



Hans J. Michael GmbH



XENONIT inaugurated

XENONIT: Gearing up to detect dark matter

There is five times more dark matter in the Universe than “normal” matter, the atoms and molecules that make up all we know. Yet, it is still unknown what this dominant dark component actually is. On 11th November 2015, an international collaboration of scientists inaugurated the new XENONIT instrument designed to search for dark matter with unprecedented sensitivity, at the Gran Sasso Underground Laboratory of INFN in Italy.



(© XENON Collaboration)

Dark matter is one of the basic ingredients of the Universe, and efforts to detect it with laboratory-based experiments have been ongoing for decades. However, until today dark matter has been observed only indirectly via its gravitational interactions – the interactions that govern the dynamics of the Cosmos at all length-scales. It is expected that dark matter is made of a new, stable elementary particle which has so far escaped detection. About 100,000 dark matter particles are expected to pass through an area of 1 cm² per second. The fact that these particles have not yet been directly detected puts stringent constraints on their tiny interaction probability with the atoms of ordinary matter. It also implies that more sensitive instruments are required to find the rare signature of the dark matter particle. The international XENON Collaboration, consisting of 21 research groups from the United States, Germany, Italy, Switzerland, Portugal, France, the Netherlands, Israel, Sweden and United Arab Emirates, celebrated the inauguration of their

new XENONIT instrument today, which will search for dark matter with unprecedented sensitivity.

The event took place at the Gran Sasso National Laboratory of the Italian National Institute for Nuclear Physics (INFN-LNGS), the largest underground laboratory in the world for astroparticle physics. The inauguration was attended by the XENON scientists along with guests from funding agencies as well as journalists and colleagues. About 80 visitors were able to join the ceremony directly at the experimental site in the 100m long, 20m wide and 18m high hall B of LNGS, which is itself below 1400m of rock. Here, the new XENONIT instrument is installed inside a 10m-diameter water tank to shield it from radiation which originates from the environment. Even more guests followed the introductory presentations in the LNGS auditorium, where Elena Aprile, Professor at Columbia University (New York) and founder of the XENON project, illustrated the evolution of the XENON program from the early beginnings with a 3kg detector 15 years

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ago to the present-day instrument XENONIT with a total mass of 3500kg.

Fighting against radioactivity

XENONIT employs the noble gas xenon as the dark matter detection material, which must be made ultra-pure and cooled down to -95°C to make it liquid. The large-mass instrument features an extremely low radioactive background in order to be able to identify the rare events from dark matter interactions. For this reason, the XENON scientists have carefully selected all materials used in the construction of the detector, ensuring that their intrinsic contamination with radioactive isotopes meets the experiment's low-background strict requirements.

The XENONIT detector measures the tiny flashes of light and charge which are generated when a particle interacts with the xenon. The scientists use this information to reconstruct the position of the particle interaction within the detector, as well as the deposited energy and whether the interaction may have been induced by dark matter. The light is observed by 248 sensitive photosensors, which are each capable of detecting even single photons. A vacuum-insulated double-wall cryostat, essentially a gigantic version of a thermos flask, contains the cryogenic xenon and the dark matter detector. The xenon gas is cooled down and purified in the three-story tall XENON building, a fancy installation with a transparent glass facade right next to the water tank, allowing visitors to actually see what the scientists are doing inside. A gigantic stainless-steel sphere equipped with pipes and valves is installed on the ground floor. It can accommodate 7.6 tons of xenon in liquid and gaseous form, more than two times the capacity needed for XENONIT. This will allow the collaboration to swiftly increase the sensitivity of the experiment by using a larger mass detector in the near future.

Aiming for a dark matter detection

Once fully operational, XENONIT will be the most sensitive dark matter experiment in the world. The detector installation has been completed just a few days ago and the first tests of its performance have already been started. The first science results are expected early 2016, as only one week of good data is sufficient to yet again take the lead in the field. The design goal of the experiment will be reached after two years of data taking, as the collaboration explains in a detailed sensitivity study published at the same time as the inauguration. The ultimate goal is the detection of the dark matter particle. Still, even if there are only some hints found after two years of operation, the XENON collaboration will be in an excellent position to move forward, as the next phase of the project, XENONnT, is already being prepared. It will largely use already existing infrastructure, and will increase the sensitivity to dark matter by another order of magnitude.

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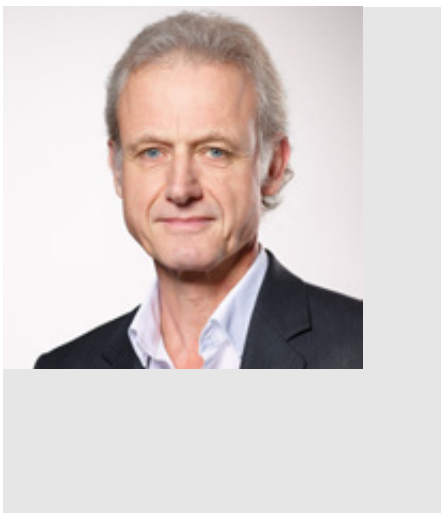
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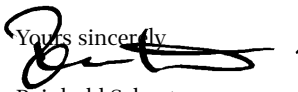
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Dear readers, dear subscribers,

now it's December 2015 and we have a lot of interesting news and a lot of interesting events for your appointment calendar.

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

Yours sincerely,

 Reinhold Schuster



The map shows where the readers of the cleanroom online newsletter are coming from: if you want to get in contact with these readers please contact us.



NEW

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Multi-functional Label with Particularly Robust Hanger for Infusion Bottles

Superbly Suspended: U.S. Label Institute TLMi Awards Schreiner MediPharm's Pharma-Tac Plus Label

Schreiner MediPharm's Pharma-Tac Plus label with a particularly robust hanger for infusion bottles, which was jointly developed with Octapharma, was recognized with the first place in the "Multi-Process" category by the North American Tag and Label Manufacturers Institute (TLMi). The judging panel was mainly impressed by the high-level printing technology and sophisticated label design.

The awarded Pharma-Tac Plus label for infusion bottles combines product marking with a hanger, several pages for product information and detachable documentation parts. The tear strength and stability of the label-integrated hanger are very important to ensure secure hanging of the infusion bottle. Due to its two-layered construction, the label provides ample text space for product information in three languages and thus meets regulatory requirements for multilingual countries. The label is easy to open and close again. In addition, it has two detachable documentation parts for the patient's medical records that can be post-printed with the batch number.

"The pharmaceutical manufacturer receives a reliable solution in this label that upgrades the final product and can be easily processed in manufacturing operations. In addition, it optimizes processes in daily hospital care settings because healthcare staff can efficiently and reliably use the product. Furthermore, the traceability of the in-

fusion makes an important contribution to patient safety," says Ann L. Merchant, President of Schreiner MediPharm, in summing up the benefits.

Since 1977, the North American Tag and Label Manufacturers Institute (TLMi) has been sponsoring an annual international competition to recognize the industry's best products in various categories. The panel of expert judges attaches particular importance to aspects such as innovation and outstanding printing and manufacturing quality. Many of Schreiner MediPharm's innovative products were awarded already at this prestigious competition.

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Flexible processing of pre-sterilized syringes

Bosch expands downstream portfolio for syringes



- Automated removal of glass and plastic syringes
- Fast and reliable rod insertion and labelling
- First customer projects implemented in Europe and Asia



USD de-nester for pre-sterilized syringes: Depending on the model, the USD de-nester achieves an output of up to 400 syringes per minute. Combined with the matching fill-finish and inspection equipment, a ZPS buffer system and an RIL rod insertion and labelling machine, it can be integrated into a complete syringe line.

Bosch Packaging Technology, a leading supplier of process and packaging technology, is further expanding its line competence in the filling and processing of pre-sterilized syringes. "After successfully establishing our fill-finish portfolio, we also strengthen our line competence in downstream processes," says Klaus Ullherr, product manager at Bosch Packaging Technology. "Two steps are required: the rod has to be inserted and the pre-filled syringes have to be inspected. The USD de-nester and the RIL rod insertion and labelling machine are ideal additions to our filling and closing machines, such as the recently launched FXS Combi." First machine combinations are already in operation in Europe and Asia.

Gentle removal and transportation

The syringes filled with liquid pharmaceuticals are either manually or automatically placed on the infeed belt of the de-nester in tubs. Using a gripper, the USD removes the syringes in rows and gently transfers them to a horizontal single-lane transport belt. The products remain in a safe and controlled position at all times. Depending on the model, the USD de-nester achieves an output of up to 400 syringes per minute. In combination with the respective inspection machines for particle and cosmetic inspection as well as leak detection, a ZPS buffer system and a RIL rod insertion and labelling machine, lines for middle and high performance can be implemented.

