



Advances in glovebox gloves enable greater protection and increased longevity

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Gloveboxes play a vital role in protecting products from human or environmental contamination as well as protecting individuals and environments from workplace hazards. Designed to provide a controlled, enclosed work environment that is separated from workers by a barrier, they ensure the containment of sensitive and critical materials. The environment inside a glovebox is typically sterile or clean and pressurized, either positively or negatively, to meet the specific requirements of the application.

Gloveboxes are used widely across various industries, from pharmaceutical and electronics manufacturing, to food processing, nuclear applications and more. In pharmaceutical companies alone, it is common to find between 30 and 600 glove ports employed per site. Due to the propensity of sensitive materials utilized in the life sciences, any of three different types of gloveboxes may be used; each is designed for the specific hazards present or level of cleanliness required.

Containment gloveboxes

Containment gloveboxes are specifically designed to protect the operator and ambient environment from the material being processed. Normally operated under negative pressure, containment gloveboxes are commonly found in pharmaceutical applications relating to the development of oral treatments, neurological pain drugs,

enhancing drugs, nuclear medicine and other potent drugs. Activities such as weighing and dispensing, filter drying, reactor charging, dryer discharging, centrifuging, blending, fermenting, powder transfer, drum charging, sampling and toxic animal handling are conducted in containment gloveboxes.

Isolation gloveboxes

Isolation gloveboxes protect the material being processed from the operator and/or the environment. Normally operated under positive pressure, isolation gloveboxes are used in applications such as aseptic drug manufacture and filling and the development of parenteral (injectable) drugs. Functions frequently conducted inside isolation gloveboxes include sterile liquid filling, freeze drying, powder filling, tablet pressing, autoclave interfacing, sterility testing and transferring.

Isolators

The third type of glovebox is an isolator, which combines features of containment and isolation gloveboxes, and includes both positive and negative pressure zones. In life sciences applications, these are used in the manufacture of cytotoxic parenteral drugs, some chemotherapy drugs and biopharmaceutical cancer drugs. Capable

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of ensuring an ultra-clean and ultra-contained space for product protection, isolators are used to contain some of the most dangerous and toxic materials known to man.

GLOVE INTEGRITY IS CRUCIAL

The gloves used inside any type of glovebox provide the vital interface between the worker and the interior glovebox environment, and must maintain a clean, reliable barrier while allowing the worker to effectively conduct manual tasks.¹ The gloves' integrity is crucial, therefore, as a glove breach is a breach in containment that puts workers and/or products at risk of contamination. Because gloves are the weakest protection point of the glovebox, minimizing breaches in the gloves is a significant safety concern in daily operations across life sciences applications.

While glovebox gloves are available in a variety of materials and configurations, the primary factor in selecting a glove is the material from which it is constructed. First and foremost, glove material must be approved for use among the hazards present, such as chemicals or radiation. Glove material is then selected based on other application-specific characteristics including aging and anti-static properties, mechanical performance, FDA compliance and its ability to resist punctures or tears. Ultimately, the glove should ensure the greatest possible protection, comfort, fit and tactility required to conduct manual tasks safely, effectively and efficiently for the duration of its use.

While glovebox gloves have traditionally been manufactured of natural rubber latex and CSM, recent advances in materials such as nitrile offer significantly improved protection, reliability and longevity.

With so many critical factors playing into both the safety of ultra-sensitive products and the protection of workers, it is easy to see why selecting the highest-performing glove is crucial in achieving best practices. This article looks at the differences between traditional and innovative glove materials to help safety managers select the safest, most effective and longest lasting glovebox gloves.

PREPARING GLOVES FOR USE

When considering a glove's overall performance and longevity, one must look not only at the various ways the glove is actively used, but also what the glove is exposed to throughout routine operations. For instance, when gloves reach the end-user, they may undergo sterilization prior to being mounted onto the glovebox. In most cases, gloves are washed in a non-sterile, or dirty, washing room, then wiped down using disinfectants, such as 70 percent IPA (isopropyl alcohol), biocides or a combination of the two. Next, the gloves move into a cleanroom area and sterilization occurs either here or when they are mounted onto the port, a process also referred to as sterilization in place (SIP).

Decontamination and sterilization are achieved through various methods depending on the application, and may include autoclave with high heat or hydrogen peroxide, or other means of environmental and/or chemical exposure. Each time gloves undergo sterilization, they are affected to varying degrees based on the type of glove material and the decontamination methods used. Therefore, the number of sterilization cycles a glove can undergo before replacement should be assessed on an individual basis. Over their service life, glovebox gloves will be exposed to the rigors of decontamination and sterilization processes as frequently as needed.

CHANGING GLOVES

The frequency with which gloves are replaced varies based on the application and depends on a number of factors including degradation of physical properties due to the sterilization process, the presence of pinholes or tears, which represent a breach in the barrier, and overall age of the glove. Over time gloves degrade as a result of exposure to chemicals, ultraviolet light, ozone, ionizing radiation, extreme heat or cold, excess stress and strain, and general wear. Finally, gloves may be replaced due to a product batch change, as a means to avoid cross contamination. By making informed decisions about the type of glove material used, employers can increase the longevity of reliable performance and protection afforded by the gloves – which reduces downtime, improves productivity and promotes cost savings.

