



# Safe remote microbial air sampling with MAS-100 ISO MH



## Abstract

Active microbial air sampling is performed in isolators and RABS to detect potential product contamination by airborne microorganisms. Two MAS-100 Iso MH impaction-based microbial air samplers were successfully tested for these applications: (1) sampling air 50 m from the instrument base unit which in practice permits to place the base unit in an uncontrolled technical area far from the space-restricted isolator (2) inclusion of a filter into the air duct which protects personnel from exposure to toxic APIs (3) air-flow calibration of the air sampler without the need to access the isolator (4) Assuring identical microbial air sampling efficiency for each of the up to 4 sampling heads of the MAS-100 Iso MH and (5) the possibility to replace the base unit of an MAS-100 Iso MH while maintaining the integrity of the isolator.

The rugged design of the standard MAS-100 Iso MH

enables specific installation options which make this instrument the safe choice for microbial air sampling in isolators and RABS.

Clean air supply is a defining criterion of an aseptic filling system within an isolator or RABS. Microbial air monitoring of these environments is performed with settling plates and active air samplers. Sampling locations are chosen based on a risk analysis within a QRM framework. In aseptic filling lines most frequently three positions are monitored: Entry and exit point of material as well as the filling position where product is exposed to the environment. The integrity of the containment must be guaranteed throughout the process.

The MAS-100 Iso MH impaction-based air sampler from MBV has specifically been designed for air monitoring in isolators and RABS. The instrument consists of up to 4 pharmaceutical grade stainless steel sampling heads inside the containment which are connected by pipes or tubes to a base unit outside the isolator.

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The base unit includes a temperature and pressure-compensated mass flow sensor, communication interfaces, valves and the air blower which aspirates air with a sensor-controlled rate of 100 SLPM through the sampling heads. In one possible set-up, 3 sampling heads are placed within the containment and the fourth sampling point remains outside the isolator.

In the following tests we will investi-

gate if the integrated mass flow sensor of the MAS-100 Iso MH maintains a constant sampling rate of 100 SLPM by automatically adjusting the blower speed to compensate for different air resistances within the air channel. If so, this would permit calibration of one channel of the instrument (e.g. the one outside of the contained compartment) and extrapolation of the result to the remaining sampling heads. The

resistance-independent calibration would also allow for different channel lengths and geometries and the integration of a protective air filter in the air channel.

### Material and methods

We tested whether differences in air resistance between the sampling head and the base unit of a MAS-100 MH instrument influence the amount of sampled air. The channel configuration with minimal air resistance consisted of a 90° stainless steel pipe bow with 3/4" inner diameter of a total channel length of approx. 0.2 m. The maximum resistance set-up consisted of a 50 m spiral coiled tube (transparent, 32x4.2 mm, #01201326, Helispring, Gummi-Fischer GmbH), the same 90° bow and an Opticap® XL4 Capsule Filter (0.2 µm pore size, Merck Millipore) which is frequently used to prevent release of toxic substances from inside the isolator. The total channel length was about 50.4 m (Table 1). The experiments were performed with two different MAS-100 Iso MH with either 4 (SNR 450019) or 2 sampling heads (SNR 450146) with standard 300x0.6 perforated lids with a D50 cut-off value of 1.1 µm. All channels of both instruments were initially adjusted to a target air flow of 100 SLPM and calibrated with a DA-100 NT digital anemometer.

After adjustment we performed air flow measurements with the minimal (no tube, no filter) and maximal resistance (50 m tube, protective filter) and compared them to the target air flow. The experiments were repeated to provide an indication of the systems robustness. The specified precision at 100 SLPM of the DA-100 NT is ±1% and for the MAS-100 Iso MH it is ±2.5%. To account for sudden environmental changes in combination with instrument and test equipment variation the ex-factory limits for air flow deviation are set to ±5%. However, this experiment was performed under controlled conditions and we targeted to stay within a band of 100 SLPM ±2.5%.

### Results

Inserting a long connecting tube and a protective air filter between the sampling head and the base unit increases resistance to the sampling airflow. We tested the relationship between the increased air flow resistance and the resulting air flow rate at the sampling point. Fig. 1 shows the results of the 6 tested sampling channels and the



MINIMAL RESISTANCE SETUP	MAXIMUM RESISTANCE SETUP
<b>Base unit</b>	
<ul style="list-style-type: none"> <li>- including blower, mass flow sensor, inner and outer valves</li> <li>- instrument 1: 4 sampling heads</li> <li>- instrument 2: 2 sampling heads (shown in picture below)</li> </ul>	
<b>Air channel</b>	
90° stainless steel pipe bow	
-	Opticap protection filter
-	50-meter-long connecting tube
	

Table 1: Experimental set-up for the comparison of the minimal and maximum air resistance configurations of MAS-100 Iso MH: On the left, the set-up of a 2-sampling head configuration of the MAS-100 Iso MH including 1 sampling head attached to a 90° stainless steel bow. On the right the identical instrument with an additional 50 m tubing and an air filter between the sampling head and the base unit.

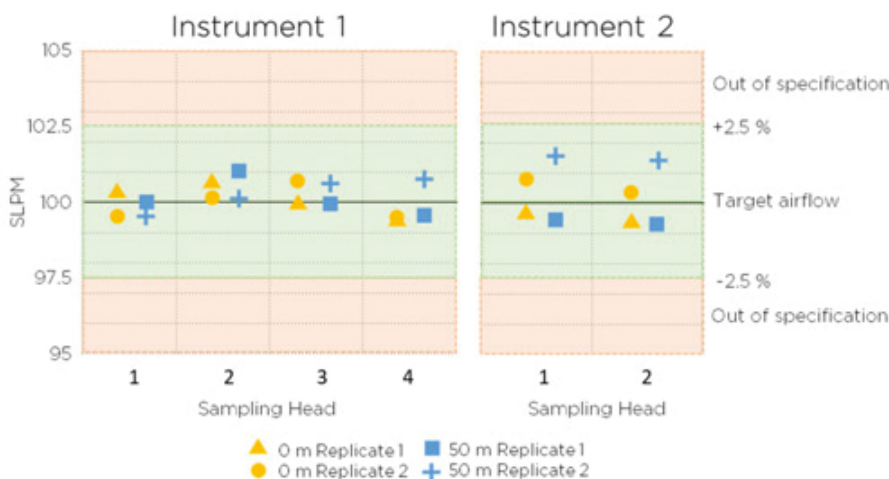


Figure 1: Calibration results of MAS-100 MH 4-head air sampler (left graph) and 2-head air sampler (right graph) measured with different resistance conditions: Both the minimal resistance (yellow) and the maximum resistance (blue) measurement values are within the allowed area of less than 2.5% deviation from the target air flow 100 SLPM (green). The mean standard deviation from the target air flow is -0.25% for the 4-head device and -0.35% for the 2-head air device.

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two repetitions per channel (4 channels of MAS-100 Iso MH instrument 1 and 2 channels of instrument 2).

Every single airflow difference between minimal and maximum resistance of an individual channel was below  $\pm 1.5\%$  of the 100 SLPM target flow and therefore well within the specified range of the MAS-100 Iso MH of 100 SLPM  $\pm 2.5\%$  (green shading in Fig. 1). The mean difference of instrument 1 was  $-0.25\%$  and for instrument 2 it was  $-0.35\%$ . In all cases the mass flow sensor controlled the blower speed such that no significant differences between the calibration with minimal and maximum airflow resistance were detected. Consequently, all 12 data points across 6 channels and 2 instruments were well within the specification of 100 SLPM  $\pm 2.5\%$ . The increased air channel resistance was compensated by an increased power output of the blower, which increased from 48% (no tube) to 67% (with tube and filter) of the maximum output. So despite the significant additional drag in the air duct, the blower still had a residual additional capacity of more than 30%.

### Discussion

We tested the stability of the calibration of two MAS-100 Iso MH impaction-based microbial air samplers under different

air resistance conditions. We found no significant differences of airflow between minimal and maximum resistance conditions (Fig. 1). This is because the combination of a mass flow sensor that controls a strong blower motor compensated the increased airflow resistance. This positive outcome offers several practical implications in real containment set-ups (Fig. 2):

#### 1. Remote microbial air sampling

The long tubing or piping between the sampling locations and the base unit enables a large physical separation of the base unit from the containment. Space in controlled environments is always at a premium. The tubing length of 50 m which we tested in this experiment and which is much longer than the 10 m specified for the MAS-100 Iso MH will permit to place the base unit of the MAS-100 Iso MH in the uncontrolled technical zone, for instance into the floor above the cleanrooms. The base unit will then be accessible without gowning and tool sterilization.

#### 2. Protective air filter

Many modern pharmaceutical products such as antibody drug conjugates (ADC) are highly toxic. Protecting personnel from exposure to these substances is therefore

a prime concern for workplace safety. We have inserted a protective air filter between the sampling head and the base unit of the MAS-100 Iso NT. The additional resistance to the airflow introduced by adding the filter had to be compensated by the blower. In our experiments this was achieved with 30% residual power output reserve of the blower.

#### 3. Air-flow calibration during running filling processes

The MAS-100 Iso MH permits microbial air sampling on up to 4 sampling heads from one base unit. The airflow from these 4 channels is measured by a single mass flow sensor which controls the aspiration speed of the blower. If 3 sampling locations are inside an isolator, then the fourth sampling head could be used to calibrate the flow sensor. Our tests suggest that the calibration result of this head can be used as a reference for the air flow of all other channels. In such a set-up an 'as found' calibration can then be performed on each channel once the isolator is opened for maintenance and, if necessary, the air flow can be adjusted.

#### 4. Identical sampling efficiency for each sampling point

During factory calibration, IQ/OQ and the regular re-calibrations, each channel of the MAS-100 Iso MH is separately adjusted and calibrated with a DA-100 NT digital anemometer. The calibration data is stored in the base unit and a calibration certificate is automatically generated for each channel. This is to ensure identical microbial air sampling efficiency for each sample. In our experiments these calibrations remained valid even if the air channel resistance was changed. For other installation set-ups this finding may need to be verified.

#### 5. Service exchange of air sampler with containment still intact

The MAS-100 Iso MH has been specified and manufactured for robustness and longevity. However, technical failure can never be totally excluded. Should a MAS-100 Iso MH experience any problems during operation, the base unit can be exchanged without compromising the integrity of the containment. The outer valve of the dual-valve protection system keeps the

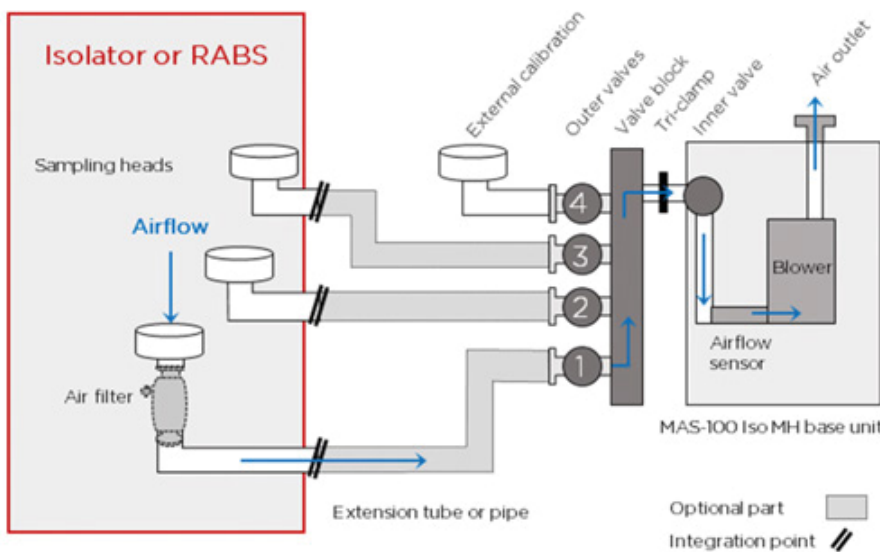


Figure 2: Schematic of a possible 4 head configuration of the MAS-100 Iso MH microbial air sampler: 3 sampling heads are positioned within the isolator/RABS and one head is placed outside as an external calibration point. The length of the tube/pipe (gray, dotted line) is specified to 10 m. In this experiment we tested a 50 m tube and additionally integrated an air filter (gray, dotted line). The airflow (blue) starts at the sampling head and is directed through the air filter, the extension tube/pipe and the outer and inner valves to the base unit. The latter contains an airflow sensor that controls the blower speed.

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air channel closed even if the base unit is removed and replaced by a calibrated replacement unit (Fig. 2). The 'as found' calibration results for each channel will have to be verified and if necessary adjusted and calibrated once the sample heads are accessible during routine maintenance operation.

### Conclusion

With this application note we demonstrate on two units and a combined 6 sampling channels of the MAS-100 Iso MH microbial air sampler the remote active microbial air monitoring in isolators and RABS. Each of the up to 4 sampling points was placed 50 m from the instruments base unit. Additionally, a protective air filter was introduced into the air channel. De-

spite this additional resistance to the air flow, no re-calibration/adjustment of the air sampler was required as the integrated flow sensor maintained the air sampling rate by adjusting the air aspiration speed of the blower. Air resistance in a real isolator/RABS setting depends on a number of factors such as tubing/piping bow radii or pressure differences between controlled zones. Although we expect similar results to our findings, it is advisable to perform a feasibility test for installations outside the instrument specifications of the MAS-100 Iso MH. It may also be necessary to adjust other installation parameters. For further information contact MBV.

The stability of the flow-sensor calibration in combination with standard safety features of this instrument offers a

number of practical advantages. These range from easier mechanical integration to increased service friendliness and provide the user with the ease of mind to comply with the requirements for safe microbial air monitoring.



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## Looking for a partner?