Safety for products, operators and patients

The high-performance machines of the RIL series accomplish exact and gentle rod insertion, and provide for reliable labelling of the syringes. First, the transport belt transfers the syringes to a segment wheel, which ensures that screwing in of the rod is done at optimum conditions in standstill mode. A separate sorting device conveys the rods to a star wheel, which positions the rods and inserts them accurately into the rubber stoppers. The torque control makes sure that the stoppers do not move. In the next step, the segment wheel transfers the syringes to the labelling station, where the labels are applied



RIL rod insertion and labelling machine: The high-performance machines of the RIL series accomplish the exact and gentle rod insertion, and provide for reliable labelling of the syringes.

and checked with a control sensor. A number of additional options are available to read out label data or inspect the quality, readability and coding of the labels.

To ensure optimum product and operator safety as well as high product quality, the RIL models are equipped with a tip closure control, which checks the presence of the protecting cap on the injection needle. All defect syringes are conveyed to a customer-specific reject station via a star wheel. After rod insertion, labelling and inspection, the processed syringes can be additionally equipped with a backstopper on the RIL. Designed for patient safety and ease of use, the stopper prevents the plunger head from being pulled out of the syringe and also broadens the finger flange.

First machine combinations in operation

"The downstream equipment is an important part of our line competence for syringes," says Klaus Ullherr. "The new models meet the requirements in the European, as well as in the growing Asian market. Our specialists have already delivered, installed and put into operation several machines together with our customers." Further steps for a consequent portfolio expansion are in the planning stage, such as the integration of so-called safety devices for syringes.



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NFC and BitSecure: Customer Workshop on Innovative Technologies

Mobile Authentication for Product and Brand Protection in the Pharmaceutical Industry

Digital technologies are playing an increasingly important role in pharmaceutical companies' anti-counterfeiting and tamper-protection strategies. This was the unanimous opinion of more than 30 international experts who recently engaged in an intensive exchange at Schreiner MediPharm's customer workshop on "Pharmaceutical Packaging Solutions to Improve Patient Safety." A wide range of measures serve to safeguard the pharmaceutical value chain. To authenticate pharmaceuticals, an active involvement of physicians, pharmacists, as well as patients, is particularly important. Innovative technologies, such as NFC and the BitSecure copy detection pattern for mobile authentication, offer unique opportunities.



The integration of NFC (Near Field Communication) technology into labels for pharmaceuticals is considered as a forward-thinking new development that adds high value.

The integration of NFC (Near Field Communication) technology into labels for pharmaceuticals is considered as a forward-thinking new development that adds high value. "Smart e-labels offer pharmaceutical companies a wealth of opportunities. In addition to possible applications such as patient interaction, automatic recognition of medications by injection systems or process optimization in internal logistics, they open up a wide variety of product and brand protection options," explains Ann L. Merchant, President of Schreiner MediPharm. NFC inlays enable contactless reading by smartphones and thus digital identification of pharmaceuticals. Customized solutions using password protection, signatures or encryption technologies offer high protection against attempted fraud, according to the respective threat scenario. The required inlays can be easily integrated into labels for medicine containers. Due to their thin and flexible construction, they inconspicuously blend into the existing design, and the NFC labels can simply be applied to the primary containers during the production process. Merchant sums up further advantages: "Due to the wide-spread use of NFC-capable

smartphones, this form of identification incurs no costs for special readers and can be performed by anyone involved in the process at any time."

The popularity of smartphones – more than 1.5 billion are currently in use worldwide – also prompted the Competence Center Schreiner ProSecure to recently upgrade the BitSecure technology with a mobile authentication option and to develop a special application for smartphones. "It fulfills all the requirements of the pharmaceutical industry for marking original products. BitSecure marking is cost-efficient and extremely counterfeit-proof, as well as fast and easy to verify," explains Thomas Voelcker, Marketing and Business Development Director at the Competence Center Schreiner ProSecure. The BitSecure copy detection pattern uses a high-resolution, cloud-like printed image. Its delicate details are not discernible by the naked eye. If a counterfeiter tries to copy it, the image will suffer a loss in precision and optical details, and can thus be identified as a fake by means of the respective app. While the original print on the medicine pack or the pharmaceutical label is generated directly from a high-resolution digital file, an illegal copy is based on a printed image. The newly developed app features a complex software while offering intuitive usability. It allows users to read the digital copy detection patterns via their smartphones and lets them know within a few seconds whether the product is an original or a fake.

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Cleaning Solutions



For customers with extremely high cleanliness requirements, such as in medical engineering, aerospace and the manufacture of process devices for the semiconductor industry, Fraunhofer IPA offers integrated, reproducible, cleaning solutions that can be fully validated. The spectrum of cleaning technologies ranges from a solvent-based cleaning process in a cleanliness zone, e.g. as a first step after part production, to multiple-bath ultrasound precision cleaning in a cleanroom with the highest cleanliness class. If necessary, further cleaning steps such as CO₂-based cleaning or plasma activation can be added. Cleaning processes, as well as the packaging of the high-purity cleaning goods, are also validated in a cleanroom.

CO₂-based cleaning solutions

As shown in recent years in diverse industrial applications, the use of carbon dioxide (CO₂) as a cleaning medium is still full of interesting potentials and allows cleaning solutions to be created in a form which was not possible in the past. Especially the efficient, localized dry-cleaning method of CO₂-snow jet cleaning offers numerous possibilities for integration into automated, serial production processes, which were inconceivable with liquid cleaning techniques.

In order to be able to apply the potentials of CO₂ to other applications, Fraunhofer IPA operates two special CO₂-cleaning laboratories: one is in a cleanliness zone and the other in a Class 1 cleanroom (ISO 14644-1). To develop application-specific processes, we have a range of cleaning methods and tools at our disposal:

- Spot-jet nozzles for cleaning defined areas on surfaces to remove mm-sized or even nm-sized particles
- Cleaning lances for cleaning the inner surfaces of tubular components (diameters ranging between 10 and 300 mm)
- Cleaning injectors for the hypercritical cleaning of blind bores and small parts
- Rinsing reactors for the hypercritical cleaning of inner component surfaces, e.g. thin tubes or capillaries.



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Cherwell publishes case study discussing key considerations when purchasing an active air sampler

Portsmouth PMU selects Cherwell for quality and service in environmental monitoring



Cherwell's SAS Super 180 air sampler and Redipor® prepared microbiological media are well received by Julie Bowden, QA Releasing Officer, at Portsmouth PMU.

Cherwell Laboratories, specialists in cleanroom microbiology solutions for the pharmaceutical and related industries, has been assisting Portsmouth Pharmaceutical Manufacturing Unit (PMU) in their extensive environmental monitoring (EM) programme for over 20 years. Such is PMU's confidence in Cherwell and its products, the facility has recently purchased an additional SAS Super 180 microbial monitoring air sampler. Cherwell has subsequently published a case study discussing PMU's key considerations when purchasing a new active air sampler for an EM programme.

Portsmouth PMU specialises in the aseptic preparation of pharmaceuticals and parenteral nutrition, cytotoxics and patient-controlled analgesia in a variety of administration devices. With two aseptic rooms, eight isolators, two preparation rooms and a checking and labelling area; an extensive environmental monitoring programme (incorporating both active and passive air sampling, as well as contact plates) is in place to ensure the environment is free from microbial contamination.

Reliability, ease-of-use and sampling speed were all key considerations in Portsmouth's selection process for a microbial air sampler. With a sampling rate of 180 litres per minute, the SAS Super 180 unit is the fastest sampler available, completing a cubic metre in less than 6 minutes - this saves on staff time and minimises disruption. In addition, the SAS is unique since it uses more readily available, and therefore less expensive, contact plates as the consumable. Furthermore, its portability allows PMU to easily conduct environmental monitoring across its various locations.

Julie Bowden, QA Releasing Officer, Portsmouth PMU commented, "When we were looking to buy a new unit, we didn't look at any other air samplers on the market. We only considered Cherwell due to our positive experience of the product and their excellent customer service. Cherwell are always very accommodating and deal with any queries straight away, we don't have to be passed on to someone else."

The reliability and robustness of SAS air sampling equipment, combined with Cherwell's technical expertise, were also key factors in Portsmouth's decision to continue using SAS units. In addition to the newly purchased unit, PMU still uses another SAS Super 180 unit 12 years after the initial purchase, confirming the lifetime value of the units. This has been supported by Cherwell's customer focused calibration service - operated by the Company's own engineering department based in its Bicester facility - this also ensures a rapid turnaround time. Calibrations can also be arranged to fit in with customer requirements, further minimising downtime and inconvenience.

"Cherwell make it easy for us to arrange recalibration at a time that suits us and the turnaround time is very quick," said Nicola Lightfoot, QC Technician, Portsmouth PMU. She added, "If any repairs are required, a quotation is always provided before the work is carried out and we are kept informed of progress."

The long standing relationship between Portsmouth PMU and Cherwell has been based on providing the most appropriate product to fit the required application, alongside a flexible and reliable service. In fact, in addition to the portable SAS Super 180 units, PMU also uses SAS Super Isolator units for dedicated EM within isolators; it has also received regular and flexible delivery of Redipor® prepared culture media since 2006. Cherwell's focus on customer support, high quality products and technical advice are all valued by Portsmouth PMU, who know their specific requests will be dealt with efficiently and effectively.