KEYS TO PROMOTING GLOVE LONGEVITY

As a general rule, the glovebox glove should be treated as though it is the operator's skin. While it must be strong and thick enough to provide an impenetrable barrier, it must also ensure the comfort, elasticity and tactility required to ensure manual tasks can be carried out as required. In order to reduce glove replacement, operators should employ general precautions, such as avoiding direct contact with anything that can degrade, puncture or tear the glove, such as sharp or hot objects or corrosive chemicals.

The way in which gloves are stored can also significantly impact their useful lifespan. Because exposure to ultraviolet light and naturally occurring ozone degrades some glove polymers, it is important to



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avoid storing gloves in the open when they are not yet mounted. For the greatest longevity, store gloves in their original, sealed packaging away from direct light sources until they are to be used.

Beyond these general guidelines, there are many characteristics specific to different materials that directly affect glove performance. Below is a closer look at the attributes of common glove materials as well as brand new offerings and the unique properties they offer.

GLOVE MATERIALS AND THEIR PROPERTIES

Natural Rubber Latex (NRL)

Natural rubber latex is an extremely common and versatile glove material employed across a multitude of industries and applications. An organic compound with highly elastic properties, NRL is prized for its exceptional comfort and fit. Since it meets FDA compliance for food processing, it may safely be used in slicing, packaging, filling and capping applications. NRL is easy to manufacture and is readily available in a range of low-cost price points.

In glovebox applications, however, NRL does not stand up to multiple autoclave cycles and may age more rapidly than other materials. The largest detractor to using NRL gloves in gloveboxes, though, is the health challenge they pose to a large number of workers who experience allergic reactions ranging from skin irritation to anaphylaxis, a potentially life-threatening condition.² Workers can be affected from direct contact as well as by inhaling airborne latex particles released when someone removes latex gloves.³ While hand dermatitis is the most common condition associated with latex allergy⁴, reactions can worsen or individuals who were previously not allergic to latex may become sensitized with repeated latex exposure.

Overall, NRL gloves deliver excellent physical performance in most applications, but short glove life, lack of heat and chemical resistance and worker allergies pose sizable hurdles to widespread glovebox application adoption.

Neoprene (polychloroprene)

Neoprene, also known as polychloroprene, is a family of synthetic latex products produced by the polymerization of chloroprene.⁵ In glovebox applications, neoprene gloves deliver very good elasticity and tactile comfort, though they are not quite as strong as NRL. Neoprene provides slightly increased chemical resistance over NRL, is somewhat flame retardant, and does not pose an allergy risk to workers, making it a popular choice for glovebox applications.

Neoprene ages better than NRL, it withstands a fairly comparable number of decontamination cycles before requiring replacement. While it does not meet FDA compliance for food processing applications, it does offer better chemical resistance against a higher range of chemicals over NRL. Overall, neoprene's increased chemical resistance without the risk of allergies make it a more suitable choice for a variety of life sciences glovebox applications.

Nitrile

Nitrile is a synthetic, non-solvent based, FDA approved polymer and is an ideal alternative to latex, where the risk of latex allergies is a concern. With excellent anti-static properties preventing the buildup of static electricity Nitrile is ideal for use with flammable liquids and powders. Nitrile can withstand temperatures of up to 121°C and mul-

tiply autoclave cycles and does not become sticky like CSM. It can also be sanitized by Gamma Irradiation, Vapourised Hydrogen Peroxide (VHP) and Isopropyl Alcohol (IPA) and non-sterile options can also be washed and processed and packaged within a cleanroom environment, ensuring the gloves are an ultra-low contamination risk before being introduced into the isolator glove box.

Nitrile has major benefits over traditional materials in physical performance with superior puncture resistance, dexterity and user comfort, it also offers excellent chemical resistance providing >8 hours permeation protection against many cytotoxins and the ability to maintain its properties after gamma irradiation. Nitrile better meets the needs of life sciences applications with significantly improved comfort, protection and performance.

EPDM+ (ethylene-propylene-diene-rubber)

EPDM+ is a premium FDA-approved material (FDA CFR 21 Positive List) designed to withstand repeated autoclave sterilization up to 50 times, significantly reducing the need for glove replacement in comparison to standard latex, neoprene or CSM gloves. EPDM+ is resistant against hydrogen peroxide solutions and common disinfecting chemicals, and withstands temperatures up to 130°C to ensure longevity even after dozens of sterilizations, making it durable and long lasting.

EPDM+ is also unique in its double-layer breach detection system. The glove's dual-tone coloring — a white outer material covering a black inner layer — allows for easy, instant visual integrity inspection. The glove's white external layer makes it ideally suited for pharmaceutical applications where visual identification of breaches and contaminants is vital.

EPDM

EPDM features all the same advanced qualities in comfort, protection, durability, heat and chemical resistance, and FDA compliance as EPDM+. The EPDM glove does not feature the white outer layer of an EPDM+ glove.