The screenshot shows the 'reinraum online' website. At the top, there is a navigation bar with 'Sie sind hier: home > WER WO WAS'. Below this is a search bar with 'Vorauswahl Rubrik' set to 'alle' and a search input field. A sidebar menu on the left lists various categories like 'Home', 'News (de)', 'News (it)', 'WER WO WAS', 'e-Learning', 'Veranstaltungen', 'wikircinraum', 'Forum', 'cleansman', 'Newsletter', 'Shop', and 'Personalanzeigen'. The main content area displays 'Please select a search term:' followed by a grid of search results including 'Construction, Operation, Facilities, equipment', 'Process Optimisation', 'Service', 'Consumables', 'R&D, Education, Association', 'Buildingcomponents, Roomcomponente', 'Modular Technologies', 'Technical Systems, Technical Components', 'Lock Device', 'Workstations', 'Measuring Systems', 'EDV', 'Deconlaminatation', and 'Plant, Room'. Other results include 'Exhaust Systems, Supply Air Systeme', 'Filter and Filtration Systems', 'Air Conditioners', and 'Ventilation and Air, Conditioning, Measuring Systems'.



Dear subscribers,

User reports describe solutions that have been found and implemented by experts: a concrete task, the right concept and the successful implementation from planning to practice. Solutions that pass the reality check and prove themselves on the market. Professional articles, on the other hand, tend to describe theoretical solutions for theoretical tasks; they are created in the laboratory, so to speak. In our newsletter, we always strive to offer you a balanced mixture out of these and a lot more.

And we would be pleased if you would support us with good „material“.

Enjoy reading cool stories in a hot summer.

Yours sincerely,

Reinhold Schuster

# Infosys Monitors Indoor Air with Vaisala's HVAC Sensors



## Best Quality Indoor Air with Vaisala's HVAC Sensors



Mr. Vikas Makkar, Regional Manager  
Infrastructure Team at Infosys.  
Photo courtesy of Infosys.

Infosys is the second largest Indian IT consulting company with 200,000 plus employees and revenue of over USD 10 billion. With headquarters in Bengaluru the company has its development centers in over 16 locations pan India and one campus in China. Currently Infosys is using Vaisala's HVAC sensors in all its projects.

### About Infosys

Infosys provides business consulting, information technology and outsourcing services. Infosys is one of the only few IT companies in India who designs, builds, and operates its own campuses and office buildings. The campuses are typically more than 100 acres with minimum 20,000 employees and comprises of office buildings, Employee care centers (accommodation facility), food courts, retails stores, entertainment and sports facilities, the majority of which are mechanically ventilated.

### Need for Accurate HVAC Sensors

Infosys believes "what can be measured

can be managed". With the total built up area of 44 million sq ft across 16 campuses, around 35% is air conditioned and requires various meters and sensors for effective remote performance management. HVAC system condition monitoring becomes a crucial requirement considering Infosys's goal to provide best indoor environmental quality (IEQ) and to provide most productive work spaces in the world to its employees. IEQ has a direct impact on employee productivity.

### Infosys's Requirements

When the idea of installing HVAC sensors was floated, around a lot of research underwent into finalizing the right sensor. The sensors have to pass all the requirements as per stringent Infosys standards. "In our pursuit of finding the best HVAC sensors, we came across Vaisala. We tested Vaisala's sensors extensively in our in-house lab and we found that they met our accuracy, reliability, and warranty requirements", says Mr. Vikas Makkar, Regional Manager Infrastructure Team at Infosys. Post the detailed study and testing, Infosys has been using Vaisala's HVAC products in all their projects since 2015.

"Sensors are very important for us as we do continuous measurement and verification of building performance at granular level through detailed Integrated building management system", says Mr. Makkar. "We believe that the sensors are a basis

for all energy savings logic that we have in our building management systems like demand-controlled ventilation, free cooling, fan modulation, and pump modulation and also the sensors provide us with invaluable data to design our future building better, continues Mr. Makkar.

### Employee Well-Being Matters

Apart from energy efficiency, providing good indoor environmental quality to its employees is crucial for Infosys. "We believe that a good IEQ has a direct impact on health and productivity of our employees", says Mr. Makkar. This becomes even more important for Infosys, being an employee intensive company. As per a recent study, conducted by the National Institute of Environmental Health Sciences (NIEHS), it's a well-known fact that abilities like strategic skills and crisis response are reduced remarkably with a slight change of just 100 ppm in the CO2 levels. Thus the sensors play a vital role in helping enhancement of employee productivity and wellbeing.

### HVAC Products Used

As of now Infosys is using Vaisala sensors mainly in measuring temperature, humidity and carbon dioxide, namely HMD110, GMD20, GMW90 series, HMW90 series, and GMT220 series. To measure the same parameters outdoors, they use the HMS112.

### Why Vaisala?

The significant reason for choosing Vaisala sensors for Infosys was the 5-year stability specification for the products. Especially for humidity and CO2 sensors which otherwise drift frequently this reason is very important. "We find that Vaisala is unique in this sense. The 5-year stability specification provides the kind of confidence and trust the customer looks for in any product. In the last 3 years we have been using the products, we have received timely support from Vaisala and are quite satisfied with the product quality," concludes Mr. Makkar.



Bengaluru Karnataka, India

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# New prospects for liver transplants

## RAUMEDIC tubing set provides vital support for transplant medicine

RAUMEDIC produces a complex tubing set that supports the preservation of the OrganOx metra, a new device for liver transplants from the British firm OrganOx Ltd. When used with the OrganOx metra device, the set helps to keep donor livers perfused outside of the body for up to 24 hours.

### Preserving organs outside of the body

Liver transplantation is a highly successful treatment, but is severely rationed by the shortage of suitable donor organs. Approximately one in five patients died on the UK liver transplant waiting list last year whilst, paradoxically, almost 500 livers from deceased organ donors were not retrieved or transplanted. This was because the condition of many donor organs was such that these were unli-

kely to work after being preserved in an ice box. Despite many advances in liver transplantation, the method of organ preservation has scarcely changed in 30 years.

Whereas the traditional method of organ preservation requires cooling and storage in an ice box, normothermic machine perfusion with the OrganOx metra device maintains the liver at normal body temperature prior to transplantation and actively delivers oxygenated blood, medications and nutrients via the tubing set assembled at RAUMEDIC. This is believed to greatly reduce the tissue injury associated with transplantation.

### From production to sterilization

The complex tubing set from RAUMEDIC is an integral part of the metra device. More than 200 components are produced and assembled for the set. Various silicone and PVC tubes, ECC connectors and product-specific molded parts are used. All of the individual parts are manually assembled with great care in the clean room of the RAUMEDIC headquarters in Helmbrechts. This process requires meticulous work since functionality of the device has to be guaranteed for 24 hours. After the assembly period, the sets are packaged and EtO sterilized.

### Start-up spirit at the start of the collaboration

“We currently deliver several hundred tubing sets to our customer each year, with an upward trend,” says Axel Wunderlich. The RAUMEDIC applications engineer has supervised the tubing set project since 2009. OrganOx was still a start-up company at the time. Today, the metra transplant device is saving lives. “We are



As the largest product at Raumedic, the tubing set helps to preserve the function of the donor organ as part of the overall system.



With the help of the cannula set, the donor liver is connected to the entire system.



Silicone tubing attaches the oxygenator to other system components.

## New prospects for liver transplants

proud that our company can play a role in this revolutionary technology,” explains the engineer. The Innsbruck Transplant Center introduced the innovative device in February 2018, one of the first centers in Europe to do so outside of a clinical study.

### Future-proof technology

Currently, after they are removed, donor livers are preserved at low temperatures in an ice box. The transplant team only has about eight hours to get the organ circulating again in the body of the recipient. The OrganOx metra significantly extends this time period to up to 24 hours, which means that:

– Liver transplants can be planned in the future, potentially

improving operating room logistics.

- Night-time emergency procedures may soon be a thing of the past.
- Donor livers from older patients may also be used, now that more extensive organ tests can be performed before the transplant.

The worldwide approval process for the innovative transplant device is in progress. The device is CE marked in the EU and a multi-center study is underway in the USA.

Raumedic AG  
D 95233 Helmbrechts

# KEK works with Dittel Engineering to design a folding inspection trolley



## The simple, functional design makes the folding trolley a sturdy and durable companion

Author: Georg Müller

On the initiative of Dittel Engineering, a joint project with the cleanroom experienced manufacturer of stainless steel equipment KEK GmbH started: In just a few iteration steps, a transport trolley has been designed to house measuring instruments and equipment for use in inspections and qualification measurements. The

peculiarity of this folding trolley is that it can be folded with two movements. This does not only mean that you can carry it without problems in a car or van. When folded, its dimensions have been optimized so that it can be wrapped and welded into a transport tube made of cleanroom foil. This means that the cleaned transport trolley

is protected during transport against contamination and therefore largely prevents the entrainment of contamination in the cleanroom at the customer's site. Expenditure for cleaning in terms of cost and effort when introduced into the cleanroom thus remains minimal. The simple, functional design makes the folding trolley a sturdy and durable companion. “Sometimes it's the smaller things that make everyday life in a cleanroom more effective. Nevertheless, the project stands for Dittel's own claim of ‚cleanroom technology in perfection‘ and reflects in the same way that the products of KEK GmbH are ‚timeless.‘” Features include conductive castors, easy cleaning thanks to smooth and round surfaces and fast tool-free assembly. A circumferential bead on the lower bottom prevents small parts from falling, the free ends of the rods allow the holding of tubes / cables.



Graphic: assembled/folded (KEK GmbH)

Graphic: assembled/folded (KEK GmbH)



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# The Swiss Biotech Association honors major industry achievements with Swiss Biotech Success Stories

On the occasion of its 20th anniversary, the Swiss Biotech Association launches Swiss Biotech Success Stories in recognition of the industry's many accomplishments. Swiss Biotech Success Stories will grow over time to encompass all of the industry's different facets. An independent jury of experts annually selects the laureates. The first recognitions go to Biogen, Glycart, Okairos, Selexis and Vifor Fresenius Medical Care Renal Pharma for their remarkable achievements and sustainable contributions to Switzerland and its biotech industry. Founders, scientists, investors and business partners celebrated the first laureates yesterday evening at this year's Swiss Biotech Day.

«Biotech is one of the most innovative sectors in Switzerland. The industry represents an unparalleled success story, attracting talents and investments from all around the globe», said Michael Altorfer, Chief Executive Officer of the Swiss Biotech Association. «Our industry is as diverse and multifaceted as its successes. With Swiss Biotech Success Stories we are honoring our pioneers, entrepreneurs, innovators and leaders – all those extraordinary people who lead the way, open the horizon and prepare the ground for lasting achievements.»

## Swiss Biotech Success Stories highlight significant achievements

Swiss Biotech Success Stories celebrate the many accomplishments and honors those who have made important and sustainable contributions to the biotech industry in Switzerland. Laureates are individuals – or groups – who earned extraordinary merits. Success is broadly defined as scientific, translational, medical or commercial accomplishments and other aspects with a positive impact on biotech industry and society in Switzerland. The recognition is awarded annually and reflects the diversity and variety of this industry sector.

## Independent expert jury decides on recognition

Current members of the jury are Luca Bolliger, vice president of Swiss Biotech Association, president of the jury; and – in alphabetical order – Patrick Aebischer, emeritus EPFL president, professor and serial entrepreneur; Martine Clozel, co-founder and Chief Scientific Officer of Actelion and Idorsia; Gabrielle Gache, president of Swiss Healthcare Licensing Group; Ulrich Geilinger, head private equity at HBM Partners; Kaspar Hess, head of the entrepreneurial private banking at Mirabaud Basel; Birgit Voigt, business journalist at NZZ am Sonntag; Jürg Zürcher, partner, biotech/medtech leader GSA at Ernst & Young. Jury secretary: Thomas Staffelbach, senior advisor at TS Kommunikation.

## 2018 laureates of Swiss Biotech Success Stories (in alphabetical order)

[Biogen for the many Swiss ingredients in its success story.](#) Founded in Geneva in 1978, Biogen has been a key stimulus and model for the biotech industry in Switzerland and on a global level. Today's success contains many Swiss roots such as today's best-selling drug against multiple sclerosis or its latest Alzheimer's candidate currently in Phase III development. In 2004, Biogen returned to Switzerland establishing its international headquarters in Zug,

and, more recently, announced new production facilities in Luterbach creating 600 new jobs.

[Glycart \(now Roche Glycart\) for its role as pioneer in antibody engineering in cancer immunotherapy.](#) The Schlieren-based company successfully engineers antibody glycosylation to increase immune-mediated cancer cell killing. A first drug based on this technology has been approved in 2013 to treat chronic lymphocytic leukemia. Since the takeover by Roche in 2005, the number of employees at Roche Glycart in Schlieren has increased from 29 to over 180.

[Okairos for its innovative T-cell based vaccines for major infectious diseases](#) such as malaria, hepatitis C, HIV, Ebola and others. Its novel replication-incompetent adenovirus vectors could open the door to the development of important new vaccines and offer immunizations against illnesses that lack vaccines. Okairos moved its headquarters to Basel to benefit from the innovation-friendly Swiss environment. In 2013, the company was acquired and integrated into GSK.

[Selexis for its advanced technologies in protein expression](#) particularly in novel and difficult-to-express proteins. With more than hundred partners worldwide, nearly hundred drug candidates in clinical development and three commercial products utilizing Selexis-generated cell lines, the technologies of the Plan-les-Ouates-based company allow biotech and pharmaceutical companies a rapid, stable, and cost-effective solution for the production of recombinant proteins.

[Vifor Fresenius Medical Care Renal Pharma, a transformational joint venture,](#) which provides Vifor Pharma direct access to dialysis patients facilitating the distribution of its products and recruitment for its clinical development. The success of the joint venture transformed Vifor Pharma into a global nephrology company in just 18 months. The vertical integration between a pharmaceutical and a medical device company could be a role model for the convergence of the two sectors.

## Partners of the Swiss Biotech Success Stories

Swiss Biotech Success Stories are sponsored by Mirabaud & Cie. SA, Switzerland Global Enterprise and Ernst & Young. The campaign is supported by Gebert Rüb Stiftung, the Canton of Basel-Stadt, Bench International and TS Kommunikation.