Through understanding the increasing regulatory requirements placed on pharmacy manufacturing units within the UK, Cherwell has been able to assist Portsmouth PMU in meeting these obligations. This has only been possible by having good knowledge of the industry sector and providing products and services that are fit for purpose.

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Parole chiave: Contamination-Diagnosis-Studies-HVAC-API-toxic-heavy metals-decontamination

Contamination diagnosis and studies in pharmaceutical industry – an essential stage in decontamination process

The diagnosis is the main point of decontamination works as it allows to focus on the real and effective problem and to target the contamination in every part of the processes. The team MSE*-Techno-One-Jobbing is completing a DIAGNOSIS before doing any works in order to optimize the operations with the highest safety level. It allows, among others, to design the decontamination works taking into account the history and the future of the client’s plant. The team is proposing turnkey cleaning and decontamination services comprising the diagnosis and the decontamination design and works, the overall being called Good site Decontamination Practices (GDP).

The team has performed several works the past years based on the GDP model. Among these works, two projects, representative of the team’s works will be described in the present case study:

- Decontamination and dismantling works at an oncological production unit of a top ten world’s largest pharmaceutical company plant: An oncological production unit belonging to a top ten pharmaceutical world producer had to be dismantled and redesigned (space reorganization and existing processes improving) in order to receive a new product. For this purpose some parts of the unit had to be eliminated and others to be reused. The unit was composed of several rooms (production areas, personnel and equipment airlocks...), equipment (formulation line with tank and mixer, filling machine, freeze dryer, sealing machine, semi-automatic inspection machine, washing machine and autoclave), central air treatment units and deduster units with associated networks. The team’s work consisted in first place to make a study so as to localize the contamination and to define the best decontamination solutions and validation technics.
- Decontamination of different surfaces soiled by heavy metals at a research laboratory: A research laboratory was confronted to three toxic heavy metals contamination (Mercury, Tellerium and Cadmium) which were used for the investigations and had to be removed. The work at the laboratory consisted in elaborating a decontamination procedure regarding the different types of surfaces of the premises.

The Good site Decontamination Practices methodology were applied in both cases. The GDP are in a general manner set up through three main steps:



Table 1: Example of test results of Cadmium decontamination on a metallic surface:

	Cadmium (Cd) Measurement (µg/m²)
Initial point	950
After decontamination with solution A	100
After decontamination with solution B	11

Table 1: Example of test results of Cadmium decontamination on a metallic surface



Figure 1: Two identical test surfaces

- Diagnosis
- Works implementation
- Validation of decontamination

Diagnosis

The challenges of this study are numerous and permit to:

- check contamination nature, location and quantities
- target the areas to clean

Contamination diagnosis and studies in pharmaceutical industry – an essential stage in decontamination process

- define the cleaning process
- define the molecules to track and the decontamination threshold to reach
- define the sampling and analytical technics

These different parameters differ from one process to another, and from one contaminant to another. For this reason the diagnosis must be systematically done before any work initiation.

1) The team makes first an EVALUATION ON DOCUMENTATION AND ON SITE INVESTIGATION so as to:

- identify the molecules to track and the decontamination level to reach
- put in place sampling and analytical methods
- make a sampling mapping

For the oncological production line, it appeared from site history (process documents, investigation with management teams and operators) that 7 different API were handled in this unit since 1970, which permitted in consequence to define trackers from literature (MSDS and API literature). Among these APIs, two trackers were chosen using their:

- toxicity level
- behavior to the cleaning process (solubility in different solvents, degradation in different medias)
- quantity handled in the unit

Then, the thresholds (decontamination level to reach) were defined using the worst case toxic molecule characteristics to calculate the allowable quantities of the contaminant by using the MACO (Maximum Allowable Carry Over: calculation based on the dose and/or toxicological data of the compounds).

Two different thresholds were defined keeping in mind the future of each part of the unit:

- parts to be reused: threshold defined to avoid cross-contamination with the new product
- parts to be dismantled: threshold defined to avoid workers and environment contamination

The lower threshold defined was of $1\mu\text{g}/25\text{ cm}^2$ and was submitted to the client for approval before the start of the works.

Next, sampling and analytical methods were adopted and validated. These methods



Figure 2: PPEs and CPEs during decontamination works



were validated ones from the client's site: swab test and internal analysis. In other cases, if not existing, the sampling method (wipe test: kind of media and solvent, air sampling etc.) is validated by measuring the recovery rate of a known amount of the pure molecule to track.

Afterwards, a sampling mapping was defined using documentation (P&ID, isometric diagram), the procedures (Cleaning In place SOP, Standard Cleaning SOP, Maintenance procedures for HVAC) and on site investigations to select the worst places where the API could accumulate during site life. Other contaminants as well were looked for as asbestos and heavy metals in different facilities. At least 120 points have been chosen for the sampling mapping.

2) Secondly, a DECONTAMINATION SOP is defined with proposal of cleaning agents (surfactant or degradation agent) and performance qualification of their efficiency on different representative surfaces.

With regard to the research laboratory, this part of the study was aimed to define the best decontamination solution according to the different kind of surfaces. An evaluation of different decontamination solutions efficiencies according to the contaminant and the surfaces nature have been done. For this purpose, chemical dosage measurements have been compared before and after decontamination.

Tests have been performed on different kind of surfaces (stainless steel, painted surfaces, PVC) by applying onto same size areas two different decontamination solutions in order to compare their efficiencies (see Figure 1). Chemical dosage measures were done before and after the decontamination tests in order to determine which one was most efficient and which removed the best the contaminants.

As it is showed on table 1, the cleaning of a metallic surface with the solution A or B allows to decontaminate this kind of surface from cadmium contamination. However, the decontamination with the solution B permits to reach a threshold 10 times lower than with the solution A.

The tests performed on the other surfaces and on Mercury and Tellerium, have been as well successful with the decontamination solution B, which have been chosen for the decontamination works.

This complete diagnosis allowed us to define the procedure the team had to follow in order to remove the heavy metals from the different surfaces using the appropriate decontamination solution.

Contamination diagnosis and studies in pharmaceutical industry – an essential stage in decontamination process

3) Finally, after the points above the DECONTAMINATION WORKS TO CARRY OUT are defined.

After cleaning agent selection, the intervention safety (LOTO procedure to implement, CPE to put in place and PPE to wear), the decontamination work and the decontamination performance qualification are established.

For the oncological production line, additionally to the sampling analysis (swab tests performed in the different chosen spots defined in the sampling mapping), were done Heat, Ventilation, Air Conditioning (HVAC) and extraction piping and ducts video inspections with a robot.

Analyzing both results (contamination mapping and video inspections showing quantities of API), the decontamination level to reach and the site constraints (utilities, production), the team suggested full technical specifications to realize site decontamination.

Works implementation

In a general manner, the decontamination works are always done starting from the top (roof) and going down to the rooms (ceiling, walls, equipment and floor). All the personnel is equipped with different Personal Protective Equipment (PPE): protective suit, overboots, air-filtration system with panoramic hood and gloves. Nevertheless, in order to protect the environment (rooms and surrounding areas of the working zone), Collective Protective Equipment (CPE) are put in place as confinement structures with depressurised unit (air-suction with HEPA filter) and glove-bags (to confine in a sealed way smaller areas such as ducts and holes). The confinement structure is put in front of the unit or room to decontaminate so as to allow the operators to decontaminate the equipment and remove PPEs in a safe manner while exiting the unit after works.

At the oncological unit plant, based on diagnosis and the future of every part of the unit, the whole works have been performed by the team MSE-Techno-One-Jobbing starting from the project management with the client, going through decontamination and dismantling works and finishing with decontamination validation and provision to the client of a contaminant-free unit ready to receive a new product in time.

As regards to the research laboratory, periodic decontamination works are now performed based on the initial studies done by the team.

Validation of decontamination

In order to control the decontamination process, different validation methods can be used:

- Wipe tests with ICP MS analysis: wipe tests are performed by swabs on surfaces to quantify the contaminant
- Endoscopy for visual inspection of HVAC and deduster ductwork: The correct decontamination of the ducts is controlled by endoscopy. Nevertheless, in order to validate the decontamination in some parts of very contaminated ducts, a swab test can be done.
- UV light for visual inspection when the contaminant contains an aromatic cycle
- X-ray Fluorescence Spectrometer for surface analysis: It is used for example to measure mercury (Hg) content

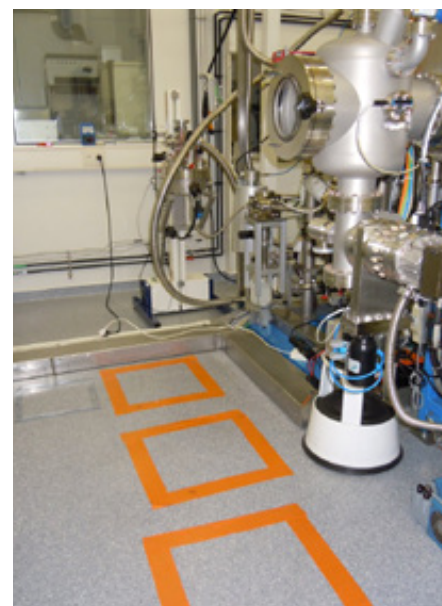
For the works at oncological production line, three sampling mappings have been done in relation with the progress of the works inside of the rooms, equipment, HVAC units, dedusters and some very contaminated ducts (revealed during diagnosis) by swab testing. The threshold has been reached in every part of the unit.