While gloves with higher protective qualities are traditionally less comfortable to wear, EPDM gloves deliver not only extreme protection and ruggedness, but also a high level of comfort, dexterity and tactile sensitivity to support workers' muscle activity and enable fine manual tasks. Available in both medium and heavy weights, the increased thickness of heavy-weight EPDM gloves (24mil/0.6mm) adds durability for heavy duty applications.

EPDM resists aging from exposure to oxygen, UV rays and ozone, lending to the material's longevity, and because it is halogen-free, EPDM is suitable for disposal by incineration. Because the glove material is fully conductive, it is exceptionally suited for semiconductor applications, and its dark coloring makes it an ideal solution in the production of dry powders.

CSM (chlorosulfonated polyethylene)

CSM is a synthetic material, and gloves constructed of it offer a combination of excellent comfort and extreme chemical protection, making them ideally suited for use in critical, heavy duty environments. Available in both medium and heavy weights, the inherent thickness of CSM gloves increases their durability and augments the glovebox's physical barrier, while their soft, flexible attributes lend to worker comfort and muscle support to improve productivity.

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CSM delivers a high level of resistance against concentrated acids and bases such as nitric acid, hydrochloric acid and ammonia, as well as many oxidizing chemicals and alcohols, and can withstand temperatures of up to 120°C, making it an excellent choice among high heat or flammable solvents. Because CSM gloves deliver improved autoclave and gamma performance as well as significantly greater resistance to aging from exposure to UV and ozone compared to neoprene and latex gloves, their use reduces the frequency of glove replacement and downtime. After two to three autoclave cycles, however, the CSM glove's material will degrade and require replacement.

CSM glove material is white, making contamination easy to detect, but it does not meet FDA standards. Overall, CSM gloves deliver increased worker comfort and product protection which in turn afford greater durability, fewer glove changes and excellent performance in heavy-duty, high-hazard environments.

Nitrile, EPDM+, EPDM and CSM gloves are designed to deliver the highest level of product and worker protection, along with extreme

resistance and durability qualities for long-lasting use. Ideally suited for critical applications, these materials offer a diverse range of solutions tailored for the life sciences industry.

Conclusion

While many variations of glovebox glove materials have served life sciences companies for decades, none have come close to delivering the innovative combination of attributes offered by Nitrile, EPDM+, EPDM and CSM. In an industry where a single glove breach can jeopardize overall operations, selecting the appropriate glove for the application is vital. By choosing high-quality glove materials built for optimum comfort, protection and longevity, and manufactured by a trusted, proven leader, employers benefit from decreased risk and increased productivity – a winning combination in any facility.

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1. American Glovebox Society AGS-G001-2007, <http://www.gloveboxsociety.org/index.asp>
2. Mayo Clinic, "Diseases and Conditions: Latex Allergy," <http://www.mayoclinic.org/diseases-conditions/latex-allergy/basics/definition/C0N-20024233>
3. Mayo Clinic, "Diseases and Conditions: Latex Allergy," <http://www.mayoclinic.org/diseases-conditions/latex-allergy/basics/definition/C0N-20024233>
4. U.S. National Library of Medicine, National Institutes of Health, "Workers' compensation claims related to natural rubber latex gloves," <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC128812/>
5. Wikipedia, "Neoprene," <https://en.wikipedia.org/wiki/Neoprene>



December 2019

Dear subscribers,

there is a lot for us to do at the moment:

- preparations for the Lounges 2020 in Karlsruhe at the end of January but most of all:
- work on the Cleanroom Yearbook 2020, which will be published in mid-January.

In the current issue of the cleanroom online newsletter you will find among others articles on the following topics:

Advances in glovebox gloves ...

Pharmaceutical packaging – high tech for our health

Flexibility through collaborative work

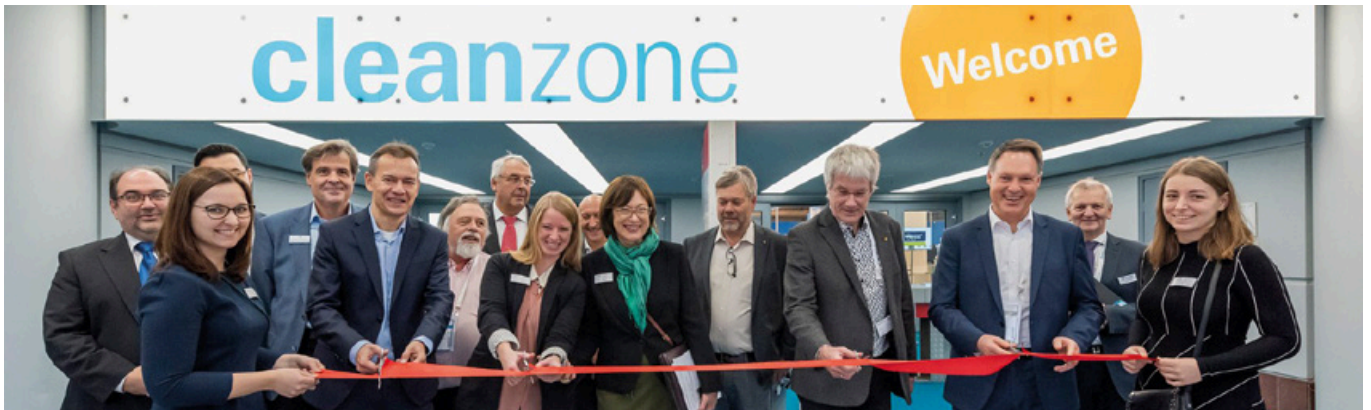
...