# Inauguration of OHB Italia new integration and Manufacturing facility

OHB Italia, a subsidiary of the Bremen-based aerospace and technology group OHB SE, has inaugurated a new Integration and Manufacturing Facility in clean environment adjacent to the headquarter building in Milan. The official inauguration ceremony was held today in the presence of the local authorities and representatives from the European and the Italian Space Agency. This new facility is operational since June 2018 and will increase OHB Italia capacity in space system production, in particular for satellite integration.

„This new cleanroom in Milan is a very important asset for OHB Italia”, said Roberto Aceti, Managing Director of the Italian subsidiary, and added, “this high-tech facility close to our headquarters will rationalize our production, allowing us to be more competitive”.

“OHB Italia has successfully acquired projects that are currently in different phases of development or production. Thus, our investment in the new facilities we are inaugurating today was a logical step: it demonstrates our commitment to driving our challenging projects forward in an ideal environment”, said Mr. Marco Fuchs,

Chief Executive Officer of OHB SE. “This new facility complements the ones available at the premises of the other European companies belonging to OHB SE. And it underlines OHB’s role as a major system integrator in Europe. I wish all employees who will be working in these new clean rooms every success in realising their projects.”

The facility consists of three separate clean rooms respectively in ISO5, ISO7 and ISO8 class. The ISO7 clean room, suitable for satellite integration, has a usable area of 190 square meters allowing the operation of up to 20 persons simultaneously; the area is equipped with a 10 tons bridge crane with a hook height of 6 meters. The ISO8 clean room, suitable for equipment manufacturing, has a usable area of 180 m2 and an internal height of 2.5 meter. Within the ISO8 area an ISO5 clean room of 80 square meters can be accommodated to be used to work on parts with high cleanliness requirements like optics. The 60 square meters ISO7 air-lock area, which enables the access to the integration room, is dimensioned to accommodate an ISO20 transport container and is equipped with a 10 tons bridge crane. A 50 square meters ISO7 testing room, a changing room and other technical spaces complete the facility which also has an overlook window to observe the integration activities in the ISO7 room from a covered terrace without interfering with the operations.

## About OHB Italia:

OHB Italia SpA is a leading company in Italy in the field of space systems design, development and integration. The company is part of the listed space and technology group OHB SE that currently employs approx. 2,500 people in two business units: “Space Systems” and “Aerospace and Industrial products”. Founded in 1981 OHB Italia has its headquarters in Milan.

OHB System AG  
D 82234 Oberpfaffenhofen



Group photo during a tour of the clean room with Dr. Lutz Bertling (Management Board OHB SE, 6th from left). (© OHB SE)



Marco Fuchs, CEO of OHB SE (4th from left), opens the new production hall together with several guests. (© OHB SE)



The exterior view of the new production hall. (© OHB SE)

# Invisible and highly mobile

**Design, functionality and more leeway with 180° multiple-joint hinges installed on the inside.**

Ganter standards experts are used to providing unconventional Ganter-standard application solutions for a wide range of applications. After all, the goal is to make it as easy as possible for the customer to use standard elements by means of illustrative product descriptions. It is quite normal that every now and then, a 180° turn around the corner must be considered.

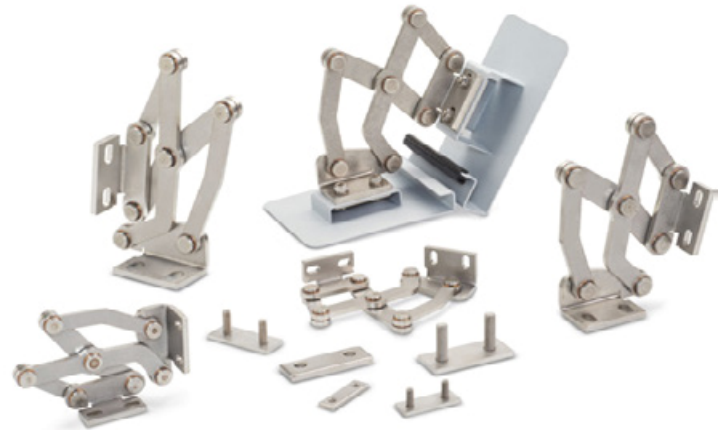
In the truest sense of the word, this requirement also applies to the Stainless Steel-Multiple-joint hinges GN 7237, which are now included in the Ganter product line. Although they are installed to be space-saving and vandalism-proof inside the housing they allow a 180° opening angle of the flaps, hatches and doors. This helps achieve optimum accessibility to the housing interior and at the same time, it avoids the blocking of escape routes by open doors, for example. Moreover, the housing exteriors remain free of attachments that do not match the design or that should be avoided entirely in the interests of easy cleaning.

The Stainless Steel-Multiple-joint hinges are made up of fixing angle pieces, which are mounted on the housing or the door, and an intervening 7-speed, clearance-free, self-lubricated joint mechanism. Thanks to the movement of the joint mechanism designed by simulation software, when opening, for example, a flap is first slightly lifted and then swung by 180°.

Maximum flexibility in installation: Long holes in the mounting bracket and spacer plates make the hinge adjustable on three levels. For easy mounting, threaded plates and spacer plates are available as accessories.

To meet more complex applications with specific opening or motion sequences, Ganter also offers custom-made solutions that go beyond conventional hinge usages, as required, with a 4- or 10-fold joint mechanism as a lifting or pull-out system.

Otto Ganter GmbH & Co. KG  
D 78120 Furtwangen



# Schreiner MediPharm Develops Novel Label for Pharmaceutical Two-Chamber Tube from Neopac

## Concentrated Competence for Innovative Label Concept

Schreiner MediPharm in collaboration with tube manufacturer Neopac and machine producer Harro Höfliger developed an innovative label for a pharmaceutical tube. The special marking label encloses the tube like a pocket, offers ample space for information and can be automatically dispensed on packaging lines.

Schreiner MediPharm designed the label for the Fleximed® Easymix tube of the Swiss company Neopac, a specialist in the development and production of pharmaceutical tubes. The transparent tube provides an alternative to conventional glass vials and consists of two separate chambers filled either with two different

liquids or a liquid and a powder. They are mixed shortly before the medication is administered by compressing the tube chambers which are separated from each other by a flexible seam.

The marking solution developed by Schreiner MediPharm consists of a front and rear part and encloses the tube like a pocket. Due to its special design, there is ample space for text. A cutout in the label provides an unobstructed view of the individual components of the two tube chambers—an important function enabling the user to check if the two components have optimally mixed before the medicine is administered. Another benefit: The innovative label design enables smooth automatic dispensing on packaging lines. Schreiner MediPharm worked closely together with Harro Höfliger, a manufacturer of production and packaging equipment with high expertise in engineering special machines for the medical device and pharmaceutical industries and Neopac's project partner in developing the tube filling and sealing processes.

Maximilian Jaeger, Development Manager at Schreiner MediPharm, summarizes the challenges posed to the label development for the two-chamber tube: "The geometry and particularly the deformation of the tube when compressing it are not suitable for a conventional self-adhesive labeling solution. The label has to accommodate a lot of information which must be inseparably connected with the tube and readily legible. At the same time, the view of the tube content must not be obstructed and possible migration of the label adhesives into the tube content has to be excluded."



No matter whether two different liquids (pictured left) or a liquid and a powder (pictured right) are mixed in the Fleximed® Easymix tube: The special label encloses the tube as reliably as a pocket and still provides an unobstructed view of the individual components of the two tube chambers.

Schreiner MediPharm D 85764 Oberschleissheim

# Endress+Hauser development team earns the AMA Innovation Award

## iTHERM TrustSens recognized as an exceptional innovation in the field of sensors and instrumentation

Innovation, originality and market relevance: these are the three key criteria that are applied when selecting the winner of the AMA Innovation Award. With the iTHERM TrustSens, a development team from Endress+Hauser was able to persuade the AMA awards jury.



Industry specialist: Endress+Hauser's iTHERM TrustSens has been designated especially for the food & beverage and life sciences industries.

With its innovation, the development team from Endress+Hauser Wetzlar, the center of competence for temperature measurement technology headquartered in Nesselwang, Germany, prevailed against 35 German and international competitors to win the award. The iTHERM TrustSens thermometer was designed especially for hygienic and aseptic applications in the food & beverage and life sciences industries.

The instrument features automated and fully traceable inline self-calibration, eliminating the risk of non-conformities and leading to superior product safety and process efficiency. In addition, the integrated Heartbeat Technology enables continuous self-diagnosis and verification without interruption of the process.

The AMA Innovation Award, which is given to innovative research and development teams by the AMA Association for Sensors and Measurement, is considered one of the industry's most coveted awards. The awards ceremony was held on 26 June 2018 during the Sensor+Test trade fair in Nuremberg, Germany. The Promass Q Coriolis-based flowmeter from Endress+Hauser was also nominated.

Endress+Hauser AG CH 4153 Reinach BL 1

# The unbridled success of the Swiss Biotech industry continues apace

The Swiss biotech industry has reached record figures for 2017 in financing, infrastructure investment, and exports. This shows that confidence in its ability to create value and innovate remains unshaken. The most prominent example is the acquisition of Actelion by Johnson & Johnson, which, at almost USD 30 billion, was the largest stock exchange transaction worldwide within the life sciences industry over the past year.

The success of the Swiss Biotech industry continues. In 2017, the sector matched the successes of the last few years and even topped them, as the latest figures from the Swiss Biotech Report show. Compared to the previous year, capital investment in private and listed Swiss biotech companies doubled from CHF 0.8 billion to CHF 1.64 billion – the highest figure since the report was first published. Industry sales\* increased by 14 percent to reach CHF 3.79 billion. The number of employees within the total 237 biotech companies and 60 suppliers rose by around 2.5 percent to 13,725 employees. In addition, investment in research and development increased by more than 22 percent to CHF 1.39 billion.

## A consistently high level of innovation

Swiss biotech companies continue to be attractive on the world market, and they remain on the radar of global pharma and biotech companies. Successful partnerships continued in 2017, and many new ones were forged. A know-how drain is repeatedly and successfully prevented, and instead, domestic activities are expanded in order to keep the high level of innovation and value creation in the country. A recent example is the takeover of Actelion by the

global player Johnson & Johnson. Although Actelion is no longer included in the Swiss Biotech Report statistics, the spin-off of Idorsia has created a new biotech company affiliated with Switzerland as a research location. Further examples of past success were the takeovers of Prionics by Thermo Fisher; Okairos and GlycoVaxyn by GSK; Covagen by Johnson & Johnson; Serono by Merck; Speedel and ESBATech by Novartis; and Glycart by Roche.

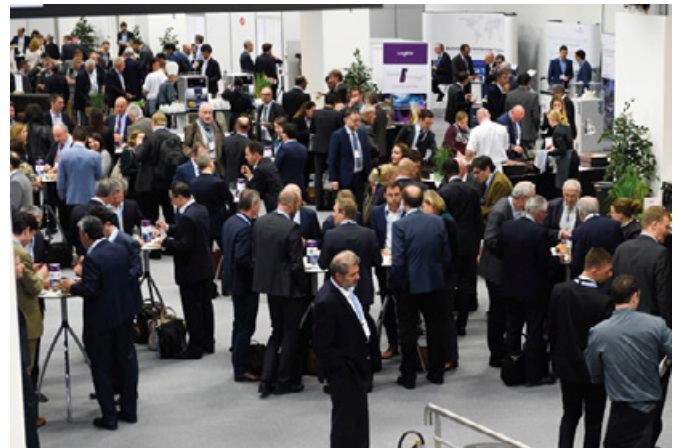
## A promising future thanks to an ideal environment

Switzerland has not only a highly specialized workforce, but also a dense supply network and a high level of availability of suppliers and service companies across all stages of the value chain. These virtually ideal framework conditions are one of the main reasons why both domestic and foreign biotech and pharma companies invested heavily in the production infrastructure in Switzerland in the past and continue to do so now. As a result, there are at least three production facilities for high-quality cell culture products (monoclonal antibodies) currently under construction: CSL Behring in Lengnau, Biogen in Luterbach, and Lonza in Visp. Together with the existing production plants of Glenmark, Merck, Novartis, MSD, Roche, and UCB, these new facilities will continue to increase exports of pharmaceuticals, vitamins, and diagnostic products, meaning that the figures will exceed last year's record values. The value of pharmaceutical and biotechnology product exports in 2017 was CHF 83.8 billion, which is about 38 percent of the total Swiss export volume.

Future prospects are also very promising: The solid development pipeline of the Swiss biotech industry and the quality of its patents, half of which are “world class patents” with a particularly high potential for value creation, will secure Swiss biotechnology's place on the global market as a strong, competitive sector in the long term.



Swiss Biotech Association  
CH 8004 Zürich



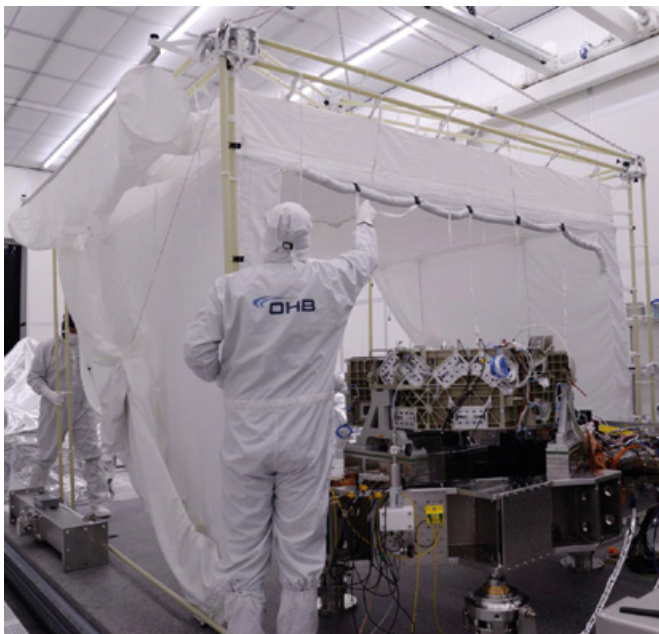
# Partnership between OHB and Fraunhofer IPA

OHB System AG, a subsidiary of listed space and technology company OHB SE, together with the Fraunhofer Institute for Production Engineering and Automation IPA, has designed a mobile clean room, which was presented at LOUNGES 2018, the trade fair for clean-room and pharmaceutical process technology.

