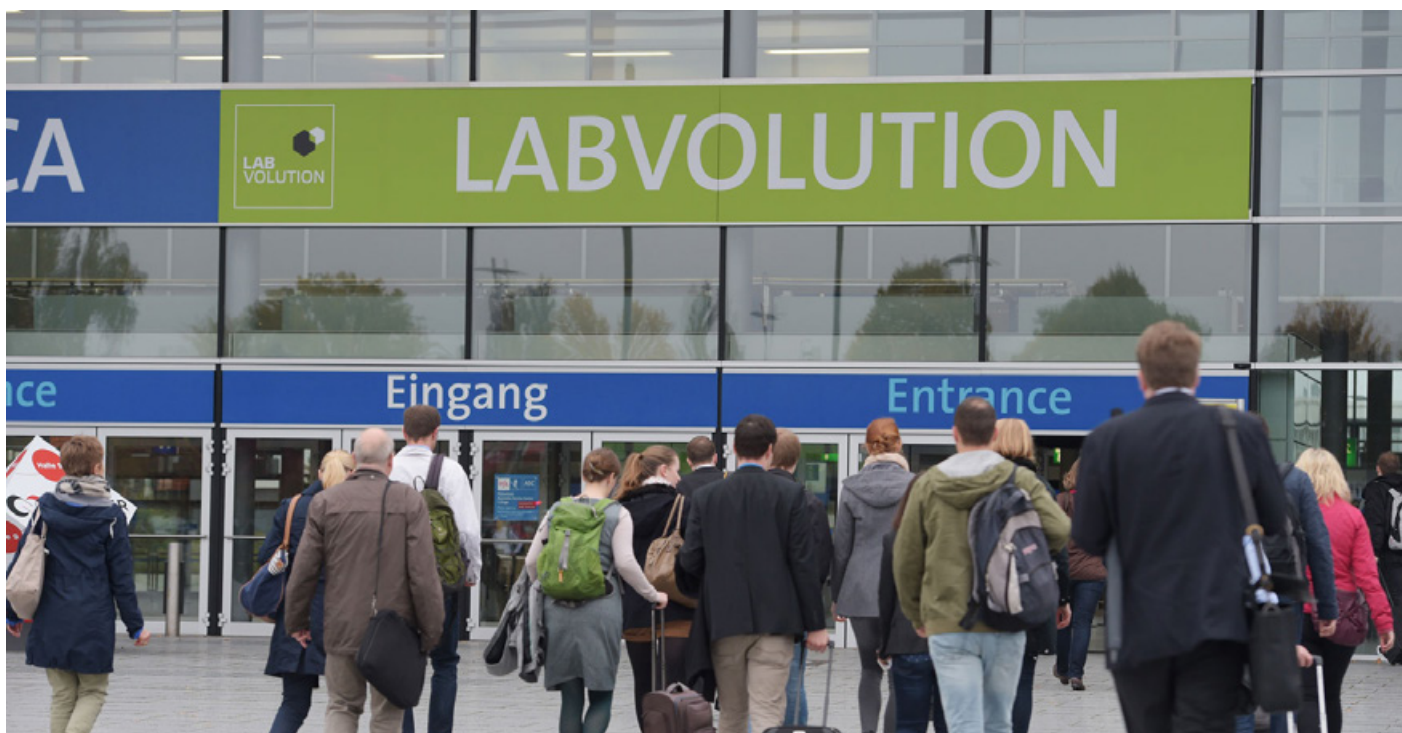
As in previous years, it will be possible to visit both events with a single ticket.

**14th - 17th Nov. 2016: COMPAMED + MEDICA,  
Duesseldorf (D)**

Messe Düsseldorf GmbH  
D 40001 Düsseldorf

International trade fair for the entire world of lab technology

# LABVOLUTION/BIOTECHNICA 2017



Following its successful launch last year, the dual LABVOLUTION/BIOTECHNICA event is now preparing to underscore its reputation as a prime showcase for the entire world of lab technology. With a new spring timeslot, the next show – which covers everything from the life sciences to the chemical industry – will take place in Hall 2 of the Hannover Exhibition Center (Hannover, Germany) from 16 to 18 May 2017. The focus will be on innovative products and services, Lab 4.0 and digitalization. Among the highlights at the upcoming event will be the next edition of the smartLAB display that made a big splash at last year's LABVOLUTION.

“LABVOLUTION/BIOTECHNICA presents the full spectrum of laboratory technology for users in every relevant sector,” said Dr. Jochen Köckler, Managing Board member at Deutsche Messe, adding: “This focus, along with exciting unique features such as the smartLAB display, transforms the event into a business platform for analytics, lab technology and biotechnology in northern Europe.”

The trade fair's main target groups are industry, research and science. With backgrounds in the chemical industry, food, environmental technology and the life sciences, trade visitors to Hannover will encounter the latest products and solutions for lab technology, automation and infrastructure and for analytics and specialist services. Featuring innovative products alongside best-practice examples, LABVOLUTION showcases the world of the laboratory along the entire value chain and across all applications. At the same time the event underlines its research strength at BIOTECHNICA. Science, R&D and companies from the biotech sector will be presenting the very latest advances and applications in fields such as personalized medicine, industrial biotechnology and diagnostics. Among the exhibitors addressing these topics will be universities, research institutes, biotech companies, and national and international pavilions.