I hope you enjoy reading our newsletter and I wish you a peaceful and beautiful pre-Christmas period.

Yours sincerely

Reinhold Schuster





Cleanzone 2019 – a wealth of innovations for high-tech industries



Digitalisation, production efficiency and the use of robot technology: On 19 and 20 November in Frankfurt am Main, Cleanzone 2019 showcased innovations for controlling contamination hazards in high-tech production. From airlock entry to packing, 80 providers were on hand to present pioneering solutions for the full scope of complex material flows in cleanrooms.

Automation solutions designed to make cleanroom processes run more smoothly were in great demand, as were monitoring systems covering the entire production process in real time to ensure effective contamination control. Plant engineering was a major focus at Cleanzone 2019, with the industry's market leaders sharing expertise on modular and flexible cleanroom systems. Visitors were able to gain even more information on issues such as dealing with nanoparticles, new materials and resource efficiency at the Cleanzone Conference, which was supported by the three most important organisations representing the interests of the cleanroom industry for the first time this year: the German Cleanroom Institute (DRRI), the Association of German Engineers (VDI) and the International Confederation of Contamination Control Societies (ICCCS). At the Cleanzone Campus, research institutes and universities presented their latest projects dealing with such topics

as airflow simulations, calibrating measuring equipment, and developing optimum airflows for hot processes like injection moulding.

One of the highlights was the Cleanzone Award, which was presented by Messe Frankfurt and the publisher Wiley-Verlag with its ReinRaumTechnik trade journal for the first time in 2019. From the eight exciting innovations that were finalists for the award, trade fair visitors chose the Friedrich Sailer company as the winner of the 2019 Cleanzone Award, which comes with 3,000 euros in prize money.

Wolfgang Marzin, President and Chief Executive Officer of Messe Frankfurt: "Cleanzone demonstrated yet again in 2019 that it is the industry's international forum for innovation. Providers and users of cleanroom technology from every discipline and an array of countries once again came to the trade fair to network and share ideas."

10.11. - 11.11.2020:
CLEANZONE 2020
Frankfurt am Main (D)

Cleanzone drew 1,300 participants from 42 countries (2018: 1,300 participants from 38 countries). Yet again, international visitors accounted for more than 30 percent of the total. Besides Germany, the most important visitor nations included Austria, Turkey, the Netherlands, Great Britain, Switzerland, the Czech Republic, Japan, Italy, Spain and Korea. Most of the trade visitors came from the pharmaceuticals, microelectronics and biotechnology industries, and there were representatives from numerous companies at the trade fair, including Novartis, Nestlé, Bosch, Boehringer Ingelheim, Carl Zeiss, Trumpf Lasersystems and Sanofi Aventis, as well as various university hospitals.

* DRRI: German Cleanroom Institute, VDI: Association of German Engineers, ICCCS: International Confederation of Contamination Control Societies



(Source: Messe Frankfurt)

cleanzone

cleanzone
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Pharmaceutical packaging – high tech for our health



Author: **Melanie Streich**

Chronic diseases are more widespread than ever before. In industrial nations and, increasingly, in developing countries as well, they are among the most common and economically relevant health problems.

The health sector's global economic factor is accordingly high, and simultaneously acts as leverage for the pharmaceutical industry, which invests a comparably high share of its revenue in research and development (R&D).

In light of global demographic changes, the industry's development opportunities are excellent. People are living longer and more health-conscious lives – which further increases the high-tech sector's growth outlook. Growing drug development requirements result in a parallel increase in systems and machine technology demands in the field of packaging and bottling medicines. "Today, pharmaceutical companies need integrated solutions. Machines provide the foundation for these. An extensive service offer and digital solutions in particular are gaining in importance," explains Norbert Gruber, Chairman of the Executive Board at Uhlmann, which provides systems for packaging pharmaceuticals in blister packs, bottles and boxes. The German family business, which has more than 2,300 employees around the world, has accordingly positioned itself as an innovative and digitalised company at interpack 2020, the world's leading trade fair for the packaging and associated process industries.

From 7 to 13 May 2020, the trade fair presents further cutting-edge solutions that the industry has to offer. As a focal point for pharmaceutical packaging, Halls 15 to 17 offer visitors the opportunity to find out more about innovative packaging and process developments for this specific industry. The other halls also showcase corresponding solutions: The approximately 1,000 companies with exhibits on Industry 4.0, digitalisation, automation, personalisation, track and trace and many other interesting topics from the field of pharmaceuticals represent a significant share of the around 3,000 exhibitors at interpack.



More and more Uhlmann solutions are made of bits and bytes instead of steel and safety glass. (Photo: Uhlmann)

Pharmaceutical market forecast

According to figures released by market research company IQVIA, global expenditures for pharmaceuticals are expected to increase to 1,43 trillion US dollars by 2022. In comparison: In 2006, expenditures amounted to 658 billion US dollars. The highest amount is spent on cancer medication and biopharmaceuticals.