“How can I protect sensitive hardware in a high-purity clean



CAPE® offers temporary protection against particle and molecular contamination in high ISO-class clean rooms. (© OHB System AG)



The mobile and autonomous CAPE® clean room being assembled at OHB Space Center “Optics & Science” for the temporary protection of optical systems in an ISO Class 5 clean room. (© OHB System AG)

room which is being serviced or modified?” wondered Dr. Axel Müller, Cleanliness Officer at OHB System AG, going on to consider various clean-room situations and possible solutions. He then came up with the idea of developing a mobile and autonomous system which is easy to install and creates its own clean-room environment inside the clean room. He presented his ideas to OHB partner Fraunhofer IPA in Stuttgart, meeting with a welcome response. The experts at IPA were quick to realize the potential and became involved in the production. Their prototype was further developed in conjunction with OHB. The result is the CAPE® (clean and protective environment) mobile clean room that allows users to set up enclosure for their hardware on an area of around four by four meters within a period of a good hour. In addition to the space technology industry, OHB and IPA also see potential demand for mobile autonomous clean rooms in the pharmaceutical, optical, food, medical and the semiconductor industries.

## CAPE® provides double protection for hardware and infrastructure

The CAPE® mobile clean room provides temporary protection for all kinds of hardware during product inspections and cleaning processes. Equally, it reliably prevents particle and molecular contamination during new installations, routine maintenance and repairs in the clean room. It can also be used for acceptance testing at suppliers or in test houses for qualifying flight hardware for space applications.

Equally, however, CAPE® protects existing infrastructure. In this case, critical processes such as gluing are performed in the mobile clean room to prevent the rest of the clean room from being compromised.

## Tested and approved

CAPE® was used in an ISO5 clean room at OHB Space Center “Optics & Science” for the first time at the end of 2017. “The system not only worked perfectly but also showed potential for modifications and extensions,” says Dr. Müller. “IPA implemented CAPE® extremely professionally. Standardized processes after each use preserve the purity and viability of CAPE® even after storage periods. For this reason, we will provide five systems at OHB to be optimally prepared for all cases.”

## CAPE® is not just an off-the-shelf article

CAPE® can be acquired either as a standard product or as a customized model. The design and assembly of the customized models take account of the intended purpose, the desired size and the necessary air purity class.

# BOY celebrates its 50th business year - with an award



BOY – Jubiläumspaket  
als Dankeschön

Just a few weeks before the end of its fiscal year on March 31, 2018, the machine manufacturer BOY received an honorable award. The Chamber of Industry and Commerce Koblenz presented the family business a Certificate of Honor for the 50th anniversary of Dr. BOY GmbH & Co. KG. Fabian Göttlich from the IHK Regional Office Neuwied (in the picture on the right) presented this award to Alfred Schiffer, Managing Partner of the global business enterprise.

Since 1968 BOY has pushed forward a variety of technical developments and launched new products onto the market. One of the milestones in the history of BOY is certainly the BOY 15, with which everything started in 1968. Max Schiffer developed this machine because there was no such product on the German market. The screw-piston plasticizing, which until then had only been used on larger machines, was adapted to this machine size. The basis of the BOY Injection Moulding Machines is a fully hydraulic clamping system. The product portfolio has been continuously expanded from 150 kN clamping force to 300, 500, 800 and 1000 kN clamping force. Since 2008, modern and energy-saving servo-electric drives have been used. BOY was the first German plastics machine manufacturer with this drive technology. The efficiency of the injection moulding process is further enhanced by the EconPlast technology, which was developed and patented by BOY in 2013. A much more efficient and careful plasticizing of the materials to be processed was thus made possible.

The introduction of the microprocessor control in 1982 offered a complete new way to operate and control the machines. The further development of the Procan control series - which is currently being used in the fifth generation - offers an intuitive operation via touch screen and modern gesture functions.

By focusing on the clamping force range up to 1,000 kN, BOY offers a whole range of efficient models. Starting with the small BOY XXS with 63 kN, the model series BOY 22 / BOY 25 of which more than 25,000 machines have been manufactured, up to the four-tie-bar compact machines BOY 35 to BOY 60. The current top model BOY 100 E is the upper limit with a clamping force of 1000 kN.



Presentation of the Certificate of Honor to Alfred Schiffer by Fabian Göttlich (IHK); in the background a BOY 15 S from the foundation year 1968

With the development of vertical Injection Moulding Machines a few years after the foundation of the company, BOY has earned a very good reputation worldwide.

The successful in-house development of independently processing additional injection units (BOY 2C XS to BOY 2C L) makes from conventional Injection Moulding Machines multi-component production machines in a cost-effective way. BOY also has the proper answer to the ever-increasing level of automation. In addition to the Injection Moulding machines the specially developed handling device BOY LR 5 represents a second production line of BOY. This linear robot takes over a variety of automation tasks, such as for example, the removal and separation of parts from the mould of an Injection Moulding Machine or the insertion of semi-finished products into the mould.

A lot has changed since the beginning 50 years ago, comments Alfred Schiffer. However, the determination, with which the company founder Max Schiffer started, still rules the activities of the BOY employees in development, production, administration, sales and customer care. BOY enjoys a high degree of recognition in the plastics industry. In addition to the production facility in Neustadt-Fernthal and the sister company in the USA, there are around 60 independent sales partners around the world cooperating with the specialist of Injection Moulding Machines with a clamping force of up to 1,000 kN.

## A free „Extra“ in the anniversary year 2018

BOY is currently preparing a special “thank-you” for its customers in Germany and abroad: „In the year of our company anniversary we will put together a free anniversary package for all BOY Injection Moulding Machines. This package includes five free options for our customers ordering machines in the period from July 1 until to the end of the anniversary year“ says Alfred Schiffer. Specifically, these are the options:

- Interface for the ejector plate safety,
- four freely-programmable inputs and outputs,
- the interface package,
- the relay output during plasticizing,
- the oil filling of the machine.

## Innovative into the future

With regard to the digitalization of the plastics industry - rising demands on manufacturers in terms of Industry 4.0, the digital networking of machines and their development towards Artificial Intelligence (AI) - BOY sees itself well prepared. BOY continues to be one of the trendsetters in the global plastics industry with its current motto „Innovative into the future - BOY-Injectioneering“ - a motto that is constantly being implemented by innovative concepts and solutions.

# Gerresheimer wowed at CPhI China with innovative packaging solutions

Gerresheimer presented new products such as the Gx InnoSafe, the metal-free RTF syringe, and RTF vials at the CPhI China trade fair in Shanghai. Inhalers and injection pens were also on show, along with glass vials, ampoules, and cartridges as well as plastic medicine containers. Many of these products are manufactured at Gerresheimer's own plants in China and India.

“To make sure our customers at CPhI China have all the information they need, we are showcasing our highlights from CPhI Worldwide and Pharmapack Europe,” said David Tsoe, Sales Director Primary Packaging Glass by Gerresheimer Shuangfeng.

## An Asian debut at CPhI China for the Gx InnoSafe

With the Gx InnoSafe, Gerresheimer offers a syringe with an integrated passive safety system that avoids inadvertent needlestick injuries and prevents the syringe from being reused. It is designed with pharmaceutical companies' production processes in mind as well as being optimized for simple and intuitive use by medical professionals.

## Metal-free 1 ml long Luerlock Gx RTF syringe

By developing an innovative, patent-pending manufacturing technology, Gerresheimer has succeeded in readying its metal-free 1 ml long Luerlock Gx RTF syringe for series production. Traces of tungsten or other metals occasionally remain in the drilled hole when the cone of a syringe is moulded, which can cause problems when the syringes are used. There is therefore a need for pre-fillable syringe systems that ideally eliminate the risk of metal contaminants, particularly for drugs based on bioengineered active substances.

## Two manufacturers – one packaging

Gerresheimer's two areas of expertise – the moulding of vials made from tubular glass and the ready-to-fill process for pre-fillable syringes – are combined with recognized Ompi EZ-Fill packaging technology for the new Gx RTF vials. The result is vials that are washed, packed in trays or in nests and tubs, and sterilized before being delivered to pharmaceutical customers. This enables our

customers to start filling them straight away without the need for any intermediate process steps.

## TE ring – firmly attached to type A and B drop bottles

The US Food and Drug Administration (FDA) stipulates that the TE ring must be firmly attached to the bottle to protect the original contents. Gerresheimer manufactures both type A and type B drop bottles in accordance with this new standard.

## Gerresheimer in China and India – glass and plastic primary packaging for drugs

Gerresheimer's Shuangfeng site in China manufactures vials, ampoules, cartridges, and other specialty products made from clear and amber glass. In India, the company produces vials and ampoules for local and international customers across three sites. The Neutral Glass plant in Kosamba makes pharmaceutical primary packaging from moulded glass, while the Gerresheimer Kosamba factory next door produces vials and ampoules from tubular glass. The Triveni Polymers plant in Kundli makes plastic containers bearing the Triveni Round and Square brand name.

## Manufacturing medical systems made from plastic in China itself

Gerresheimer's production site in Dongguan City near Hong Kong offers the full range of injection moulding techniques under ISO class 8 clean room conditions as well as assembly, product finishing, and packaging. Project management, the validation of customers' tools, and a tool maintenance and repair service complement the offering. 4,200 m<sup>2</sup> of the site's 10,700 m<sup>2</sup> is given over to production, including 600 m<sup>2</sup> of clean room in accordance with ISO class 8 (100,000) and 1,100 m<sup>2</sup> of other clean room space.

Gerresheimer Medical Plastic Systems Dongguan Co. is an FDA-inspected Medical Device Manufacturer. During the Pre-Approval Inspection (PAI), the management system was audited along with the entire product manufacturing process, from incoming goods to outgoing goods.

## Global ties

Gerresheimer's factories in Asia, Europe, and the Americas work closely together as part of a global network. They apply current good manufacturing practice (CGMP) principles rigorously and are certified to ISO 9001. Some of them own ISO 15378 as a bare minimum. All Gerresheimer products comply with the relevant pharmacopeias (Ph. Eur., USP, and JP).



Cleanroom production at Gerresheimer in Dongguan

# Cleanzone Conference presents a line-up of top speakers and trending topics



How will cleanrooms be planned, built and operated in future? What role will be played by digital twins? What demands do new therapies employing highly active substances place on production in the medical field, and what can be done to ensure that products and personnel enjoy optimum protection? Answers to these and other questions will be on offer at the Cleanzone Conference accompanying the Cleanzone trade fair on 23 and 24 October 2018.

With four fascinating topic areas 'Cleanroom for life', 'Upgrade your cleanroom efficiency', 'Clean life sciences – the next level' and 'Cleanrooms: Modelling the future', the Cleanzone Conference 2018 delivers expertise for cleanroom operators in fields ranging from life sciences to microtechnology – and it does so for experts and newcomers alike. Participants can book anything from one to four modules with as many as five presentations, all in keeping with their areas of interest.

## Cleanroom for life

When customers suddenly demand cleanroom quality, suppliers are often at a loss. Numerous questions arise, including: Does it really have to be a high-level cleanroom? Which cleanroom class is best suited to my production operations? In his presentation, Professor Dr. Horst Weißsicker, a certified expert for the field of cleanroom technology, addresses these very issues while offering tips on finding the right solutions.

Dr. Christian Raiss, a hospital hygiene specialist at Hygiene-Institut AYSID GmbH, reveals the possibilities for obtaining an immediate overview of existing bacterial

load: "I'm certain that real-time methods will be playing a major role in future. I'm fascinated by bio-microchips – some of these are even suitable for on-site use in real-time, providing readings directly without any need to send samples into the lab." As part of the 'Cleanroom for life' module, Daniela Freundorfer, an industrial hygiene expert with Schülke & Mayr, will be paying particular attention to personnel in her presentation: "Cleanrooms are being subjected to ever stricter hygiene standards, even as the interpretations of regulatory requirements become harder and harder to decipher. How can proper personnel and production hygiene be leveraged to prevent microbiological contamination?"

## Upgrade your cleanroom efficiency

Cleanroom efficiency has many facets. In addition to energy savings, especially through ventilation and air-conditioning technology, efforts to improve efficiency are currently focusing on new software solutions, as these make it possible to simplify processes while optimally linking people and machines, resulting in improved information flows and a reduction in disruptions. Yet efficiency also means creating the

precise clean production conditions that are necessary to ensure product quality and personal safety – no more, and no less. All of these aspects are covered in the module 'Upgrade your cleanroom efficiency'. The roster of speakers here includes Professor Dr.-Ing. Martin Kriegel, a ventilation expert from the Hermann-Rietschel-Institut at the Technical University of Berlin, and Dr. Udo Gommel, a cleanroom technology specialist from Fraunhofer IPA in Stuttgart.

## Clean life sciences – the next level

As a result of highly toxic cytotoxic drugs, new forms of individualised therapy and the development of a new generation of antibiotics, the protection of products and people in cleanrooms is playing an increasingly important role in the medical field. In order to guarantee personal safety, various safety measures are necessary, including closed product transfer systems. The containment specialist Richard Denk from Skan will be discussing this topic in the module 'Clean life sciences – the next level'. In the same block, Nikolaus Ferstl, Technical Director at University Hospital Regensburg, will be talking about germicidal surfaces, new systems engineering capabilities and innovative software for hygienic and efficient pharmaceutical production.

How can proper cleanroom behaviour be taught, such as for the production of highly toxic substances, and what can be done when it is not possible to integrate training into ongoing production? Sebastian Scheler, a psychologist with Austrian start-up firm Innerspace, explains the advantages on offer from virtual reality in situations such as these.