Special formats at LABVOLUTION/BIOTECHNICA 2017 will once again include a flanking conference on lab automation and the new LabUSER exhibitor forum. Located in the conference area of Hall 2,

exhibitors at the LabUSER forum have the opportunity to present products and applications and also to offer training and courses. The special display “smartLAB – lab of the future” is unique throughout the tradeshow landscape and a major plus for LABVOLUTION. As well as being a showcase for the prototype lab, it features an accompanying forum and a conference program.

The exchange of ideas and knowledge transfer in relevant biotechnology and life-science topics – such as Bio-IT, personalized medicine and bioeconomy – will take center stage at the BIOTECHNICA FORUM in 2017. Other topics to be featured next May will include careers & recruitment, partnering & networking, and support for start-ups.

Last year saw the first parallel staging of LABVOLUTION and BIOTECHNICA. The story behind the two brands could hardly be more different, with the new LABVOLUTION presenting lab technology for all sectors and the visionary smartLAB, on the one hand, and the well-established BIOTECHNICA – a research and biotech event for Europe with a 30-year history – on the other hand. The two trade shows have now joined forces, benefiting exhibitors and visitors alike. Trade visitors across all sectors throughout northern Europe come to learn about current developments in lab technology and find out about the latest issues and innovations in biotechnology. At the same time, biotechnology users and researchers have the opportunity to view the entire spectrum of cutting-edge lab technology and infrastructure.

**16.05. - 18.05.2017: LABVOLUTION, Hannover (D)**

Deutsche Messe AG  
D 30521 Hannover

## Energy-saving fan filter units

# EC centrifugal fans for clean rooms

Tougher product quality requirements call for production in clean or ultra-clean rooms. Even the slightest impurities in the air can compromise production processes and lead to high reject rates. Air supplies for such production environments need to be as free as possible from dust or germs. The RadiCal centrifugal fans from ebm papst are ideal for such applications.



Compact fans with energy-efficient GreenTech EC technology for use in fan filter units. (Photo: ebm-papst)

Clean rooms place special demands on their ventilation systems, including sufficient air flow and pressure, precise temperature and humidity control, and consistent air quality. So-called fan filter units (FFU) combine filter systems and fans and are designed for installation in ceilings. For large clean rooms in particular, such a configuration satisfies the requirements.

The range of products offered by ebm-papst Mulfingen includes RadiCal centrifugal fans that are specially designed for use in fan filter units and satisfy all mandatory requirements for such applications. The fans cover an air performance range from 1,170 to 2,330 m<sup>3</sup>/h at a back pressure of up to 300 Pa. GreenTech EC technology is also of particular interest for clean room systems since FFUs equipped with it can reach efficiency levels of more than 50%, which was not previously possible with conventional technology. In addition, strict noise protection regulations apply in clean rooms. The RadiCal impellers, which were optimized according to aerodynamic criteria, ensure low noise emissions; the fans are 6-7 dB quieter than the previous market standard.

For operation in accordance with user requirements, the EC fans can be controlled with an analog 0-10 V signal or via a digital RS485 interface. The latter is especially effective for clean room systems, where several thousand fan modules are often at work in the ceilings.

In such cases, the networking capabilities offered by MODBUS or ebmBUS have proven very advantageous for controlling and monitoring these complex systems.

Besides the production of semiconductors, clean-room conditions are also called for in production processes for optics and lasers, aerospace, medical research and treatment, and foodstuffs and pharmaceuticals. Clean-room technology prevents contamination from compromising production processes and damaging sensitive products, and there are also processes involving materials that must be kept from reaching the outside air.

RadiCal fans have demonstrated their capabilities all over the world, for instance in the clean rooms where flat panel displays are produced. The market leaders from Korea and Taiwan relied on GreenTech EC technology from ebm-papst for the production of their large flat panel products.

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

Now Also Available as an App for Mobile Devices

# Humidity Calculator Calculates Humidity Measurands, including Measurement Uncertainties



With the online humidity calculator from E+E Elektronik, humidity-related parameters can be calculated quickly and easily. In contrast to other programs, it takes into account the measurement uncertainties. The E+E humidity calculator is now also available as a free app for mobile devices. The app for Android or iOS operating systems can be downloaded from the Google Play or Apple App Store. The app also features a pressure dew point calculator.

Based on known ambient conditions, the E+E humidity calculator converts among all humidity-related parameters, such as relative humidity, dew point / frost point temperature, water vapour density, mixing ratio, partial water vapour pressure and specific enthalpy. Calculations can be made in metric (SI) as well as imperial (US) units.

Unique is that the E+E humidity calculator takes into account measurement uncertainties in the calculation. This means that realistic and reliable total uncertainties can be calculated based on the accuracy specification of the measuring device.

The app also features a pressure dew point calculator specifically tailored for compressed air applications.

Thanks to the intuitive operation the humidity calculator is very easy to use. The conversions and calculations can be saved or sent as a PDF. The online humidity calculator ([www.humidity-calculator-online.com](http://www.humidity-calculator-online.com)) also offers the option of copying the results to an



Figure 1: The E+E humidity calculator app for mobile devices. (Photo: E+E Elektronik Ges.m.b.H.)

Excel file. The online version of the E+E Humidity Calculator is available in 8 languages, while the app is available in German and English.



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