The reasons for this increase in market growth are quite apparent: Demographic change with a rise in older patients and increasing urbanisation with a growing middle class are the determining market factors for the pharmaceutical sector and the associated process and packaging industries.

The future of biopharmaceuticals

Whilst in pharmerging countries, more and more people are gaining access to traditional medicines such as painkillers and antibiotics, industrial nations are increasingly employing new, complex active ingredients and innovative treatments.

In the pharmaceutical sector, biotechnology is considered a key technology in the global fight against severe diseases such as can-



Bausch+Ströbel believe in flexible system solutions with fast module changes, short sterilisation cycle times and expandability. (Photo: Bausch+Ströbel)

cer and autoimmune diseases. Their share in the medical market has almost doubled in the past ten years and has thus become a decisive factor for the process and packaging industry.

Sophisticated processing

Highly effective medicine is accompanied by considerable demands on packaging and processing technologies, particularly with regard to bottling and packaging solutions. When manufacturing biotech medicines, avoiding contamination is essential. Special containment solutions aim to prevent said contamination.

Isolators are one such example. Liquid medicines can be processed under sterile conditions in vials. Pre-filled syringes also contribute to an increase in safety. They help prevent dosage errors and also eliminate contamination when changing needles. In the hectic daily life of practices and clinics, pre-filled syringes and pens also save precious time. Authenticity checks performed on complex purification processes using combined sensor technology and mathematical models ensure that quality controls can be performed much more quickly with increased process accuracy.

Pharmaceutical packaging – high tech for our health

Pharmaceuticals and packaging: True team play

When manufacturers launch new pharmaceuticals, they depend on the market and technology competence of machine, systems and packaging manufacturers and processors. Time limits on patent protection require fast and flexible solutions that have to guarantee scale-ups from small laboratory amounts to high volumes in larger plants.

Optima is a single-source provider of packaging machines and bottling and production systems. To ensure that newly developed products can be launched as quickly as possible, Optima uses the CSPE method, which will be one of the company's central topics at interpack 2020. This method reduces delivery times and significantly accelerates the commissioning of pharmaceutical systems. "In light of increased development periods and costs on the one hand and increasingly tough international competition on the other, the time between concluding the approval phase and launching the product has to be kept as short as possible," explains Gerhard Breu, Chairman of Optima's Pharma division.

At the same time, companies require reliable packaging machines and bottling systems that are easy to use and clean, and that can be retrofit without great effort. Pharmaceutical service provider Harro Höflinger provides support in the early stages. His clean rooms and laboratories can depict extensive processes in a controlled environ-

ment, whilst test setups allow clients to check critical steps in advance. "Our clients increasingly ask to test their own substances and critical conditioning products on machines designed by Harro Höflinger. Our clean rooms and laboratories are the perfect place to implement these tests. They allow us to recognise and minimise risks at an early stage – the basis for quick and safe scale-ups to commercial manufacture," explains Stefan Mayer, Senior Director Process Services.

Protection against counterfeiting

In the pharmaceutical field in particular, strict legal provisions and guidelines apply that are of extreme importance for all parties involved in the process and that at the same time mean tremendous investments for the affected companies. Since February 2019, prescription medicine in the EU has to be equipped with tamper-proof seals that ensure that the packaging has not been opened.

Serialisation on the packaging is now also a legal requirement. All affected packaging has to be equipped with a two-dimensional datamatrix code that uniquely identifies the medicine and confirms its authenticity. This code contains information on the batch number, the expiration date, the serial number and the national reimbursement number.

These new regulations have far-reaching consequences. In individual cases, production facilities have to be expanded, constructed or modified to accommodate new serialisation units. The expansion of the IT infrastructure in particular is a true feat of strength for many companies and is associated with high costs.

Körber Medipak Systems offers extensive solutions that protect patients against counterfeit medicine. Pre-serialised folding boxes with tamper-evident seals and targeted system solutions put a stop to counterfeit medicines in the legal value chain, as packages now visibly and unambiguously show whether they have been opened or not.

The silver generation

By 2050, global population will reach 9.7 billion people; a mere 50 years later, this number is expected to increase to 10.9 billion, according to the most recent UN global population forecasts released in June 2019. In 2050, every sixth person in the world will be over 65, with a total of 426 million people over the age of 80. This equates to triple the 2019 numbers, with 143 million people over 80.

These demographic changes also mean a rise in diseases that increasingly occur with age. These include diabetes, rheumatism, multiple sclerosis as well as dementia and Alzheimer's disease. The affected patients require particular administration methods, depending on the type of complaint and symptoms. Pre-filled syringes and auto injectors help people with limited mobility regularly administer their medicine themselves.

The packaging industry offers smart packaging for patients whose sight and hearing are dwindling or who are losing their finger strength and motor skills. One of these innovations was created by pharmaceutical technology provider Romaco Siebler. In cooperation with foil experts Huhtamaki, Romaco Siebler developed Push Packs, which are equipped with special, accessible features and allow patients to easily push tablets out of the foil. "Push Packs are an affordable alternative to cold-formed aluminium-aluminium blister packs (Al/Al blister packs). As the packaging foils are a lot thinner, they require less material. This reduces packaging costs in direct comparison by up to 60 percent," calculates Jörg Pieper, CEO at Romaco Holding.