## Cleanrooms: Modelling the future

The use of digital twins for process simulations is becoming ever more important to the field of cleanroom technology, and not just in production – it is equally important when planning, constructing





## Cleanzone Conference presents a line-up of top speakers and trending topics

and operating these facilities. Professor Dr.-Ing. Christoph van Treeck, Chair of the Institute of Energy Efficiency and Sustainable Building at RWTH Aachen University, will be devoting his presentation to whether we are BIM ready. Frank Jansen, responsible for building technology and building services engineering at the Association of German Engineers (VDI), delves into the use of the BIM (Building Information Modelling) method for building planning and talks about the opportunities and risks it brings for cleanroom technology.

The industrial landscape is currently undergoing radical changes in which everything is revolving around changed production systems, new markets, alternative technologies, innovative manufacturing

processes and new strategies for entering the market. Dr. Udo Gommel from Fraunhofer IPA will be exploring their impact on cleanroom production in the 'Cleanroom: Modelling the future' conference block. He explains: "The demand for applications and products, such as high-performance components produced using 3D printers, low-emission automotive drive systems, high-resolution image recognition systems, artificial intelligence and the extremely powerful minuscule semiconductor components these require is growing rapidly. In order to do justice to all these trends and increasing requirements, (ultra-)clean environments, high-precision processes, low-contamination handling technologies and testing and assessment methods are

absolutely essential."

**23rd - 24th Oct. 2018: CLEANZONE 2018,  
Frankfurt am Main (D)**

cleanzone

cleanzone

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# ISCC'18 announces programme including first 3 keynote speakers

From September 23rd to September 26th 2018 VCCN, the Dutch contamination control society, hosts the International Symposium on Contamination Control and cleanroom technology in the Hague. With The World behind Contamination Control as theme for ISCC 2018, VCCN is pleased to announce the conference programme, including the first 3 keynote speakers.

**23rd - 26th September 2018:  
ISCC'18 - International Symposium on  
Contamination Control, The Hague (NL)**

The symposium starts with a social programme, followed by a three day conference programme, including tutorials, workshops and technical tours. The total conference programme consists of 4 keynote speakers and 60 speaker sessions. The first 3 keynote speakers are:

- prof. dr. ing. Dave Blank, University of Twente, the Netherlands
- dr. Bas Zaat, Amsterdam Medical Center, the Netherlands
- prof. dr. Vadim Banine, ASML, the Netherlands

### Contamination control professionals

VCCN welcomes all contamination control professionals to exchange knowledge while meeting old and new friends. With

more than 500 participants from all over the world, ISCC 2018 offers an excellent opportunity to learn all about new applications and inventions concerning the improvement of quality in cleanrooms.

### ICCCS

The International Confederation of Contamination Control Societies is an international community for national societies on cleanrooms and contamination control. Every two years one of the ICCCS members organises an international symposium. ICCCS stimulates the development and exchange of cleanroom technology and contamination control courses and provides international accreditation to courses of members that fulfill the IEC guidelines.

### About VCCN

Dutch Contamination Control Society was founded in 1988. The society is for every contamination control professional.

Our main focus is optimizing and improving professionalism in our field. The most important goal: increase your skills. VCCN is a member of the International Confederation of Contamination Control Societies (ICCCS). VCCN is the only Registered Educational Institute in the contamination control in The Netherlands.



VCCN

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# Un « tremblement de terre » dans la mesure des concentrations



## Du laboratoire aux processus pharmaceutiques et biotechnologiques

La pharmacie, les biotechnologies et les salles blanches doivent en général pouvoir réaliser une analyse de grande qualité des processus du fait de l'utilisation de petites quantités d'échantillons (par rapport à l'industrie chimique). En effet, il existe actuellement une nette tendance à se diriger vers des processus plus robustes dans tous les domaines.

**03.10. - 04.10.2018: ILMAC LAUSANNE,  
Lausanne (CH)**

Un exemple pour qu'une analyse spéciale et moderne des processus apporte de nouvelles réponses à la question de la détection optique du point final des titrages photométriques. Les capteurs modernes peuvent déterminer le changement de couleur dans le récipient de mesure à une longueur d'onde déterminée. On mesure de manière logique le changement de potentiel – et non pas le changement de couleur ! Ceci permet de rendre le processus fiable même en présence de solutions colorées ou troubles. De plus, l'ensemble de l'analyse est très facile à réaliser: celle-ci est automatisée, indépendante des faiblesses de l'œil humain et applicable à tous les titrages classiques avec changements de couleur. Un autre avantage du capteur optique est qu'il devient inutile de réaliser un conditionnement du capteur ou un remplissage du récipient avec une solution d'électrolytes.

Son utilisation dans le domaine de la pharmacie s'étend entre autres au titrage photométrique en phase non aqueuse conformément à la norme américaine US (USP) et à la pharmacopée européenne (Ph. Eur.); ceci est particulièrement vrai lors du titra-

ge du sulfate de chondroïtine, constituant important du cartilage (selon l'USP).

### Des processus sur ligne aux processus en ligne: la puissance de la spectroscopie

La spectroscopie joue un rôle majeur dans l'analyse non destructive de processus en ligne. À côté des méthodes classiques il existe également la détermination de l'humidité résiduelle des additifs lors de la compression de comprimés. À cet effet, on utilise la spectroscopie par proche infrarouge (NIRS) de telle sorte qu'une décision comme celle d'arrêter ou de continuer à sécher l'additif puisse être prise en seulement quelques millisecondes.

Les produits chimiques sont inutiles dans ce processus, ce qui permet d'économiser de l'argent sur ces derniers et sur les consommables. On évite également le déplacement de contaminants du fait de l'absence de produits chimiques à proximité du processus (comme par exemple dans les produits pharmaceutiques ou dans les bains d'acide lors de la production de Wafers en salle blanche). Les sondes des systèmes de mesure en ligne NIR actuelles peuvent être montées sans contact avec le fluide. De cette manière, la sonde reste protégée et inversement, aucun composant n'en est détaché. Ainsi, plusieurs bains

d'acide peuvent par exemple être surveillés en temps réel; des dosages ou des dilutions supplémentaires peuvent être effectués immédiatement si besoin.

Les méthodes de mesure optique telles que NIR, MIR et UV/VIS dans l'analyse des liquides et des solides apporteront encore beaucoup plus dans l'avenir. En effet, ces méthodes ont fait leurs preuves depuis des décennies dans les analyses classiques en laboratoire. Elles sont maintenant introduites de plus en plus souvent dans les processus. À cet effet, le spectromètre ou le photomètre sont intégrés directement dans la sonde de mesure – notamment pour la mesure en ligne de la concentration dans les liquides (= mesure des particules non dissoutes).

Il existe également une méthode innovante basée sur les ondes acoustiques de surface à côté des mesures de concentration dans les milieux liquides. Leur comportement physique est similaire à celui des ondes sismiques lors d'un tremblement de terre. L'analyse des processus ne nécessite aucune pièce mobile même si cela s'avère dramatique lorsque l'on entend les mouvements du sol – absence d'usure et faible entretien. Cette technologie devrait être intégrée directement dans les débitmètres dans un proche avenir. Ils réalisent ensuite une mesure de la concentration en plus de la



Le travail sur le poste sécurisé se déroule de manière encore plus facile et plus intuitive qu'auparavant – un appareil adaptable de soudage des déchets est inclus; il permet de réaliser une collecte sécurisée des déchets ainsi qu'une soudure sûre et hermétique aux aérosols. (Image: Skan)



Le spectromètre Raman d'aujourd'hui: à la fois compact et pourvu d'une grande puissance et d'une haute reproductibilité métrologique pour un appareil de paillasse. (Image: Anton Paar)



Le spectromètre Raman d'aujourd'hui: à la fois compact et pourvu d'une grande puissance et d'une haute reproductibilité métrologique pour un appareil de paillasse. (Image: Anton Paar)

## Un « tremblement de terre » dans la mesure des concentrations

mesure du débit massique et de la densité.

### Détecteurs Raman: maintenant plus puissants dans les systèmes à usage unique

Retour aux méthodes de mesure optique: la spectroscopie Raman est de plus en plus souvent utilisée comme méthode complémentaire à la spectroscopie infrarouge. En effet, celle-ci est adaptée à la surveillance en temps réel de la « Cell-Wellness » dans les processus biotechnologiques: les micro-organismes actifs trouvent-ils suffisamment de glucose et d'oxygène? Ou bien leur croissance est-elle affaiblie par une trop grande quantité de dioxyde de carbone?

Cela fonctionne très bien dans les cuves en acier inoxydable utilisées généralement dans les installations de production biotechnologique. La tendance se dirige également vers l'utilisation de la spectroscopie Raman dans le domaine des systèmes à usage unique. À cet effet, les housses à usage unique sont équipées d'adaptateurs optiques également à usage unique. La mesure proprement dite s'effectue sans contact à



Silencieux et efficace: poste de travail sécurisé pour la microbiologie avec protection des personnes, des produits et de leur dispersion. (Image: Skan)

travers une fenêtre.

Bien évidemment, la spectroscopie Raman se situe dans un segment élevé de prix – elle n'est pas destinée à des applications

standards. Cependant, ce processus est rentable pour les principes actifs pharmaceutiques sensibles et les produits biotechnologiques onéreux. Grâce à une gamme étendue d'applications, cet investissement est encore plus rentable lorsqu'on passe d'une échelle pilote en laboratoire à une échelle supérieure: la même analyse Raman peut être utilisée dans n'importe quel environnement.

Les visiteurs de l'Ilmac Lausanne pourront découvrir dès cette année toute la gamme des tendances et des innovations présentées ici.

**ILMAC**

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## Hygienic Design for Standard Parts

**Ganter develops sealed standard stainless steel elements that meet stringent hygiene requirements.**

Maximum hygiene is one of the absolutely basic prerequisites wherever food is produced. However, hygiene also plays a major role in other sectors — from medical technology and the pharmaceutical industry to manufacturers of dispersion paints. Today, it is all about producing products without preservative additives — and this is only possible in production environments which have high purity levels. Since even the tiniest weak points can cause entire production lines to be contaminated, Ganter decided to develop a special series of standard parts that meet the very high EHEDG requirements and the 3-A Sanitary Standard.



Ganter offers a variety of knobs, handles, clamping levers, leveling feet and screws under the label „Hygienic Design“, all of which are optimized for minimal contamination and easy cleaning. Stainless steel — with either ground or polished surfaces — is the material used in all of these cases. The maximum surface roughness is kept below Ra 0.8 µm, so that dirt particles cannot adhere and can be reliably removed during cleaning.

Another key feature of the Ganter standard parts is their freedom from „dead space“. There are no interior areas in which substances can accumulate. A hygienically safe sealing concept, verified by software simulation, guarantees that the FDA-compliant elastomer seals are all installed flush with the surface and fulfill their function in the long term. This prevents problems from developing without being noticed. At first glance, most standard parts appear to be located far away from the actual work areas, but airborne spores from microorganisms can spread rapidly and widely.

To prevent damage to the surfaces during assembly, tools with special protective inserts must be used. Ganter provides information regarding suitable cleaning procedures in the enclosed instructions. Standard parts in the „Hygienic Design“ line of products reduce cleaning effort; they are easier, and most of all, faster to clean due to the „clean in place“ concept, which allows a system to be operated more cost-effectively in the long term.

# parts2clean supporting program: extensive know-how and added value for a bright future in parts cleaning



- Bilingual Industry Forum incorporating Innovations and QSRein 4.0 Forum
- New and established special presentations on a variety of topics

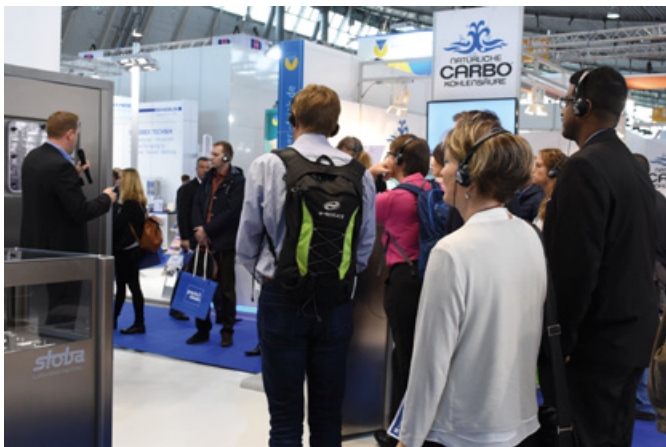


23.10. - 25.10.2018: parts2clean, Stuttgart (D)

Lightweight construction, changing manufacturing and coating technologies, new materials and material combinations, the digitization of production, electromobility and autonomous vehicles – these trends are putting pressure on manufacturers to clean parts and surfaces to ever higher standards. “The solutions on offer from exhibitors at this year’s parts2clean are designed to not only meet current standards for the cleanliness of parts and components, but also even more stringent requirements coming up in the future – and that with consistently reliable results, and at affordable cost”, remarked Olaf Daebler, Global Director for parts2clean at Deutsche Messe. But the products and services showcased by exhibitors at the Leading International Trade Fair for Industrial Parts and Surface Cleaning are not the only reason parts2clean is a must for cleaning technology users from every branch of industry; the show’s supporting program also offers an unparalleled wealth of know-how and added value. Among the supporting events are the information-rich, bilingual Industry Forum and the associated Innovations and QSRein 4.0 Forum as well as a special presentation on “Process Flow in Parts Cleaning, Including Cleanliness Checks”, one on QSRein 4.0 and another on the role of automation in parts cleaning.

## Special presentations on hot topics

The special presentation “Process Flow in Parts Cleaning, Including Cleanliness Checks”, staged in conjunction with the CEC (Cleaning Excellence Center), provides live coverage of the deburring of workpieces, cleaning in a cleanroom environment, and the contamination-free transfer of parts to a Class ISO 7-compliant clean room for cleanliness checks using a cleanroom-compatible transfer cart. These checks are likewise performed live and involve a series of processes: rinsing, filter drying, gravimetric analysis, visual checks using optical microscopy, and protocol generation. Specialists in industrial cleanliness will be giving visitors guided tours of this special presentation on all three days of the show (mornings and afternoons).