The equipment, rooms, HVAC and dedusters to be reused were ready after the works to receive the new product, while the HVAC units and ducts to be removed have been dismantled by the team after decontamination works.

These case studies show how important the diagnosis phase is in order to prepare the works to be performed and to deal with every contamination in different configurations on a case by case basis. By the GDP appliance, decontamination works can be performed at any plant, unit, process, equipment to be decontaminated in order to be re-used, transferred, dismantled, sold, eliminated as waste,... and for every contaminant (toxic, corrosive, explosive, CMR, ...) representing an obstacle to a healthy environment for the operators and the production.



Figure 3: Validation methods (X ray spectrometer, endoscope, UV-lamp, wipe test)

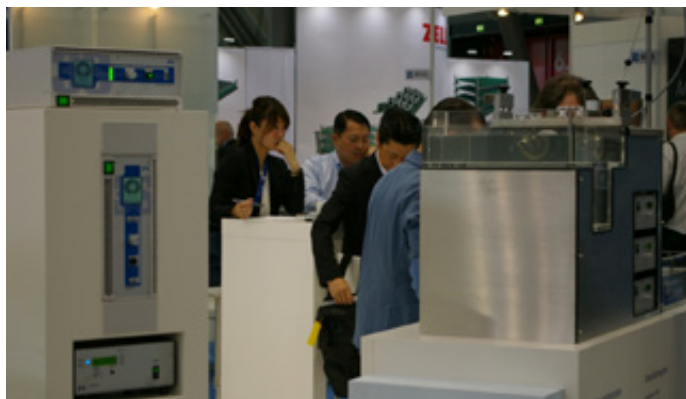


CURIUM
D 69700 Montagny

parts2clean – prime source of industrial cleaning solutions and know-how



- The world's leading trade fair for the cleaning of parts and surfaces
- Rising demand for efficient and sustainable cleaning solutions



31st May - 02nd June 2016: parts2clean, Stuttgart (D)

Regardless of whether the cleaning task at hand is highly complex or fairly simple, the cleanliness of surfaces and components and the removal of all contaminants is a critical factor for the quality of subsequent processing steps, and indeed of the finished product. Consequently, the demand for cleaning solutions that are efficient, sustainable and produce consistently reliable results is on the rise around the globe. parts2clean – which takes place in Stuttgart – has built an international reputation as an unparalleled source of all the necessary solutions and expertise.

“The quota of decision-makers attending parts2clean is higher than average. Around 80 percent of the visitors come to the show with a view to investing in new technology”, explained Olaf Daebler, the director in charge of parts2clean at Deutsche Messe. “For exhibitors that means plenty of serious inquiries and ideal opportunities for talking business with new customers.” This is confirmed by Roland Jung, head of surface technology at Hermann Bantleon GmbH: “At the 2015 show, we again had many visitors coming to our stand with specific projects and issues. Some of these were new contacts, and very promising ones, too.” It is no surprise, then, that the Leading International Trade Fair for Industrial Parts and Surface Cleaning is regarded by the industry as an absolute must. “It’s important for us to come here and present our broad range of products to the market. After all, parts2clean is the platform that customers look to for information about solutions for their cleaning challenges and the latest developments in the field”, said Walter Mück from the marketing department at Pero AG.

The No.1 source of expert know-how on industrial parts cleaning

But it’s not just the comprehensive array of exhibits covering every sector and every type of material that draws the visitors. The three-day parts2clean Industry Forum is also a big part of the attraction. With an average of more than 25 presentations, which are simultaneously translated (German <> English), the Forum offers valuable know-how on a variety of topics of importance to each and every stage of the process chain for cleaning industrial parts and surfaces. The 2016 event will offer separate sessions on “cleaning approaches”,

“upstream and downstream processes”, and “analytics”. Also planned are two blocks of presentations to be held by industrial users. The one block will deal with cleaning applications in specific fields such as medical technology, electronics production, the automotive industry, the aerospace industry, plastics, and maintenance, repair and overhaul (MRO). The other topic block will address “engineering for cleanliness”, with presentations by users on aspects such as cleaning-friendly design and construction, ways of rendering cleaning unnecessary, and clean-friendly production. Presentations may be submitted at www.parts2clean.de under “Program / Expert Forum”.

Guided Tours – the shortcut to valuable expertise and contacts

The Guided Tours program offered as a service for visitors has proven so popular that it is being expanded for parts2clean 2016. The tours enable visitors to efficiently increase their know-how on everything of special interest to them. It is a quick and easy way to discover relevant solutions and innovations and identify potential solution-providers. The Guided Tours are also highly beneficial for participating exhibitors, enabling them to present their products and innovations to a choice, pre-selected audience right at their stands, resulting in additional contacts and sales prospects.

Parallel events of relevance to industrial cleaning

In parallel with parts2clean (31 May to 2 June 2016), several other trade fairs in which parts cleaning plays an essential role are also taking place at the exhibition center in Stuttgart. The various coating processes featured at O&S, the International Trade Fair for Surface Treatments and Coatings, all require a scrupulously clean substrate. LASYS, the International Trade Fair for Laser Materials Processing, showcases laser applications across all sectors of industry and for all types of materials, and here, too, the right outcome often depends on having a clean surface to start with. And also for many of those attending AUTOMOTIVE Expo – a group of five trade fairs covering different aspects of the automotive industry – the cleaning of parts and surfaces is likewise of great importance for manufacturing operations.

Deutsche Messe AG D 30521 Hannover

Successful European Heat Pump Summit 2015



- Conference programme popular with participants
- High level of internationalism

After two days packed with first-class presentations and high-quality up-to-date information events, the European Heat Pump Summit – powered by Chillventa – came to a successful close in the Nuremberg Exhibition Centre on 22 October. 240 heat pump experts and 21 exhibitors in the accompanying Foyer Expo took part in this year's trade event on the subject of heat pumps. Experts from around the world used this opportunity to exchange views, discuss research results, and find out about the latest trends and developments. A further highlight was the Foyer Expo, where a wide range of new components and products was presented. This year the proportion of international exhibitors reached over 75 percent.

24th - 25th Oct. 2017: European Heat Pump Summit, Nürnberg (D)

„We are happy with the success of the European Heat Pump Summit 2015“, summarized Alexander Stein, Executive Director for NürnbergMesse. With 240 participants and 21 exhibitors, the European Heat Pump Summit is the largest heat pump event in Europe for industrial and commercial applications, for residential construction, as well as hybrid systems and components. „The number of participants and exhibitors is on a par with the previous event, which is satisfying. We were also happy to get the consistently good feedback that we received from everyone involved this year. Exhibitors, speakers, and participants came to Nuremberg from 27 countries to take part in specialist discussions. This underscores the international significance of the event. Heat pumps are at home in Nuremberg, both at the European Heat Pump Summit – obviously – and also at Chillventa and the Chillventa CONGRESS, which will be taking place in October 2016,“ Alexander Stein continued.

Symposium provides answers to current questions

In 2015 the European Heat Pump Summit once again provided a wide range of specific and technically valuable answers to the questions that are being asked in Europe and throughout the world as a result of current legal requirements, technical developments, and calls for a clean environment. The topicality and depth of technical knowledge at the Summit were confirmed by the participants, represented here by this view expressed by Joachim Gerstel, Business Development Manager, Opteon Refrigerants EMEA, Chemours: „The Summit is a well-organized meeting place for specialists to exchange expertise. I very much enjoyed it overall, as it tackled new core topics like high-temperature heat pumps and low-GWP fluids, including the new HFO-1336mzz(Z). The speakers' presentations were professional and competent.“

Still plenty of potential in Europe

Today people are taking advantage of the benefits of heat pumps in many countries in Europe. In Germany, however, this is not currently the case, says Dr Rainer Jakobs from the IZW (Information Centre on Heat Pumps and Refrigeration) and coordinator of the Summit: „In Germany, the framework conditions for heat pumps are not ideal at the moment. In my view, this is because the low gas and oil prices combined with the very high – and rising – cost of electricity are counterproductive for utilizing heat pumps, both in commerce and industry and in the residential sector.“ And yet, Dr Jakobs continued, the heat pump would be an environment-friendly method of heating which has many advantages, as was evident at the Heat Pump Summit. The pioneers here are our European neighbours, for

example Denmark, which has already banned the use of gas and oil heating systems in new buildings.