Child-proof, suitable for senior citizens and sustainable. Patients can easily push tablets out of the Push Packs by Romaco Siebler and Huhtamaki. (Photo: Romaco Siebler)



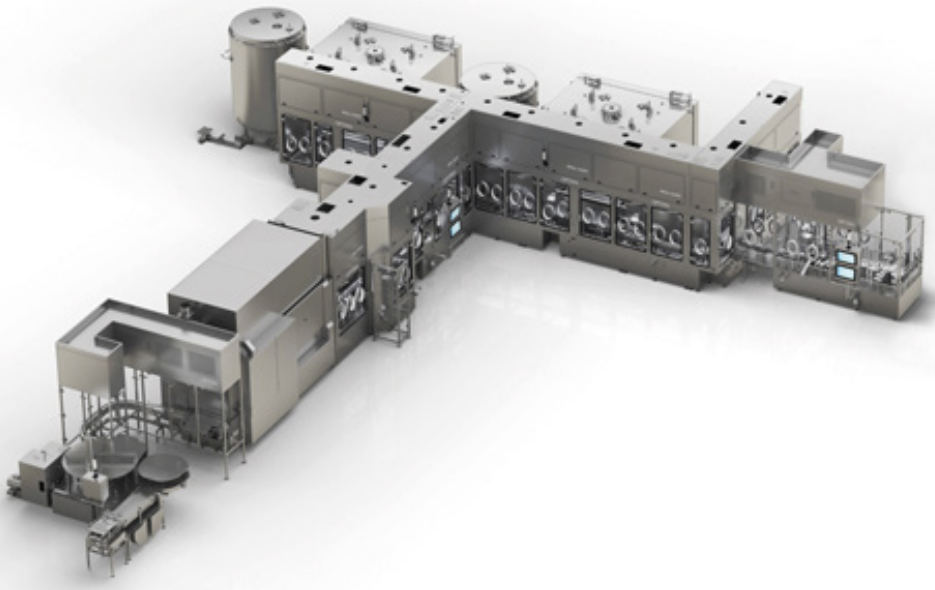
Medical packaging has to protect highly sensitive products from external influences. (Photo: Marchesini Group)

Pharmaceutical packaging – high tech for our health

Tailor-made medicine

Personalised medicine will change the global health system considerably in the years to come. Studies have shown that more than 70 percent of all pharmaceuticals currently in development have been customised to meet the needs of specific patient groups. In cancer therapy, individual medicine is already common and is to supplement standard therapies in future. Scale-out solutions for machines

ve more quickly and without additional liquid intake. They can also be equipped with more active ingredients. This particularly benefits patients who have difficulty swallowing and who depend on various tablets. However, experts say it will be quite some time before patients can print their own prescription medicine, with an individual formula put together by their doctor, in the comfort of their own home. The current fields of application are limited exclusively to highly specialised, individual medicine.



Optima's CSPE process helps pharmaceutical companies launch their newly developed products as quickly as possible. (Photo: Optima)

and equipment enable the production of smaller batch sizes. Here, existing equipment is copied exactly for other locations. This requires clearly defined processes and machine technology with a high degree of automation.

More and more pharmaceutical manufacturers require flexible bottling and packaging systems that allow them to work on small batches with maximum efficiency. Bausch+Ströbel has a compact solution in their portfolio: the modular VarioSys production system is also suitable for application in laboratories with small batch sizes. "Flexibility is the first priority in all our designs. We achieve this by quick and easy module changes on the one hand and short cycle times when sterilising the isolator on the other," explains Heiko Schwarz, who is responsible for the development of VarioSys in product management at Bausch+Ströbel.

Print your own tablets

Tablets fresh off the 3D printer are no longer a dream of the future. Spritam, a printed epilepsy treatment, was the first medicine to be approved by the Food and Drug Administration (FDA) in 2015. 3D printing processes allow manufacturers to adapt products exactly to patient needs whilst reducing time and cost factors in production, as machine components no longer need retrofitting.

Compared to conventional tablet presses, printed pills can also be equipped with a more porous surface, which helps them dissol-

Convenience and safety

Personalised medicine is a field that particularly affects the hospital and care sector. To ensure that patients receive the right drug cocktails whilst relieving carers of the task of putting the necessary medicine together, tablets may be blister-packed ready for use.

Blister pack machines in chemists and blister packaging centres pack the patient's individual tablet mix in an airtight and hygienic strip of sacs and simultaneously ensure that the individual doses are labelled and delivered in the right order. This prevents wrong dosages and ensures that patients do not take the wrong tablets by mistake.

Cost pressure and systems efficiency

Despite all the positive market developments in the pharmaceutical sector, we must not forget that even though the industry is growing, the health care systems in several countries are subjected to tremendous cost pressure. Mandatory discounts, price limits and reimbursement models often force manufacturers to lower their costs per package. Machine and systems manufacturers have to work on improving overall equipment efficiency. In Industry 4.0's future, this means using integrated systems with reliable availability and a continually high product quality. This is the only way to ensure that providers can keep up with a dynamic market in the long run.