Visitors to the special display on the role of automation in parts cleaning will discover what solutions are already available for these applications, such as robots for parts handling, and what future trends are starting to emerge. Another special presentation is entitled “QSRein 4.0 – Opportunities for Industrial Parts Cleaning”. Here the focus is on new approaches and possibilities in plant engineering, and on process solutions for parts cleaning in the future.

## Knowledge and innovations for parts and surface cleaning

The three-day Industry Forum at parts2clean, organized by the Fraunhofer Cleaning Technology Alliance (FAR), is one of the most internationally respected knowledge resources for parts and surface cleaning. The talks by renowned experts from industry and science will be given in simultaneous translation (German <> English), and are grouped together under the following topic clusters: “Cleaning processes”, “Maintenance and operation of plant and process chains”, “Analytics”, “Field reports and examples of best practice from various sectors”, and “Automation/robotics and Industry 4.0 in parts cleaning”. “Thanks to the excellence of its guest speakers and the quality of the information provided, the parts2clean Industry Forum effectively serves as a high-caliber seminar”, comments Daebler, adding “And the forum is open to all parts2clean visitors.” Also part of the Industry Forum is the successful “Innovations for parts cleaning” session held by the German Industrial Parts Cleaning Association (FiT). The agenda features talks about innovative products and solutions in chemistry and processes, plant engineering and equipment, measuring, testing and control, as well as consultancy, applications and services. Also organized by FiT is the session “QSRein 4.0 – Opportunities for Industrial Parts Cleaning”.

The complete program for the Industry Forum and the special sessions will be available from about mid-September on the parts2clean website under the “Supporting program” menu.

## Guided Tours – the shortest route to the ideal solution

The Guided Tours program enables visiting professionals to gather information on everything of particular interest to them, while at the same time being exposed to the very latest technical developments at selected exhibitor stands. As such, the tours cover every link in the parts and surface cleaning process chain. The tours will each take about two hours, and are available for groups of up to 25 persons (max.) on all three days of the show. Each tour is led by a trained guide, with commentary in English.

# Maximising efficiency potential



## ENGEL at TaipeiPlas 2018

Compact manufacturing cells, precise processing and intelligent control units: ENGEL AUSTRIA, the injection moulding machine manufacturer and system solution provider, is set to pull out the efficiency stops with a medical application for TaipeiPlas 2018, which takes place in Taipei, Taiwan, from August 15th to 19th.

**15th - 19th August 2018: TaipeiPLAS 2018,  
Taipei City (Taiwan)**

Silicon is a highly resistant and bio-compatible material that can be injection moulded with maximum precision and efficiency. It has an ever increasing number of uses in the field of medical engineering, especially in relation to consumables needed in high quantities. Over the five days of the trade event, ENGEL will demonstrate how to minimise unit costs with intelligent machine technology by producing catheter components from liquid silicone rubber (LSR) using a 16-cavity mould on a tie-bar-less ENGEL victory 200/80 injection



iQ weight control compensates for process fluctuations before rejects are produced. The intelligent assistance system is available for both hydraulic and electric injection moulding machines. (Picture: ENGEL)



Thanks to their tie-bar-less clamping unit, injection moulding machines in the ENGEL victory series enable efficient and cost-effective production concepts. (Picture: ENGEL)

moulding machine with clamping force of 800 kN.

### Tie-bar-less technology cuts unit costs

Tie-bar-less technology – a unique selling point of ENGEL – is key to cost effectiveness. Given that mould fixing platens on ENGEL victory injection moulding machines can be used to the hilt, relatively small machines can be fitted with large moulds. This is especially efficient when multi-cavity moulds are used which, although being large, require relatively little clamping force for the precise moulding of fairly small component surfaces. Where a tie-bar-less injection moulding machine is deployed, therefore, the machine size is determined not by mould volume, but by the clamping force required for the moulding process. Thanks to tie-bar-less technology, much smaller injection moulding machines can



ENGEL will use a tie-bar-less ENGEL victory injection moulding machine to produce catheter components at its stand at the TaipeiPlas event. The fasteners simplify handling for medical staff. (Picture: ENGEL)

be used for many applications; this keeps investment and operating costs low while facilitating compact manufacturing cells.

The patented force divider in the tie-bar-less clamping unit enables the moving mould mounting platen to follow the mould exactly parallel while clamping force is building up, and ensures that the applied force is evenly distributed across the whole surface. This means both outer and inner cavities are kept closed with precisely identical force, which leads to extremely consistent wall thicknesses. Even when using very low-viscosity materials such as LSR, flashes are reliably prevented, so injection moulded parts require no subsequent processing.

Other advantages of tie-bar-less clamping units include improved ergonomics, set-up time savings and highly efficient automation concepts. Robots have maximum freedom of movement and are able to access the mould area from the side without obstruction. Bearing these two factors in mind, the ENGEL victory is ideal for use in cleanrooms. Moreover, the tie-bar-less mould area already lessens air turbulence constructively.

Not least, the energy-efficient operation of victory machines contributes to high overall efficiency. The machines come with a servohydraulic ecodrive as standard.

### Integrated manufacturing cells from a single source

“Demand for high-end solutions for LSR processing is rising fast,” says Kurt Hell, Vice President of ENGEL’s Medical business unit in Asia. “By adapting production lines to individual products and quantities, we can guarantee our customers high competitiveness. Where the components in a manufacturing cell are all coordinated from the outset, we can maximise both efficiency and quality potential.”

To integrate other peripheral units and moulds alongside robots and process technologies, ENGEL has established a global network of system partners. “Here in Asia

## Maximising efficiency potential

we have very strong partners who, like us, are able to implement ideal solutions because they understand the needs of local processors intimately,” says Hell. “By working with local suppliers, we guarantee high cost efficiency for the most demanding applications while keeping delivery times short across the whole system.” The system partners involved with the exhibit are Taiwan-based mould manufacturer H.R. Silicone and 2KM, which is represented in Asia in Guangzhou, China.

### Self-optimising injection moulding machine

Furthermore, Industry 4.0, another

trend gaining ground in Asia, will draw visitors to the ENGEL stand at TaipeiPlas. “Industry 4.0 is a major enabler of greater efficiency and quality,” stresses Kurt Hell. “We are supporting our customers on the road to the smart factory by developing products tailored to their precise needs.” The modular approach of ENGEL’s inject 4.0 program is making it easy for processors to exploit the opportunities presented by Industry 4.0. Even small-scale individual solutions promise considerable benefits. To give one example, ENGEL will be presenting its iQ weight control assistance system in Taipei. During the injection process, the software analyses the

pressure profile in real time and compares measured values by means of a reference cycle. For every shot, the injection profile, switchover point and the holding pressure profile are automatically adapted to current conditions and the injected melt volume is kept consistent throughout the production operation. In this way, fluctuations in environmental conditions and in raw materials are automatically recognised and readjusted before even a single reject is produced.

ENGEL AUSTRIA GmbH  
A 4311 Schwertberg

# Lab Innovations 2018 – registration opens and keynotes announced



## Learn and earn CPD points at the UK’s only lab-dedicated showcase and scientific seminar series

31st Oct. - 1st Nov. 2018: Lab Innovations 2018, Birmingham (UK)

Lab Innovations, the UK’s only trade show dedicated to the laboratory industry, announces the launch of free advance registration for visitors at [www.lab-innovations.com](http://www.lab-innovations.com). Returning to the NEC, Birmingham, on 31 October & 1 November 2018 for its seventh successive year, Lab Innovations enables laboratory professionals from a diverse range of industries to interact, see and source new products all under one roof.

In addition to viewing the very latest updates and technologies for the laboratory, visitors can also learn and earn CPD points at a free-to-attend series of captivating scientific lectures. These include those hosted by the Royal Society of Chemistry at its dedicated

theatre. Here, this year’s keynote speakers will be scientific, medical and technology broadcaster Maggie Philbin and science presenter, Steve Mould.

Maggie Philbin has worked in radio and television for 30 years on a wide range of science, medical and technology programmes from Tomorrow’s World to Bang Goes the Theory. In June 2016 she was voted most influential woman in UK IT by Computer Weekly and also named 2016 Digital Leader of the Year. Steve Mould is a physicist and science presenter on TV and stage. Part of the sell-out science and comedy trio Festival of The Spoken Nerd, his most recent TV appearances include presenting ITV’s I Never Knew That About Britain and on BBC’s Britain’s Brightest.

“We are extremely pleased to be able to announce such influential, interesting and amusing keynote speakers as Maggie Philbin and Steve Mould,” said Alison Willis, Divisional Director, Lab Innovations. “As well as professional development and learning opportunities, with the UK being a global leader in research and development, visitors to Lab Innovations will have the opportunity to take a look at and discuss the very latest scientific advances. They can also source new products from the UK’s leading suppliers to help them achieve efficiency in their laboratories.”

For free advance visitor registration for Lab Innovations 2018, click ‘Register Now’ on the Lab innovations home page.



Cherwell Laboratories Ltd  
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# BrauBeviale 2018 set to create fresh momentum and inspire



BrauBeviale is looking forward to once again welcoming professionals from the international beverage community to the exhibition halls in Nuremberg from 13 to 15 November 2018. The exhibition team for the world's biggest capital goods fair for the beverage industry this year made use of the scheduled break from the event's three-year cycle to fine-tune the concept, ask around in the market and track down the hot topics affecting the industry so that they can be addressed in the next three-year programme. This resulted, among other things, in a comprehensive supporting programme that aims to provide impetus for dealing with all the challenges that the beverage sector is currently facing.

Creating momentum and inspiration are the key elements of the supporting programme that BrauBeviale is offering alongside the exhibition. It is designed to appeal to all beverage producers, whether they are brewers, mineral water operations, or manufacturers of spirits or alcohol-free drinks. All of them are basically asking the same questions about the future viability of their company and their sector. "We determined that many people in the beverage industry are currently asking how they will become or remain competitive in the future," explains Andrea Kalrait, Exhibition Director BrauBeviale. "As the key platform for the sector we see it as our job to address and discuss these important issues and provide food for thought."

## Professional development opportunities ahead of the fair

For some visitors it is well worth arriving before the fair actually starts to take advantage of the three interesting training events on the day before the exhibition as such. Almost all beverage producers will have asked themselves at some point whether, and in what form, it would be worthwhile exporting their products. The Export Forum German Beverages will address this very issue. The high-calibre speakers and networking opportunities at the forum will help all manufacturers to make decisions about exporting their products. The European MicroBrew Symposium hosted by the Berlin-based research and teaching institute for brewing (Versuchs- und Lehranstalt für Brauerei, VLB) will be taking place for the sixth time. With its focus on technological and quality aspects, it is intended for international craft brewers and brewpub operators and so will also be conducted in English. Another hot topic among brewers worldwide is heirloom brewer's barley. This will be the focus of the Heirloom & Terroir Barley and Malt Symposium hosted by RMI Analytics. The Heirloom Brewing Award, which acknowledges select beers with a consistent overall concept, will also be presented at the symposium. The beers themselves can then be tasted at BrauBeviale.

## Listen, join the discussion and be inspired

The BrauBeviale Forum will once again take place on all three days of the exhibition. The proven blend of talks, presentations, panel discussions and award ceremonies invites visitors to become informed about current issues and be inspired by exciting ideas and approaches. The very wide range of topics includes raw materials, technologies, entrepreneurship and marketing. The language of the forum is German with simultaneous translation into English. The detailed programme will be available in good time on the BrauBeviale website to allow visitors to plan their visit. Also in the Forum:

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## 13.11. - 15.11.2018: BrauBeviale 2018, Nürnberg (D)

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The official opening on the first day will feature a keynote address by food trend researcher Hanni Rützler as well as the presentation of the Bavarian Beer Medal. At 16:00 on Day 1, visitors can also attend the Final of the German Beer Sommelier Championship.

## Listen, join the discussion and be inspired

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## Tastings of beverage specialities

Anyone wanting to explore and indulge in the diversity of beverage specialities should head for the Craft Drinks Area. With a total of around 7,500 participants over the three days of the last event, it represented a logical development of the Craft Beer Corner from the last trade fair cycle. This is where visitors can enjoy tastings conducted by independent experts at a total of 8 bars, while immersing themselves in what are sometimes completely new taste experiences. As well as the glass bar, where you can experience how the quality of the glass can affect the taste of the beer, there is also one bar each for mineral water, spirits and innovative alcohol-free drinks. There are four bars dedicated to beer that showcase specific countries and themes as well the diversity of alcohol-free and low-alcohol beers.

As tradition demands, the European Beer Star, which has been part of BrauBeviale since it was "born" in 2004, will also be awarded again at the event. In 65 categories, five more than in the previous year, breweries from all over the world can submit their beers for inclusion in one of the most important beer competitions worldwide. Last time the competition attracted 2,151 beers, 60 percent of which were from overseas. The competition was initiated by the German Private Breweries Association (Private Brauereien Bayern), the honorary sponsor of the fair, and the German and European

## BrauBeviale 2018 set to create fresh momentum and inspire

umbrella organisations. On the first day of the fair, BrauBeviale visitors will once again be lucky enough to be able to vote for their favourite beer from among the gold medal winners, resulting in the Consumers' Favourite 2018 in gold, silver and bronze.

### Expert partners for specific issues

Various themed pavilions will present themselves as the focal point for certain issues tailored to specific groups of visitors: Artisan and Craft Beer Equipment and brau@home are where small and micro-breweries and home and hobby brewers can find comprehensive information on equipment, ingredients and solutions as well as valuable suggestions through the short presentations in the associated Speakers' Corner. Another pavilion is devoted to "Sustainable Water Management in the Beverage Industry", an issue that affects all drinks manufacturers and is becoming increasingly important at a time when raw material resources are becoming increasingly scarcer. For consumers, the packaging at the point of sales continues to be a key purchasing criterion. The World Packaging Organization has given this aspect the attention it deserves with its Special Show Innovative Beverage Packaging. Interesting examples of packaging innovations are provided by the winners of the World Packaging Awards that will be presented at the special show. The reasons why these products won their awards will be explained clearly to visitors. PET continues to be a topical and important issue. The quality association Wertstoffkette PET-Getränkeverpackungen e. V. will cover various approaches and present ideas and solutions for PET recycling.