Over 35 well-known speakers from Germany and abroad showed very clearly in their presentations how the heat pump contributes to protecting the environment and how successfully it can be used. In addition, its market potential was also made obvious: Since 2005, an average annual growth rate of 7.4 percent has been recorded. This was affirmed by Thomas Nowak from EHPA in his market overview for the 21 EU countries. The highest growth rate recorded was for hot water heat pumps, which increased from 11,000 units sold in 2005 to over 110,000 in 2014. The symposium focussed on the potential for heat pumps in various markets, as well as renewable energies in conjunction with nZEBs to create sustainable and responsible business. Julian Jansen from Delta EE examined the market for hybrid heat pumps and forecast growth in France from 6,000 units in 2014 to over 30,000 in 2020.

In commercial and industrial applications, the hybrid use of heat and cold is moving into the foreground. Jörg Saar from Danfoss presented this application in supermarket refrigeration systems in Denmark. In this application the cold is used for chilling food and the heat is pumped to a higher temperature level so that it can then be fed into district heating networks. He clearly explained the evolution of supermarkets from being energy users to energy producers. In addition, the development of building components and products for innovative future-proof systems was also highlighted.

International energy agency provided information at the symposium

Another highlight of this year's European Heat Pump Summit was the inclusion of reports on the status of global research and development within the scope of the heat pumping technologies of the International Energy Agency (IEA-HPT). These research and development presentations are known as the IEA HPT Annexes. The heat pump concept for use in „nearly Zero Energy Buildings“ is the subject of HPT Annex 40 and was comprehensively presented by Prof. Carsten Wemhöner from Rapperswil University in Switzerland. A few hundred of these nZE buildings have been built and documented. They combine power generation using photovoltaic systems and heat generation using heat pumps. HPT Annexes 42 and 45 deal with the hybrid heat pumps already mentioned and their integration into smart grids.

Commercial and industrial applications at a glance

A special series of presentations in German took place in parallel with the European Heat Pump Summit symposium. The theme was the commercial and industrial use of the heat pump. In his presentation, Stefan Wolf from the University of Stuttgart provided an overview of the framework conditions for industrial production plants and the possible applications of specifically tailored heat pumps.

Successful European Heat Pump Summit 2015

In his presentation „Energy efficiency with high-temperature heat pumps in the process industry“, Karl Ochsner, President of Ochsner Wärmepumpen, spoke about heat pumps with forward flow temperatures of up to 98 °C, which, for example, provide process heat for district heating networks and which can heat large-volume structures. The presentation „Large cooling systems with heat recovery at high temperatures“ discussed reference systems for generating cold and heat in the high capacity range, from several MW to 70 MW. In cold generation, using cutting-edge compressor technology means that hot water with temperatures of 95 °C and more can be generated. Further themes in this session were heat pumps in the drying process and other high-temperature heat pumps.

Details of all the presentations and the speakers plus photos can be found at: www.hp-summit.de/symposium

High international participation in the Foyer Expo

The Foyer Expo, held in parallel with the symposium, once again rounded out the programme of presentations with the latest products presented by well-known companies and associations from the international heat pump sector. Over two-thirds of the exhibiting companies came from abroad this year. The up-to-date list is available on the European Heat Pump Summit Website at: www.hp-summit.de/foyer-expo

Other important industry events: ACREX India and Chillventa 2016

ACREX INDIA will take place from 25 to 27 February 2016 in the Bcec, Mumbai. It is South Asia's leading trade fair for heating, ventilation, air-conditioning, refrigeration, and building technology. This coming year the title of the trade fair is „Make in India – infinite opportunities for HVAC&R and the building services industry.“ The organizers are once again expecting record attendance figures, with roughly 30,000 trade visitors and about 500 companies. Another highlight follows in autumn of 2016: Chillventa, the International Exhibition for the Refrigeration – AC & Ventilation – Heat Pumps. The world's leading refrigeration trade fair is taking place from 11 to 13 October 2016 in the Nuremberg Exhibition Centre. The theme of Chillventa will be „Connecting Experts,“ because this is where the international refrigeration, air-conditioning, ventilation, and heat pump community gets together to meet. „Preparations for Chillventa 2016 are already well under way. It is clear that Chillventa is going to grow once again. A good year before the event, we can already see that we are moving towards the largest, most successful Chillventa ever“, Alexander Stein commented.

NürnbergMesse GmbH
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International trade fair for additive manufacturing

„addAM concept“ – a unique concept at the AM Expo

The AM Expo (Additive Manufacturing Expo) from 20 to 21 September 2016 is the first trade fair with an exclusive focus on additive manufacturing in serial production. Contract manufacturers demonstrate the possibilities of making profitable use of additive manufacturing. The basis for doing so is the „addAM concept“ initiated specifically for the AM Expo.

20th - 21st Sept. 2016: AMX - Additive Manufacturing Expo, Luzern (CH)

Messe Luzern will launch the AM Expo in September 2016 in cooperation with its strategic partner, Additively Ltd. Additive manufacturing is becoming a topic of interest to an ever-growing number of companies from many different segments. The necessary know-how required to ensure both economical and high-quality production is, however, lacking in the majority of businesses. This is why many companies turn to contract manufacturers.

The AM Expo provides a showcase for these service providers. They put the huge potential of additive manufacturing on display at the trade fair. To this end, the AM Expo and Additively Ltd have jointly developed the innovative „addAM concept“ that offers a number of solutions to achieving profitable serial production and also serves as an orientation aid in a heterogeneous service provider marketplace.

Focus on showcases

Exhibitor showcases are at the heart of the „addAM concept“ – and therefore also of the AM Expo. These are concrete application examples that show how to make profitable use of various additive manufacturing methods and materials. The showcases illustrate in practical terms what is achievable today and in which quality, and the milestones accomplished so far.

Showcase Finder – 365 days digital, 2 days analogue

These showcases can be seen at the AM Expo. Visitors can take them in the hand and talk to the experts. But that is not the only benefit of the „addAM concept“. The innovative concept extends the coverage of the AM Expo into the Internet. The showcases are

available for viewing online both before and after the trade fair – in the Showcase Finder. Visitors can find the applications and manufacturing technology they are interested in before visiting the AM Expo and arrange an appointment to visit the exhibitor's stand at the trade fair. Showcases generate high-quality contacts with the right partners – before, during and after the AM Expo.

Starting point for innovation

Showcases are an inspiring method of showing visitors and companies how they can profitably apply additive manufacturing methods. They also represent an excellent starting point for launching new AM projects. Exhibitors at the AM Expo are classified and positioned in accordance with their showcases. The exhibitor classification also acts as a navigation tool and helps visitors to quickly gain a comprehensive overview.

The first 14 showcases are already online

The first showcases are now ready for viewing at www.additively.com/showcase. The goal is to present 150 showcases by the AM Expo start date. The showcases will also be a topic during the Innovation Symposium at the trade fair and a selection will be featured in detail in the AM Report.

Messe Luzern AG
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Gerresheimer at CPhI India 2015

Triveni Polymers adds eye drop bottles to its portfolio



Gerresheimer is back at this year's CPhI (Convention for Pharmaceutical Ingredients) in India from December 2 to 4, 2015, exhibiting the new and well-proven glass and plastic pharmaceutical packaging products in its portfolio to an expert public. This is the first CPhI at the Bombay Convention and Exhibition Centre where Gerresheimer will have eye drop bottles manufactured specifically for the Indian market by Triveni Polymers on show.



“Conjunctivitis is a very widespread affliction of the eye that can often be very effectively treated with eye drops,” said Subodh Gupta, Managing Director for Gerresheimer at Triveni Polymers Private Limited. This is the first time that Triveni Polymers is exhibiting ophthalmic medication bottles

for the Indian market at CPhI because the company recently extended its familiar portfolio for solid dose pharmaceuticals to include a new ophthalmic product group. The first bottles in this product group for India are available in the two most common bottle sizes of 5 and 10 ml, either in LDPE or HDPE. Other sizes and designs can be provided by the Gerresheimer Group.

Neutral Glass: representing Gerresheimer's global glass competence in India

In India, both glass and plastic are standard materials for solid and liquid dose pharmaceutical packaging and storage. The glass pharmaceutical packaging products manufactured by Neutral Glass are long established in the Indian market. Its range of type I and type III bottles includes injection, dropper and syrup bottles in diverse market and demand-oriented designs in flint and amber glass.

Production operations at Gerresheimer, Triveni Polymers and Neutral Glass are compliant with stringent quality standards that meet the pharmaceutical industry's very high requirements of quality.



Gerresheimer is expanding in India

India is a key growth market for Gerresheimer. This is the reason why it acquired majority shareholdings in the two Indian companies, Triveni Polymers and Neutral Glass, three years ago. Since then, both companies have been very effective ambassadors of Gerresheimer's pharmaceutical plastic and glass packaging competence in India and the Asian region. Today, packaging products made by Gerresheimer, Triveni Polymers and Neutral Glass can be found in the medicine cabinets of every hospital, medical center and private household. They keep solid and liquid dose pharmaceuticals dry and securely packaged until they are used up.