Messe Düsseldorf GmbH
D 40001 Düsseldorf



Tests in state-of-the-art clean rooms and laboratories help recognise risks at an early stage and thus accelerate the approval of medicines. (Photo: Harro Höfliger)

28.-30. Januar 2020 · Messe Karlsruhe



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www.expo-lounges.de

CWS and STAXS® reached agreement to acquire the cleanroom laundry division of STAXS®



CWS Group and STAXS® have reached an agreement on the intended acquisition of the STAXS® cleanroom laundry division by CWS. The transaction will incorporate all existing contracts with customers and suppliers. Services will remain unchanged and provided from the same facility as currently. With this acquisition, the CWS Group, a complete system provider in the solution areas Hygiene, Workwear and Fire Safety, is further strengthening its position in the Benelux market. STAXS®, the Benelux leader in value added distribution of consumable products for cleanrooms in the Life Sciences industries, will fully focus on the cleanroom consumable market. Completion is expected to take place by the end of 2019.

As a system provider, CWS stands for a shared vision: making the future healthier and safer. The CWS cleanrooms rental service provides a quality assured cleaning, decontamination and sterilisation process with full traceability. With its cleanrooms business the company already offers cleanroom services in 9 countries across Europe. Within its workwear business, cleanrooms is a growth market for CWS. The acquisition of the cleanroom laundry division of STAXS® reinforces CWS' cleanroom footprint and is therefore a valuable addition to the CWS Group.

Markus Schad, Business Unit Director CWS Cleanrooms commented: "Benelux is a significant growth market for us. Both CWS and STAXS® aim for the highest standards in the market and are fully focussed to deliver solutions to customers, therefore this acquisition is a perfect fit for CWS. We are looking forward to broaden our cleanroom service network and offer our customers the best possible services from both companies".

Johan-Detlef Dubbelboer, CEO of STAXS® commented: "Combining the strength of our cleanroom laundry with the platform of cleanroom laundries of CWS does give opportunities for both our companies as well as for customers. STAXS® focusses fully on the consumable part of the business and its expansion throughout Europe".

It was agreed not to disclose any further details of this transaction.



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Pfeiffer Vacuum opens new plant in Wuxi China

Pfeiffer Vacuum, one of the world's leading providers of vacuum solutions, celebrated the expansion of its facility in Wuxi, China on October 23 with a grand opening ceremony. Double its original size, the new, expanded facility marks a significant milestone in Pfeiffer Vacuum's development in China, as it allows the company to better respond to local customers' needs while supporting its strategic growth in the local coating and semiconductor market.

"This is part of our new growth strategy which includes a global investment program of €150 million", said Hugh Kelly, representative of the management board, "In addition to providing after-sales service, the bigger facility will now also allow for the production of dry pumps and our new leak detection systems ATC, as well as the assembly of pumping stations. With the introduction of industry-leading technologies and equipment, Pfeiffer Vacuum is better poised to react to the needs of local customers."

At the 2019 annual general meeting, Pfeiffer Vacuum shared 8 strategic pillars of the company, with Dr. Eric Taberlet, CEO of Pfeiffer Vacuum Technology highlighting the importance of the Chinese market to the company's development. As one of the key cities in the Yangtze River Delta region, Wuxi has been receiving strong government sup-

port to develop its semiconductor, electronics and solar industry. The expanded facility not only strengthens Pfeiffer Vacuum's presence in China but also enables closer proximity to its customers in China as well as the wider Asia market.

Since entering the China market in 2007, Pfeiffer Vacuum has maintained a steady growth with over 150 employees, largely part of the country's booming economy as well as strong market demand for scientific and high-precision vacuum technology. As the inventor of the turbomolecular pump, Pfeiffer Vacuum has been investing in Research & Development for nearly 130 years, with an aim to provide cutting-edge solutions and innovative products to customers and the wider industry.

In support of the vacuum technology industry in China, Pfeiffer Vacuum has been working closely with top local enterprises, scientific research institutions as well as other industry partners with its products and rich expertise. With the new, expanded facility, Pfeiffer Vacuum is set to deliver more value to local customers and deepen its commitment to the China market in the future.

Pfeiffer Vacuum GmbH D 35614 Asslar

Safety Excellence: Exyte Wins 'Excellent Contractor' Award from GCLSemi, China



Exyte, the global leader in the design, engineering and delivery of high-tech facilities, plants and factories, was presented the "Excellent Contractor" award by GCLSemi. The award is in recognition of Exyte's achievement of 800,000 safety work hours during the construction of GCLSemi's silicon wafer manufacturing cleanroom project in Xuzhou, China.

Exyte led the design, construction and commissioning of the project as the key contractor for the 25,100m² silicon wafer manufacturing cleanroom project, which included the cleanroom as well as the mechanical, electrical and process distribution and plant systems. Leveraging on Exyte's 50-year track record in delivering state-of-the-art controlled environments, Exyte met all critical specifications, including air temperature, humidity and Airborne Molecular Contamination (AMC) control of the cleanroom. Upon completion, the facility will manufacture up to 300,000 12-inch silicon wafers each month.