### Spotlight on the future

To be able to continue to operate successfully on the market in future, every company needs to be able to count on its workforce. The issue of the lack of skilled employees at all levels is one that also affects the beverage industry. As the key platform for the sector, BrauBeviale has dedicated the last day of the fair, the Thurs-

day, to the theme "Future Generation". At the BrauBeviale Forum there will be presentations specifically on the topic of recruiting and encouraging the next generation. On this day, many exhibitors will have representatives of their HR department at their stands to answer in detail any specific or general questions.

Young companies from Germany that develop innovative products and processes for the beverage industry that they would like to bring onto the market in the near future, or have just launched on the market, will showcase their companies and ideas to the professional community at the Innovation made in Germany Pavilion. Their participation is subsidised by the BMWi, the German Federal Ministry for Economic Affairs and Energy. Many a former participant in this pavilion has meanwhile become a permanent fixture in the beverage industry.

### Beyond the beverages

With so much going in the beverage sector it only stands to reason that we should take a look at other culinary pleasures. With this in mind, the SFC Street Food Convention will take place alongside the BrauBeviale from 14-15 November 2018. For the fourth time, it will offer a varied programme covering all aspects of street food, food trucks, mobile catering and visionary dining culture, accompanied by a sponsor exhibit and food trucks serving food on the trade fair grounds.

### Dates of the current three-year BrauBeviale cycle:

BrauBeviale 2018: 13 - 15 November 2018

BrauBeviale 2019: 12 - 14 November 2019

BrauBeviale 2020: 10 - 12 November 2020

### Beviale Family: International expertise in the beverage industry

NürnbergMesse Group demonstrates its expertise in the beverage industry on an international stage, beginning with BrauBeviale, the international capital goods fair for the beverage industry in Nuremberg. This is where, for over 40 years, the sector has been showcasing all aspects of the production process chain for beverages, such as raw materials, technologies, logistics and marketing. Other members of the product family are operating in important growth markets worldwide: For example, Beviale Moscow is the first and only trade fair for the entire beverage industry in Eastern Europe. CRAFT BEER CHINA in Shanghai is the gathering place for the Chinese craft beer community, while CRAFT BEER ITALY in Milan is the B2B platform for the Italian sector. In Bangalore, CRAFT DRINKS INDIA is designed to meet the needs and interests of the fast-growing drinks market in India. The Beviale Family also supports other projects through collaborations. It is represented in Brazil, for example, through the Feira Brasileira da Cerveja in Blumenau. SIBA's BeerX, Britain's largest trade fair about beer and brewing, is also an official partner to the Beviale Family. And ProPak Asia is likewise a part of the global network for the beverage industry. The "international sponsors" of the Beviale Family are Doemens Akademie and the VLB (Versuchs- und Lehranstalt für Brauerei), the Berlin-based teaching and training institute for brewing. Other projects are in the planning phase.





# Chillventa 2018: an ongoing success story



- **Strong growth**
- **Chillventa CONGRESS: sharing industry expertise**
- **Chillventa AWARD moves into second round**

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16th - 18th October 2018: CHILLVENTA, Nuremberg (D)

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From 16 to 18 October 2018, Chillventa will once again make the exhibition venue in Nuremberg THE gathering place for the international refrigeration, AC, ventilation and heat pump community. The Chillventa CONGRESS will be held on 15 October, the day before the exhibition. The compact one-day congress programme will give experts from around the world the chance to learn about the latest trends and developments in depth. The organisers expect that the key figures for this year's exhibition and congress will again reach new heights. With about four months still to go, an increase in floor space for the exhibition is already in evidence.

"The outlook for Chillventa 2018 is excellent," says Daniela Heinkel, Exhibition Director Chillventa at NürnbergMesse. "As things stand now, Chillventa will be able to open at a similarly high level to 2016, with an expected 1,000 exhibitors. In terms of space, we have already surpassed the final figure for the previous event, which is very gratifying. Even if it's a little like gazing into a crystal ball, we also expect to welcome more than 32,000 visitors once again. The large proportion of international exhibitors, more than 68 percent, and trade visitors at 57 percent, once again highlights the importance of Chillventa as the leading fair in the international refrigeration industry, particularly the AC, ventilation and heat pump segments. It has established itself as THE international networking platform: Chillventa Connecting Experts."

The international role of Chillventa is also reflected in the international pavilions, which will host presentations from a total of six countries: in addition to South Korea, the Czech Republic, Thailand, Turkey and the USA, China will be represented at as many as three of the pavilions.

## Growth for Chillventa – and an impressive array of halls

"Chillventa will once again have a larger display area in 2018," says Heinkel. "It is showing good growth in this area this year, with an expected increase of about three percent. That's a very good development, building on an already strong starting position, and a sure sign that companies find Chillventa an important business platform where they can meet the right customers and present themselves accordingly. In response to this development, the hall arrangements were adjusted in 2016 to create more space. It is clear that the idea of having more space and a thematic breakdown along product lines is working out extremely well. Feedback from the trade visitors confirms we're on the right track, as they can find their way around with no difficulty whatsoever."

## Main thematic focus areas for Chillventa and Chillventa CONGRESS – Focus on IoT

With its extensive range of products and services, Chillventa will once again provide an overview of the industry in 2018, with components, systems and applications for refrigeration, air condi-

tioning, ventilation and heat pumps. The exhibition and congress this year focus on subjects such as the Internet of Things, IT security for refrigeration plants, implementing the 42nd Ordinance under the Federal Immission Protection Law (BImSchV), current climate goals, eco design, recovery and reprocessing of refrigerants, efficiency through controls, innovation in heat transfer, air conditioning of data centres, heat recovery, and system solutions for cold water. As well as the innovations at exhibitor stands, there will once again be fascinating special presentations on heat pumps, hygiene in air-cooled heat exchangers, tours for trainees, and the Chillventa Award.

The Chillventa CONGRESS will provide experts with a firm insight into the latest industry topics of interest. Prominent international speakers will share international knowledge from R&D and actual practice, and will look at the latest underlying political conditions in Europe and around the world. This year's congress programme covers the following subject areas, with a focus on the Internet of Things (IoT) and Cyber Security.

- The fifth Innovation Day for refrigeration technology: energy efficiency and climate protection (in German)
- ASERCOM + EPEE Symposium (in English)
- Heat pumping technologies for commercial and industrial applications (in English)
- Energy-efficient air conditioning in data centres (in German)

## Trade forums offer knowledge direct from the source

In the three forums, held in the halls in parallel with the exhibition, renowned presenters will hold more than 150 talks on cutting-edge topics. The latest product developments and innovative solutions for energy efficiency and energy saving will be showcased in Hall 9, in the forum on applications, training and codes of practice: leak detection, recovery and reprocessing of refrigerants, no biofilm and thus no Legionella, implementation of the 42nd Ordinance under the Federal Immission Protection Law (BImSchV), CE labelling, replacement with alternative refrigerant mixtures, EC fans for cooling towers, cooling tower hygiene, water chemistry, EN 378, defect guarantees, and much more besides.

The Refrigeration Technology forum in hall 7A will cover to-

## Chillventa 2018: an ongoing success story

pics such as low-GWP refrigerants, eco-efficiency in supermarkets, R290 compressors, water loop systems, sliding temperature refrigerants, heat recovery, market trends in commercial application, compressor developments, application of A2 and A3 refrigerants, IoT in various applications, refrigerant leak detectors, ejectors for R744 systems, and the importance of frequency converters in refrigeration technology.

The forum in hall 4A will deal with air conditioning, ventilation and heat pumps, with a focus on the following: cloud solutions, refrigerant solutions for air-conditioning and heat pumps, challenges created by urbanisation, high-temperature heat pumps, recooling systems, system solutions for cold water, hybrid VRF, R32 applications, water as a refrigerant, fans of the future, filter technologies, etc.

### Hygiene in air-cooled heat exchangers

The special presentations at Chillventa have already become an established tradition. Each event deals with topics of current interest that move the industry, or provides a detailed insight into new technologies or necessary input from the trades.

At the special display area for “Hygiene in air-cooled heat exchangers”, speakers from the Bundesfachschule Kälte-Klima-Technik (Federal Technical College for Refrigeration and Air Conditioning Technology) will begin by offering important basic background information about maintenance and inspection work on air-conditioning and ventilation systems from a hygiene perspective. Together with manufacturers of ventilation components, they will then show how the necessary cleaning and checking work should be performed. Then they will deal with the required documentation and paper trail for cleaning and inspection activities.

### Heat pumps: a key technology for a successful energy transition

Heat pumps have been a fixed part of Chillventa since the event first began. Despite rising power prices, heat pumps have become established as practical and attractive alternatives to fossil-based means of generating heat. The special presentation “Heat pumps: a

key technology for a successful energy transition” will look at this development.

### Chillventa AWARD: paying tribute to expert team achievements once again in 2018

The Chillventa AWARD had its exciting launch in 2016. The organisers, the publishing firm Baurverlag and NürnbergMesse, are taking this top-level prize further and will again present it on the first day of the exhibition at this year’s Chillventa. “We are very happy that the Chillventa AWARD has been so well received and are already looking forward with excitement to this year’s line-up,” say the award initiators, Daniela Heinkel of NürnbergMesse and Christoph Brauneis, Senior Editor KKA, Baurverlag.

In 2018, the award will again recognise the achievements of teams of experts (designers/planners, system engineers, clients/operators) that have worked together in exemplary fashion, above and beyond the technical standards, to realise a project that is highly impressive with regard to functionality, energy consumption and technical innovations. In evaluating the projects, the jury will focus in particular on the interplay between the people involved in the project, from conceptual formulation, through planning and system construction to the operation of the system. Projects submitted for the award must clearly demonstrate and map the level of quality reached through cooperative planning. Projects may be submitted which have been carried out on the applicant’s own responsibility and which are completed by the final date for submission for the AWARD. The submitted project must not have been completed any more than two years ago.

### Continued growth for the international refrigeration and AC network in India

With the key Chillventa trade fair and the European Heat Pump Summit in Nuremberg, ACREX India and the European Pavilion powered by Chillventa at China Refrigeration, NürnbergMesse has built up an impressive portfolio of refrigeration, air-conditioning, ventilation and heat pump events in recent years. “The product family associated with Chillventa has developed brilliantly,” says Alexander Stein, Executive Director Chillventa International Network, NürnbergMesse. “Working with our partners and subsidiaries, we have created a veritable global network. This year we can welcome a new member to the Chillventa product family: REFCOLD INDIA, which will premiere at the Mahatma Mandir Convention cum Exhibition Centre in Gandhinagar, Gujarat, India, from 22 to 24 November 2018. REFCOLD INDIA will reflect all the segments of the cold chain industry, and bring together interested parties and players from throughout the sector. The first event of REFCOLD INDIA, the exhibition for the cold chain industry, will be jointly organised by the Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE) and NürnbergMesse India. “Experts worldwide can look forward to the international refrigeration, air-conditioning, ventilation and heat pump network that we are continuing to expand wherever it is practical to do so,” says Stein. “After all, our motto ‘Chillventa Connecting Experts’ applies here too.”



# Huiles chaudes et crèmes glacées fraîches

## Analyse innovante des processus – focalisation sur la température

Le thermomètre symbolise de manière concise et précise la tendance principale actuelle des capteurs d'analyse de processus. Elle est basée sur le désir de disposer de systèmes d'auto-calibrage nécessitant peu d'entretien.

03.10. - 04.10.2018: ILMAC LAUSANNE,  
Lausanne (CH)

La mesure de la température est une condition nécessaire voire indispensable à l'obtention d'un déroulement fonctionnel et économique de nombreux processus dans le domaine de la chimie, de la pharmacie, de l'alimentation et des biotechnologies; ce qui implique de réaliser régulièrement un calibrage des thermomètres. Pour des raisons réglementaires, ceci est également nécessaire dans le cas des produits pharmaceutiques et alimentaires.

### Thermomètre en ligne dans la production alimentaire

Exemple: Un fabricant d'huiles et de graisses végétales de haute qualité doit respecter une plage de température définie lors du processus de fabrication – ceci pour

chacun des lots. Généralement, l'équipe de production fabrique des capteurs appropriés en fonction du travail à réaliser, elle les calibre et les refabrique.

Il existe maintenant une alternative élégante: les thermomètres en ligne à calibrage automatique. Deux capteurs entrent en action en même temps. Un capteur de référence calibré réagit lorsque la température diminue sous une valeur inférieure à sa température de Curie (par exemple lorsque la chaîne de production est nettoyée après la fabrication d'un lot). Ce dernier déclenche alors une nouvelle calibration du capteur primaire. Il n'est donc pas nécessaire de recourir à un spécialiste afin d'inspecter le système (sauf si un dysfonctionnement est constaté). Ainsi, l'opérateur a la certitude que: « nos capteurs de température fonctionnent parfaitement et répondent aux exigences réglementaires. » Le protocole de nouvelle calibration est enregistré électroniquement et reste donc disponible



Fig. 3: Ce capteur de température présente l'avantage majeur de ne nécessiter aucun entretien (aucune calibration, aucun conditionnement ni de remplissage avec une solution d'électrolytes). (Photo: Metrohm)

dans la base de données. Cette calibration alternative automatique permet d'éviter 3000 interruptions de processus par an ainsi que les multiples interventions d'un technicien lors de la production des huiles et graisses susmentionnées.

Les débitmètres innovants de Coriolis constituent un autre progrès récent dans le domaine de la production alimentaire. En effet, ils sont capables de déterminer la den-



Fig. 1: Ce nouveau capteur de température à calibration automatique permet d'éviter 3000 interruptions de processus par an dans la production d'huiles et de matières grasses. (Photo: Endress + Hauser)



Fig. 2: Grande précision de mesure du débit massique et de la densité, pour les crèmes glacées en vrac ou d'autres fonctions dans le processus d'analyse. (Photo: Endress + Hauser)

## Huiles chaudes et crèmes glacées fraîches

sité en plus du débit massique. Un système disponible récemment permet d'atteindre une précision de mesure particulièrement élevée dans ce domaine grâce à une technologie multifréquences sophistiquée. Ceci est requis entre autres lors des mesures soumises à une vérification obligatoire.