01st - 03rd Dec. 2015: CPhI India, Mumbai (India)

Gerresheimer AG
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With a powerful performance – matching the previous year's level, BrauBeviale closed its doors again for another year after three intensive trade fair days. 37,137 visitors (41 percent of them international) came to this year's most important equipment show for the beverage industry. Among the total of 1,083 exhibitors were regular guests and newcomers, world market-leaders and small and medium-sized companies. They presented all aspects of the beverage industry process chain: high-quality raw materials, innovative technologies, efficient logistics and creative marketing ideas. The SFC Street Food Convention held within the framework of BrauBeviale celebrated a successful premiere.

BrauBeviale 2015: Enjoyment for all involved



- 37,137* visitors came together with 1,083* exhibitors
- Creative Beer Culture met Premium Spirits
- Craft Beer met Street Food

08th - 10th Nov. 2016: BrauBeviale, Nuremberg (D)

"BrauBeviale invites you to the sector's regular meeting place and they all come!" Director Exhibitions Andrea Kalrait is happy about the participation levels and the mood at BrauBeviale 2015. "The enthusiasm in the exhibition halls was there for all to see and experience. The trend towards craft-brewed beverages is continuing unbroken and is attracting increasing attention, we are of course also noticing that here. Over the past few days trade visitors came to us from a total of 131 countries – and they did so despite the flight attendants' strike at Lufthansa!" The mood in the sector is good, the exhibitors and visitors are agreed on this: around 87 percent and 84 percent respectively assessed the economic situation as remaining constant or even with an increasing tendency, according to the results of a survey conducted by an independent institute.

The visitors: highly satisfied and very international

The guests mainly came from Germany as well as from Italy, the Czech Republic, Austria, Switzerland, the Netherlands, Belgium and Russia. And it was apparently worthwhile: almost every one of them (99 percent) was satisfied with the range of products and services presented at the fair and is planning to visit the fair again in future (98 percent). The average guest at the fair spent a total of one and a half days at BrauBeviale; they mainly came with the aim of gathering information about new products and innovations, cultivating business contacts and exchanging experiences and information with colleagues. The exhibitors were delighted with the renewed increase in the high quality of the visitors to their stands: around 90 percent of the trade visitors are involved in the investment decisions at their respective companies.

The exhibitors: most important target groups reached

The exhibitors, 47 percent of them international, presented their stands in space of 45,185 m², an increase of about six percent compared to the previous year. The slight increase in guests from abroad shows: BrauBeviale is also becoming more important on an international scale. The exhibiting companies came from 49 nations, in particular from Germany (580), Italy, the Netherlands, Belgium, Austria and Switzerland. Their range extended across products and solutions along the entire process chain of the beverage industry. 93 percent of the companies assessed the overall success of their participation at BrauBeviale as positive. A total of 97 percent stated they had reached their most important target groups and around 86 percent of the companies surveyed expect post-show business.

The support program: top marks given by visitors

The Forum BrauBeviale covering topics straight from the sector for the sector, PET@BrauBeviale with key impulses in the beverage packaging sector and not least the "Creative Beer Culture meets Premium Spirits" trend topic met with great interest from the visitors and received positive assessments. In this connection, among others, retailers, caterers and also producers attended the tastings organized by renowned beer sommeliers – among them Markus Sailer, the current German champion - and spirits tasters in the Craft Beer Corner. At five tasting bars, each of them covering one of these themes: hops, malt, yeast, specialities and the perfect glass, over 160 national and international beers faced up to the professional scrutiny of the curious visitors. But there was an alcohol-free side to the event too: the water-tasting sessions conducted by trained water sommeliers also attracted a large

number of keen visitors. Exceptional beer specialities were available too for interested parties to experience away from the exhibition centre: at the atmospheric "Schanzenbräu & Friends" after-show party or in the numerous restaurants and bars, which were part of the "BierErlebnis Nürnberg" (Nuremberg Beer Experience).

European Beer Star 2015: Consumers' Favourites win awards As one of the most renowned beer competitions, the European Beer Star has had its exhibition home at BrauBeviale since 2004. Jointly initiated by the Private Brauereien Bayern (Association of Private Bavarian Breweries), honorary sponsors of the fair, the German and European umbrella organisation, it is now one of the most significant beer competitions in the world and is repeatedly setting new participation records. With 1,957 beers from 45 countries on all continents, in 2015 more beers than ever before were submitted. Once again, in 2015, the trade visitors selected their favourite beers from the 55 gold medal-winning creations: the "Ayingen Bräuweisse" produced by Brauerei Aying (Germany) was awarded the title Consumers' Favourite in Gold. The silver medal went to the Danish Midtfyns Bruyhus in recognition of their "Midtfyns Imperial Stout". "Double Jack", an Imperial India Pale Ale brewed by the Firestone Walker Brewery (USA), received the third largest number of votes from the total of over 6,350 testers.

SFC Street Food Convention: launched at full throttle

Creative beverage culture literally calls for unconventional food. It therefore comes as no surprise that the first SFC Street Food Convention was held for the first time within the framework of BrauBeviale. On 12 and 13 November, over 1,500 participants, also including guests from Austria, Switzerland, Great Britain, Italy, Greece, Poland and Slovakia, flocked to the 45 exhibitors and in-

BrauBeviale 2015: Enjoyment for all involved

formative specialist program into the Frankenhalle at the Nuremberg exhibition centre. Here, insiders and newcomers came together to obtain information about trends, business models for new business founders/entrepreneurs, suppliers, market strategies, cooperation partners and technologies on this new catering scene. The Street Food Business platform was initiated and organized by "Mr Foodtruck", Klaus P. Wünsch.

Global beverage consumption: continuing on course for growth

In 2014, worldwide consumption of packaged beverages reached almost 912 billion litres, around 18 billion litres more than the previous year. According to experts, it will continue to rise even further, they are pre-

dicting annual average growth of 3.4 percent. The driving forces behind the global increase are in particular the Asian/Pacific region with China and Japan as well as the Middle East/Africa. In Europe, the market is still split down the middle: on the one hand the optimally supplied Western European industrial nations, on the other, Eastern Europe, which with growth of 5.5 percent by 2019, still promises scope for further potential. The global ratio of non-alcoholic to alcoholic drinks is continuing as before at around 70 to 30 percent (Euromonitor May 2015).

In Germany, in 2014, 761.7 litres per capita (including coffee, tea and milk) were drunk, that is almost 7 litres less than in the previous year. At 106.9 litres, every German drank one glass of beer more (0.3 litres) than in 2013. However, the consumption of alcoholic

drinks overall declined by the same volume to 136.9 litres per capita. The Germans also drank around 3 litres less of non-alcoholic beverages: 300.2 litres per capita (according to beverage producers' associations).

All good things come in threes: BrauBeviale 2016 date

Creative beverage culture and special treats of a professional kind will be on offer for you to experience again next year: at the third staging of the BrauBeviale triple from 8 to 10 November 2016, at the exhibition centre Nuremberg.

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swop – Shanghai World of Packaging 2015

Tremendous Success for the Inaugural 4-in-1 Packaging Show in China



swop – Shanghai World of Packaging 2015 was successfully concluded on 20 Nov, 2015 at the Shanghai New International Expo Centre (SNIEC), P.R. China. The 4-day exhibition was organized by Messe Düsseldorf (Shanghai) Co., Ltd (MDS), Adsale Exhibition Services Ltd. and the China Center for Food and Drug International Exchange (CCFDIE) and was supported by worldwide packaging and industrial associations and enterprises. The fair was comprised of four professional exhibitions which included International Packaging Material Production and Processing Exhibition (PacPro Asia), International Food Processing and Packaging Exhibition (FoodPex), International Bulk Packaging Technology and Equipment Exhibition (BulkPex) and The 20th edition of The China International Pharmaceutical and Cosmetic Industry Exhibition (CHINA-PHARM).

Altogether, 22,626 visitors from all over the world were attracted to this 4-day exhibition. Feedback has been extremely positive and participants indicated that they are eager to attend swop 2017.

swop 2015 attracted 751 distinguished enterprises covering over 50,000 sqm. Many renowned domestic and overseas companies were in attendance, including Multivac, Fawema, Hastamat, Kolbus, Aoki (Foshan), Yizumi, Morimatsu, Shenzhen Beauty Star Co., Ltd., Jiangsu Newamstar, Siemens, Ho-

rauf and Fuji. Please click here to view exhibitor statements.

"We are very pleased to see that the first swop was concluded so successfully. The show will be an important element of Messe Düsseldorf's Global Packaging and Processing Portfolio with interpack at its head. swop will be an essential international hub for top brands and professionals in Asia in the future," says Mr. Jablonowski, Global Portfolio Director Packaging and Processing from Messe Düsseldorf.

swop provided a one-stop sourcing platform for processing and packaging solutions with comprehensive coverage in the fields of food and beverage, cosmetics, pharmaceutical, and logistics. Exhibits such as in mould labelling, tracking system, packaging materials and products, food processing machinery, pharmaceutical processing machinery etc. were on display. New technologies also enhanced the comprehensive product categories.