Cette mesure combinée fonctionne également lors d'applications particulièrement difficiles. Ceci est valable en particulier pour des liquides de haute viscosité et en présence de chicanes avec des inclusions gazeuses (par ex. les crèmes glacées en vrac). La mesure fiable de la densité cons-

titue un paramètre de qualité très précieux. Ces mêmes capteurs offrent également des avantages tangibles à l'industrie pétrolière et gazière. En effet, leur grande précision dans la détermination de la masse ou du volume est déterminante dans ce secteur d'activité.

### Titration thermique – la maintenance compliquée appartient au passé

De l'analyse non destructive à l'analyse destructive: processus sur ligne ici et en ligne là-bas – mais souvent avec un ob-

jectif commun. La tendance se dirige vers des processus plus robustes nécessitant peu de maintenance et sans avoir recours à un nouveau calibrage. Dans le domaine de l'analyse chimique humide, cela conduit souvent vers la thermotitration.

En effet, le regard se tourne sur la température au point de titrage lorsque l'on détermine de manière classique le point d'inflexion d'une courbe de titrage potentiométrique. Précisément, elle ne devrait plus se modifier après une augmentation (réaction exothermique) ou une diminution (réaction endothermique) de la température car l'analyte est consommé lors de la réaction avec la solution à doser. Ainsi, une grande partie de ce qui était considéré comme acquis est supprimée: les capteurs en verre avec une membrane pH, le remplissage et le re-remplissage des cuves avec des solutions d'électrolytes, le conditionnement et le calibrage de l'électrode.

Une application intéressante concerne les bains de gravure contenant de l'acide fluorhydrique dans les domaines des semi-conducteurs et de la galvanoplastie. L'acide fluorhydrique est un agent particulièrement agressif qui attaque le verre, l'utilisation d'électrodes de pH classiques (électrodes en verre) doit être si possible évitée. Les appareils de titration thermique offrent la possibilité de fabriquer toutes les pièces en contact avec le liquide dans un plastique robuste et donc résistant à l'acide fluorhydrique

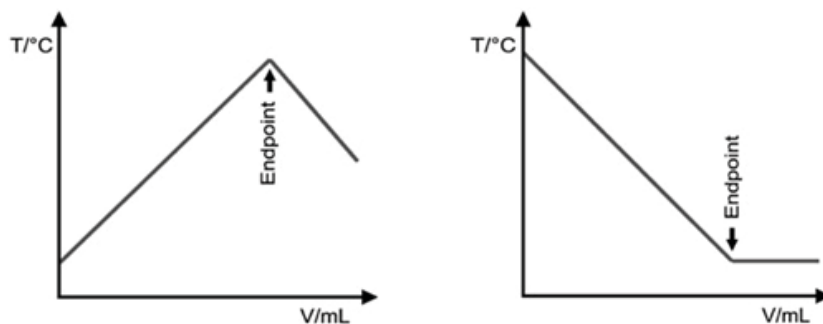


Fig. 4: Le principe: la température ne monte plus (réaction exothermique à gauche) ou ne baisse plus (réaction endothermique à droite) au point final de titrage. (Graphique: Metrohm)



Fig 5: Surveillance entièrement automatisée des processus 24h/24: système moderne d'analyse des processus pour le titrage thermométrique. (Photo: Metrohm)

### Le « Retour aux racines » en vaut la peine

Les dernières innovations montrent également que la recherche fondamentale est primordiale. En effet, les « ingénieurs de Coriolis » ont passé des années à s'investir dans la recherche fondamentale en physique afin de mieux comprendre le comportement des solutions complexes. Ce qui devrait jeter les bases de futurs progrès techniques dans leur application.

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# POWTECH India and IPB China: trade fair pairing for global business relations



Global expertise in powder and bulk solids: in October this year, two POWTECH World trade fairs in India and China will once again offer excellent networking opportunities for manufacturers of process engineering machinery and plant. POWTECH India will take place in Mumbai from 11 to 13 October: the combined trade fair and congress focuses on the latest innovations in the area of powder and bulk solids, and is a meeting place for experts and users throughout the Indian sub-continent. And the International Powder & Bulk Solids Processing Conference & Exhibition (IPB 2018) will open its doors in Shanghai from 17 to 19 October. The supporting programme for IPB includes a Pharma Day and a seminar on "Materials for Additive Manufacturing". The two events are expected to attract more than 10,000 visitors in total.

The POWTECH World trade fairs, POWTECH India and IPB China, focus on the entire range of powder and bulk solids processing and mechanical process engineering. For manufacturers of machines and plant for grinding, separating, mixing, transportation and storage of bulk solids, and for analysis and metrology, these events offer ideal access to the markets in India and Asia. For IPB 2018, organizer NürnbergMesse China expects about 200 exhibitors, about 40 percent coming from outside China - including many market and technology leaders like Netzsch, Neuman & Esser, Compass, UWT, Malvern Panalytical and Rembe.

## PB: Additive Manufacturing and pharmaceutical manufacture

In parallel with the trade fair, a supporting programme aligned with the latest industry topics will provide stimuli for the sector: IPB 2018 will include a Pharma Day for the third time. In collaboration with the International Association for Pharmaceutical Technology (APV), top-level speakers will report on advances in powder and particle technology for pharmaceutical production. A further emphasis in the supporting programme for IPB 2018 is the subject of "Powder materials for Additive Manufacturing". In April of this year, NürnbergMesse China and the Chinese Society of Particology organized a successful Road Show event in Beijing on this group of subjects. A seminar at IPB in October will pick up on this future-oriented theme once again. And a match-making system at IPB 2018 will make it even easier for participants to make the contacts they need. The online-based system is available for all exhibitors and visitors. Appointments can be arranged from July.

"We are expecting growth in both exhibitor and visitor numbers at IPB 2018," says Kate Yuan, who has been involved in the event for four years now and heads the IPB event management starting from this year. "With its 16-year history, IPB is the ideal location for sharing views and finding new solutions for powder and bulk solids processing. We extend a warm welcome to exhibitors and visitors from all over the world."

## POWTECH India: Three days of innovation and expertise

POWTECH India, in Mumbai, is aimed mainly at trade visitors in the pharmaceutical and food sectors, as well as those from the chemical, cement, and building and non-metallic mineral industries. The event brings together leading providers in the area of mechanical process engineering from Germany, China, the UK, and many other countries, as well as leading Indian manufacturers. The list of exhibitors already includes Chronos Richardson, Rembe, Bec-

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

tochem, Glatt, DMN and Allgaier Process Technology. On all three days of the trade fair, there will be an extensive parallel conference programme of lectures and workshops on a broad range of topics. The organizer has lined up a number of prominent speakers and supporters, including the Process Plant & Machinery Association of India; Indian Pharmaceutical Association; IIT Delhi; the University of Newcastle, Australia; and Ind Ex e.V. The agenda includes topics like Index safety congress, powder characterization and interpretation in process industries, dust-free production, pneumatic transport systems, Good Manufacturing Practice (GMP) and automation.

From 2018, the Indian event will be re-branded as POWTECH India, after previously being known as Powder & Bulk Solids India (PBSI). "The new name POWTECH India will give the global bulk solids community an even clearer impression of our event," says Chaitali Davangeri, Director, Projects POWTECH India at NürnbergMesse India. "POWTECH India is the focused event for the powder and bulk solids industries in India. Anyone looking for the latest technologies for handling and processing powders and bulk solids, together with practical presentations and workshops, will have come to the right place!"

## Global process technology

POWTECH World is a global network of trade fairs and conferences relating to mechanical process engineering. The events at POWTECH World form the ideal platform for sharing knowledge at an international level, as well as new, global business relationships. Forthcoming POWTECH World Events:

### - POWTECH

The Leading Trade Fair for processing, analysis, and handling of powder and bulk solids, Nuremberg, 9-11 April 2019

### - PARTEC

International Congress on Particle Technology, Nuremberg, 9-11 April 2019

### - FCE Pharma

International Technology Expo for the Pharmaceutical Industry, São Paulo, Brazil, 21-23 May 2019

# Differential Pressure Sensor Rounds Up HVAC Portfolio



**The EE600 is a versatile, multi-range pressure transmitter for HVAC applications. It is fully configurable and features a large graphic display.**

The EE600 differential pressure sensor extends the product portfolio for HVAC and building automation of the Austrian sensor manufacturer E+E Elektronik. The transmitter is available with full scale 1,000 Pa (4 inch water column) and 10,000 Pa (40 inch WC) with each four selectable measurement ranges. The piezo-resistive pressure sensing element ensures highly accurate and long-term stable measurements. The innovative enclosure facilitates mounting and minimizes installation costs. An optional graphic display shows the actual measured data.

The EE600 is dedicated for the measurement of differential air pressure in ventilation and air conditioning systems or for filter monitoring. Additionally, it can be employed for all non-flammable and non-aggressive gases.

## Multi-Range, Fully Configurable

Four measuring ranges (0...250 / 500 / 750 / 1000 Pa or 0...2500 / 5000 / 7500 / 10000 Pa) can be selected via DIP-switches



EE600 differential pressure sensor for HVAC and building automation. (Photo: E+E Elektronik GmbH)

on the electronics board. This makes the EE600 particularly versatile. The output signal and the response time can also be set directly on the board. With push buttons, the user can easily perform a zero and span point adjustment.

## Large Graphic Display

The EE600 offers voltage and current output signals, both simultaneously available at the spring terminals. The device can be fitted with a large graphic display. The display backlight and the pressure unit (Pa, mbar, inch WC, kPa) can also be set via DIP-switches on the electronics board.

## Installation-Friendly Enclosure

Same as all other HVAC measuring instruments from E+E Elektronik, the EE600 features a robust IP65 / NEMA 4 enclosure, which facilitates fast and easy installation. Due to external mounting holes, it can be mounted with closed cover. This saves time and minimizes installation costs. In addition,

the electronics is protected against construction site pollution during installation. For US requirements the enclosure provides a knockout for a 1/2" conduit fitting.

## One Stop Solution for HVAC

The EE600 pressure sensor rounds up the existing E+E offer for humidity, temperature, CO2 and air velocity. E+E Elektronik is thus a single source of measuring devices for all HVAC-relevant measurands.



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# New, self-sealing GEMÜ connection principle for modular valve solutions

**Optimized combination of modular valve block solutions and durably reliable sealing with sealing method free from O-rings.**

Faulty O-rings can cause direct and indirect consequential costs through machine downtimes, recalls or environmental damage. In the presence of chemicals and additives as well as of elevated temperatures, these elastomer seals reach their limits of wear soon. Therefore, GEMÜ has developed an innovative sealing method without O-ring for its iComLine product range. Two contours synchronized with each other fit with precision and thus ensure lasting, reliable sealing. The developed sealing principle without O-rings thus not only saves the additional cost for the elastomer seals

but also increases the service life of the modular valve solutions considerably. The new sealing method makes almost deadleg-free sealing possible. In addition, the optimized installation of accessory parts and additional connections to the various multi-port valve blocks support the modular and consequently flexible construction of the multi-functional iComLine block solutions.

Depending on the requirements, stainless-steel screws or a thread directly machined into the GEMÜ PC50 multi-port valve block ensure the joint and compression of the two seal contours. The innovative



Sample configuration - GEMÜ iComLine with O-ring-free sealing

joining principle is available for all GEMÜ PC50 iComLine multi-port valve blocks made of PTFE material. It is qualified for an operating pressure up to 6 bar and can be used at media temperatures from -10 to +150 °C.

The GEMÜ PC50 iComLine block solutions with O-ring-free sealing are available now in nominal sizes 3/8" and 1/2". Further nominal sizes can be qualified on request and provided in a customised manner.

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG  
D 74653 Ingelfingen

# Cherwell enhances quality management system

## Cleanroom microbiology solutions provider completes transition to ISO9001:2015

Cherwell Laboratories, UK based manufacturer of Redipor prepared media and supplier of environmental monitoring solutions, has successfully completed the migration of its quality management system to the new ISO9001:2015 version. This enhancement affirms that Cherwell is operating to stringent quality assurance and manufacturing standards, enabling its pharmaceutical customers to have complete confidence in the company's range of cleanroom microbiology products.

The British Standards Institute (BSI) assessed the quality management system

at Cherwell during two surveillance visits in November 2017 and May 2018, raising only two very minor issues that required attention and which were addressed rapidly.

Managing Director at Cherwell, Andy Whittard commented, "Our business has always been focused on delivering high quality products for our customers. We were keen to ensure that the new version of ISO9001 helped us improve our systems and therefore our offering to our customers. Our experienced in-house quality team have spent the past 18 months working on this project ensuring we attain va-

lue from the process."

Cherwell's clients are mainly within the pharmaceutical sector, operating to the rigorous standards laid out in Good Manufacturing Practice (GMP). These customers demand high quality and as such any supplier must have robust procedures and processes in place. The 2015 version of ISO9001 quality management places greater emphasis on the leadership of the business and risk assessment to understand issues that could affect the business.

Steven Brimble, Quality Manager at Cherwell added, "The quality team at Cherwell were keen to ensure not only a smooth transition to the new standard, but also to seek improvements in our current procedures. Along with the deployment of Q-Pulse to manage complaints; audit findings; non-conformities and document control; our enhanced quality management system provides a sound basis for Cherwell going forward."

Cherwell's product offering includes the Redipor range of prepared media which it has been manufacturing at its Bicester facility for over 30 years. Developed to service industrial markets, the range offers flexibility, reliability and choice for users and includes a selection of petri dishes, settle plates, bottled media, injection vials and DIN bottles, broth bags and ampoules. Cherwell has a strong understanding of users needs and an ability to offer bespoke products as a solution to help resolve issues.



Redipor prepared media range manufactured by Cherwell to stringent quality standards.

Cherwell Laboratories Ltd  
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