In addition, ten large-scale seminars and conferences were held during the exhibition. Focusing on current industry trends, these activities facilitated an exchange of ideas on topics such as industry upgrades and enterprise development among others, resulting in a win-win situation for both visitors and exhibitors. Seminars and conferences were full house events and were a great success

with many participants walking away with useful market information and future enterprise development approaches. For instance, visitors who attended the FoodPex Seminar – Improve food safety, reduce food waste on day two of the exhibition not only understood more deeply about the latest regulation and production environment on food supervision, but also learned how to cope with the current packaging trend of customized packaging solutions. In addition, audiences were inspired by presentations given by Mrs. Dong Ying, R&D Associate Director of PepsiCo with the topic, Health, Nutrition, Packaging – New innovative direction of PepsiCo as well as other renowned speakers at Future of packaging from the needs of brands, which was organized by Packaging Family.

In order to improve contact between exhibitors and visitors, the organizers also promoted a "Business Matching Service" for overseas purchasers, which effectively drew buyers closer to suppliers while providing ad-hoc, on-the-spot meetings to overseas visitors.

The 2nd edition of swop – Shanghai World of Packaging 2017 will be held on November 7-10, 2017 at SNIEC in Shanghai and preparations are already under way.

Messe Düsseldorf GmbH
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From 19 to 21 April 2016, trade visitors to POWTECH in Nuremberg will get to experience the latest trends and technologies in mechanical processing technology, when around 900 exhibitors showcase their developments for manufacturing, processing and handling powders, granules and bulk solids. At POWTECH, experts from the pharmaceutical, cosmetics and food industries in particular will gain valuable insights for optimising their production processes. One hot topic on the agenda is the use of sterile technology and the need for production to satisfy the most stringent standards of hygiene. In addition, the cumulative knowhow of the pharmaceutical sector will be highlighted in the expert forum hosted by the APV (international association for pharmaceutical technology).

POWTECH 2016: Pharmaceutical sector focuses on expert knowhow and the latest processes



19th - 21st April 2016: POWTECH, Nuremberg (D)

Nowadays, a large number of production processes in the pharmaceutical, food and cosmetics sectors have to meet the most stringent requirements in respect of hygiene and sterile technology. From the raw material to the packaging stage, products ranging from instant soups to sunscreen and medicines all have to be handled and produced in accordance with the strictest hygiene regulations. As the trend barometer for life science process technologies and Europe's largest gathering place for pharmaceutical producers, POWTECH brings together a wide range of vendors and solutions with expertise in this area.

The challenge of sterile production

Advanced innovations in medicines, for example for use in cancer treatment, are increasingly relying on highly active ingredients that necessitate sterile production environments. But what is more, there must be absolutely no contact between personnel and the product. This can be achieved using containment solutions that completely

shield and isolate production processes. At POWTECH 2016, Leistritz Extrusionstechnik GmbH, for example, will demonstrate how a production facility can be built to satisfy the most stringent protection requirements according to Operator Exposure Level (OEL) 5. "A complete plant like this consists not just of dosing system and extruder but also an isolator with special design elements for cleaning and sluicing process components," explains Albrecht Huber, Head of Business Unit Pharma Extrusion at Leistritz. "Pharmaceutical extrusion is a highly versatile process for manufacturing solid dosage forms and includes downstream technologies for cooling and shaping."

The meeting place for the pharmaceutical community

At POWTECH 2016, a total of more than 375 exhibitors will showcase solutions for the entire pharmaceutical production chain. As a result of integrating the TechnoPharm fair, which used to be held parallel to POWTECH, trade visitors get to experience a wealth of pharmaceutical highlights in all six exhibition halls. The Pharma.Manufacturing.Excellence Forum in Hall 3A, organised

by the APV (international association for pharmaceutical technology), offers scope for a lively exchange of knowhow with experts and peers. Visitors can expect a wide-ranging programme covering the production of solid, semi-solid and liquid dosage forms and the latest research in this area. The agenda includes presentations and workshops exploring the theory and practice of such topics as sterile technology, analysis, validation and GMP. A current list of exhibitors and further information about POWTECH is available from: www.powtech.de

The latest developments in particle technology

Parallel to the fair, the Nuremberg Exhibition Centre will also be welcoming PARTEC, the international congress for particle technology. PARTEC brings together leading particle engineers and scientists to share knowledge about the latest developments in particle formation, agglomeration and coating processes as well as measuring techniques and various industrial applications for particles.

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The health economy has exciting topics on its agenda: Digitalisation, networking and “wearables” create a dynamic effect

The new set of dates for the MEDICA and COMPAMED have been widely approved – the federal government shows its impressive presence

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

The new set of dates running from Monday to Thursday has been widely accepted by the specialist visitors of the world's largest medical trade fair, the MEDICA 2015, as well as the specialist supplier trade fair, COMPAMED 2015, being held in parallel. Both were well received right from the start this year. “The 19 trade fair halls were intensely visited without exception. The concentration of the MEDICA + COMPAMED during the normal working days of the week offers the specialist audience an even wider variety of travel planning options. This time, that had a positive effect on the well-visited trade fair forums as well as the accompanying conferences. Here, the many programme highlights were very popular on all days,” said Joachim Schäfer, managing director of Messe Düsseldorf GmbH.

From 16 - 19 November, 2015, 130,000 specialist visitors from around 120 nations came to Düsseldorf (previous year: 128,500). The portion of international visitors amounted to just over 50 percent, a strikingly large number came from the foreign markets of the USA, Latin America and especially from Iran and countries located in the Arabic-speaking regions. “The MEDICA is and shall remain a top event for decision-makers across all country borders,” Joachim Schäfer added with respect to the fact that 96 percent of the visitors have decision-making power. For the first time, the complete spectrum of innovations for out-patient and clinical care were offered by almost 5,000 exhibitors from 70 nations to experts from hospitals, practices, laboratories, the retail sector as well as from industrial ranks and cost bearers (insurance companies) that are especially relevant with regard to investments.

The exhibitors especially benefit to a great extent from MEDICA's high level of internationalisation on the side of visitors. This is because the medical industry is developing in a dynamic and unchanged manner, being particularly driven by the export business. For the coming year, the companies organised within the Federal Association of Medical Technology (BVMed e.V.) expect an increase in sales of 6.8 percent on a worldwide level, whereas growth of 4.3 percent has been forecast for the German market. For the MEDICA 2015, the industry associations SPECTARIS and ZVEI have confirmed an evident growth of at least six percent for their member companies, also resulting from the “solid” growth levels of the business in Western Europe. In accordance with this, the sales volumes of German manufacturers is currently at around 27 billion euros at an export quota of 68 percent. Nevertheless, the German market, which is virtually just outside the gates of the MEDICA trade fair, will remain quite lucrative from an industrial perspective. Following the USA and trailing right behind Japan, it is considered the third largest market for medical technology and medical products. Germany also scores top marks with its good healthcare infrastructure, a good level of care for patients, well-educated medical professionals and high standards regarding clinical research.

Gröhe and Wanka provided for political momentum

In order to guarantee this high level shown in a worldwide comparison in the future, not one, but two members from the ranks of the federal government used the MEDICA as premium platform for discussion and communication of current political issues. On the occasion of the opening of the MEDICA 2015, at the 38th German

The new set of dates for the MEDICA and COMPAMED have been widely approved

Hospital Conference, the Federal Minister of Health, Hermann Gröhe, underlined the significance of the planned hospital structure law to improve the financial resources of German hospitals. Following this, at the MEDICA ECON FORUM, he discussed current health policy issues. On the occasion of the opening of the MEDICA 2015, the Federal Minister of Education and Research, Professor Johanna Wanka, presented, at the MEDICA HEALTH IT FORUM, the federal government's pioneering funding concept for medical informatics. It focuses on exactly what is still currently lacking in many cases: Many medical data are saved, scattered around hospitals, clinics or other medical institutions – often not even in digital form. Federal Minister Wanka highlighted that due to this, innovative IT solutions are in demand to provide for improved consolidation of data. "One of the largest subject-matter focuses of the MEDICA entails the digitalisation of the medical field. That is why the MEDICA 2015 is the ideal place to present the development concept of medical informatics. For us, it mainly concerns using medically relevant data for the well-being of patients. If these data are systematically evaluated, more precise diagnoses and improved therapies can be derived therefrom as a result."

The digital "revolution" could be based on patients

The MEDICA visitors were able to be impressed with regard to numerous innovations presented by exhibitors in the face of the digital future already taking shape in very specific ways, but also by the lectures and presentations that were being held at the MEDICA CONNECTED HEALTHCARE FORUM (with the MEDICA App COMPETITION) or the MEDICA HEALTH IT FORUM. For this reason, among other things, projects and IT applications were presented providing a live connection to the patient, from the hospital bed into a classroom by means of the Internet, tablet PCs and a controllable robot or also the project entailing a telemedical consultation session to improve medical care in rural areas.

In particular, "wearables" and smartphones in combination with special health apps which can also be used by patients themselves have the potential of becoming an essential element of networked health in the future. The product innovations at the MEDICA 2015 included the first mobile 22-channel ECG system for tablet PCs and smartphones. The system not only makes the diagnosis of arrhythmias possible, but also the diagnosis of circulatory insufficiency (the early signs of a heart attack). A high level of interest was also shown for a mobile analysis tool to measure emotions for the optimum management of stress or a device similar to a Frisbee disc with a mobile telephone connection for the precise analysis of sleep activities – at a sleep laboratory level, but for uncomplicated use under the mattress in one's own bed. Everyone was also able to gain an impression at the "Wearable Technologies Show" (in hall 15) of "where the journey will go from here" and what analysis data patients will possibly be confronting their physicians with in the near future. The variety of devices ranges from lifestyle products, such as fitness trackers, to intelligent glasses and hearing devices, all the way to the latest trend – intelligent patches that continually retrieve physical data, but that can also administer medications in a minimally invasive manner.

In general, the miniaturisation trend in the field of medical technology is continuing. This also applies with reference to devices and systems that should only really be used by "professionals in the field". This includes, for example, extremely compact devices with sizes that are suitable for jacket pockets for medical imaging, whereby that can still be taken to extremes. This is because an ultrasound device was presented at the MEDICA 2015 consisting of a mere transducer having a connection to a tablet PC with a matching app. Also new: a system with a wireless transducer for particular freedom of movement during ultrasound examinations.

Supporting programme is well received at an international level

During the accompanying conferences, a subject of discussion was also made concerning how such medical technology innovations can bring about an optimum level of benefit within the scope of the daily routine at many medical institutions. In particular, these included the DiMiMED for military and disaster medicine, which also received good international participant feedback with its presentations held in English, as well as the MEDICA PHYSIO CONFERENCE conceived especially for physiotherapeutic treatment concepts.

The MEDICA EDUCATION CONFERENCE, organised by the German Society for Internal Medicine (DGIM) and Messe Düsseldorf, offered many interdisciplinary and international programme highlights within the scope of 56 events with 168 speakers from Great Britain, the Netherlands, Sweden, Austria and Poland, among others. The connection between science and medical technology was the common theme of the presentations. Thereby, with topics such as surgical robotics, gerontotechnologies, image fusion and interventional therapies, the select focuses of the four conference days ideally built a bridge to the innovations of the MEDICA exhibitors and were well received by the participants," said the conference president, Professor Hendrik Lehnert, confirming the subject-matter focus in the concept of the continuing education event.

Once again, the 38th German Hospital Conference, which was accompanied in a complimentary manner this time by the internationally oriented 3rd European Hospital Conference, was on the one hand dedicated to health policies according to the motto "Reform 2015 – conceived from the perspective of patients". On the other however, "substantial issues" were also dealt with within the programme for approx. 1,900 participants from the field of hospital management. During the sessions of the IT initiative "ENTSCHEIDERFABRIK", it was shown how company success can be increased by means of using IT. For example, a current hospital project that was presented is dedicated to process optimisation in emergency departments, which are considered to be cost-intensive – taking into consideration all relevant "interfaces" by means of improved communications and data exchange (e.g. between the A+E unit, the operating theatre and hospital bed planning).

Suppliers as partners for the entire supply chain

Being the leading trade fair for suppliers of the medical technology industry and being held for the first time during the course of four days, the COMPAMED took place in connection with the MEDICA already for the 24th time. A record number of 779 exhibitors presented technology solutions and services for the entire medical technology supply chain to the 18,800 specialist visitors in halls 8a and 8b – from the development to approval, all the way to mass production and sales, as well as spare parts handling. For example, the joint stand of the IVAM – the German Industry Association for Microtechnology – as well as both specialist forums integrated into the COMPAMED made the continuous miniaturisation a subject of discussion, entailing increasingly more compact and, at the same time, more complex systems. Highlights at the COMPAMED 2015 include, among other things, smart sensors for use in "wearables", microsystem technology applications for intelligent implants or also printed electronics (made a topic of discussion in a session of the IVAM forum by the VTT Technical Research Centre of Finland).

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The new Systec & Solutions tilt adapter

The new Systec & Solutions tilt adapter for just the right viewing angle



Alongside the ergonomic height adjuster, a tilt adapter is now also available from Systec & Solutions for TROLLEY systems as well as for floor and ceiling-mounted installations. This permits simple adaptation of the HMI system tilt angle to suit different work situations.

The new tilt adapter is made entirely of stainless steel and satisfies the requirements of safety class IP65. Internal cable routing through the adapter means there are no additional holes or edges. The tilt adapter is designed for maximum flexibility and ease of cleaning. With the adapter, the HMI system can be tilted forwards or backwards by 35° from the vertical, thus providing an overall tilt angle of up to 70°.

Another particularly user-friendly feature is the ergonomic height adjuster, which is also made entirely of stainless steel. Adjustment is performed by means of an integrated cylinder similar to those used in standard office chairs. Once the release mechanism has been actuated, the position of the monitor can be set with a minimum of effort.

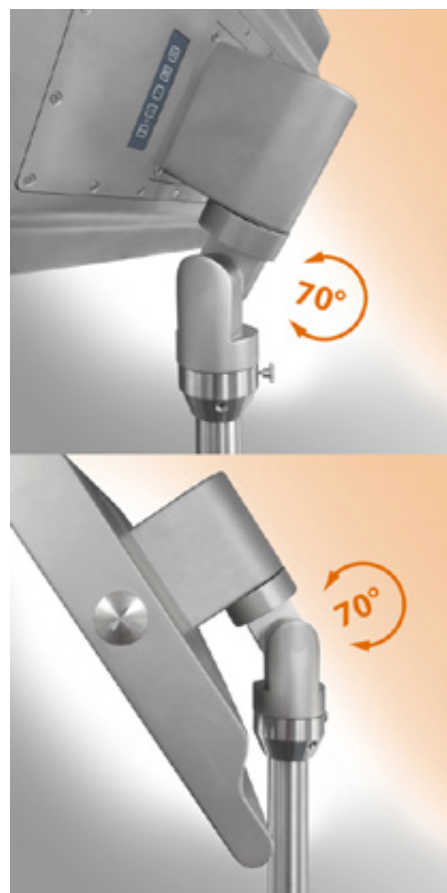


Figure 1: Tilt adapter (Image rights: Systec & Solutions GmbH)

A new member for the PILOT family. In the future the Systec & Solutions product range will be rounded off by the PILOT 221 with a 21.5" IPS full HD display and PCT Multi-Touch.

Multi-Touch for the pharmaceutical and foodstuffs industries now also in 16:9 full HD



As with the PILOT 219, the front is made up entirely of a non-reflecting glass multi-touchscreen flush-mounted without edges in the stainless steel casing. Capacitive illuminated buttons on the front enable the system to be operated without mechanical keys. The multi-touch screen offers 5-finger gesture operation and supports all standard operating systems, such as Windows, Linux and QNX. For the foodstuffs industry the glass front is of shatter-proof design and

provided with a laminated protective film. Upgrading to a glass keyboard with further operating options is possible at any time.

The integrated IPS display with a viewing angle of up to 180° is fixed to the touch panel by optical bonding and provides particularly sharp images. The PILOT is ideal for use in industrial production as well as in areas with increased cleaning and hygiene requirements and is available as industrial PC, e.g. i7, monitor or ultra-thin client.



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The website www.eplusecal.com provides information about all the calibration services offered by E+E Elektronik. (Photo: E+E Elektronik GmbH)



BEV/E+E calibration certificate with CIPM MRA logo. (Photo: E+E Elektronik GmbH)

E+E Elektronik maintains the national standards for humidity and air velocity in Austria as a designated laboratory of the Federal Office for Metrology, BEV (Bundesamt für Eich- und Vermessungswesen). Recently, the International Bureau of Weights and Measures (BIPM) authorized E+E Elektronik to use the CIPM MRA logo (International Committee for Weights and Measures - Mutual Recognition Arrangement) on its BEV/E+E calibration certificates.

Only National Metrological Institutes (NMI) and their designated laboratories, which are the highest metrological authorities of a country, are permitted to use the CIPM MRA logo. The prerequisite for this is that their Calibration and Measurement Capabilities (CMC) data is listed in the BIPM Key Comparison Database (KCDB). A certificate issued by a laboratory under the CIPM MRA is accepted by assessors from Conformity Assessment Bodies with the highest level of confidence.

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participates in international measurement comparisons and established a quality management system certified according to ISO 17025.

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The website www.eplusecal.com provides an overview of all E+E calibration services including online calibration request.



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