"Exyte executed the entire project with utmost professionalism. Their project management approach and highly experienced team gave us the assurance that the project will be delivered on time. The Exyte team presented advanced and state-of-the-art ideas and solutions, and they responded to project matters in a timely manner. I am very satisfied with the work that the Exyte team delivered," said Mr. Zheng, Xiongjiu, General Manager of GCLSemi. Mr. Zheng also added that the Exyte team ensured that quality and safety were never compromised – they raised standards of safety at the project site and were able to influence other contractors to adopt safety as a value.

"The "Excellent Contractor" award from GCLSemi is truly an honor and testament to the outstanding engineering services and expertise of our teams, as well as our commitment to safety, on-time and on-budget delivery of projects for our clients. This is our first project with GCLSemi and I am confident that we will continue to achieve many more milestones together," said Frank Lorenzetto, Managing Director of Exyte China.

"A safe project is the result of good planning, disciplined execution and a committed team. With these factors our projects are safe and successful. In order for us to deliver a project successfully and safely, it takes a world-class project management approach as well

as safety values and behavior that are strongly embedded across the organization," added Lorenzetto.

Exyte's in-house safety program - "Incident-Free Workplace" (IFW) reinforces safety as a core value. IFW is embedded across all aspects of the organization, and is embraced by all of Exyte's stakeholders including its partners and suppliers.

About GCLSemi

Based on the world's leading silicon material production techniques, experience and talents, GCLSemi is specialized in research, development and manufacturing of integrated circuit silicon materials and supporting devices and products and committed to promoting sound growth of China's integrated circuit industry. Since 2015, GCLSemi has founded polycrystalline silicon, crystal pulling, and silicon wafer production, research & development bases and developed relevant industries in Xuzhou, Jiangsu and elsewhere under the support of China Integrated Circuit Industry Investment Fund and other institutions.



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Project Management Director of Exyte China speaking at the celebration ceremony.



General Manager of GCLSemi presented the Excellent Contractor Award to Project Manager of Exyte GCLSemi silicon wafer manufacturing cleanroom project.

New plant of Gerresheimer in Skopje, North Macedonia, to start production mid 2020

Today the topping-out ceremony of the new Gerresheimer plant in Skopje, North Macedonia, took place, attended by the Prime Minister of North Macedonia, Zoran Zaev, the Deputy Prime Minister, Kocho Angjushev, other ministers of the Government, the German Ambassador and distinguished guests. The CEO of Gerresheimer, Dietmar Siemssen, announced during the ceremony: "This new plant in Skopje will play a significant role in our future growth plans. It is making progress as planned and we expect start of production by mid of 2020. Our customers are very much interested in this new manufacturing capacities. We will produce plastic systems for both the pharmaceutical industry and the medical technology sector as well as pre-fillable syringes here in Skopje. North Macedonia is an ideal location for us, offering trained personnel, good infrastructure, cost structures, and very good support from the authorities. And we have great options to further extend the facility in the future."

Gerresheimer has established a local company Gerresheimer Skopje DOOEL in North Macedonia which has started building the new plant in spring 2019. Start of production is planned for mid 2020. Up to 400 employees will work in this state-of-the-art modern production facilities in the medium term. Hiring of local staff has begun already. In the first phase the plant comprises 12,500 sqm, among that production space in modern cleanrooms of some 7,500 sqm. The site plot area provides options for further enlargement. Gerresheimer is in-

vesting a mid-double-digit million Euro figure in the new plant in the North Macedonian capital of Skopje. The plant will initially manufacture medical plastic systems and later adding pre-fillable glass syringes lines with a further expansion phase.

Gerresheimer AG
D 40468 Düsseldorf



In the future, Gerresheimer will produce inhalers and insulin pens for the pharmaceutical industry with state-of-the-art cleanroom technology at its new plant in Skopje, northern Macedonia.

Facility of the Year Awards Overall Winner

On 30 October, 2019, ISPE has announced Kantonsapotheke Zürich as the 2019 Facility of the Year Awards (FOYA) Overall Winner at the 2019 ISPE Annual Meeting & Expo in Las Vegas, Nevada. Well done, all participants!

KAZ representative Heinz Obertüfer received the coveted award on Tuesday, October 29, during the ISPE membership breakfast.

"Congratulations to our client! Working in concert with the leadership team of Kantonapotheke Zurich, Exyte provided engineering, procurement, construction management and validation that led to the development of this technologically-advanced facility", outlines



François Abiven, President Life Sciences & Chemicals at Exyte.

In April 2019 the partners Kantonsapotheke Zürich (KAZ) and Exyte were awarded the Operational Excellence Award Category for the new compounding pharmacy for Canton Zürich Hospitals - a leap forward for hospital pharmacy compounding operations. The project demonstrates a transformational step in hospital compounding operations and establishes a new norm for future facilities in this important step of patient therapy. Exyte played a key role in the development of a new compounding pharmacy for Canton Zurich hospitals.

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New focus in project portfolio of Gerresheimer subsidiary Sensile Medical

- SQ Innovation and Gerresheimer sign partnership for micro pumps for heart failure treatment
- Sanofi terminates development project for micro pumps for patients with diabetes
- Further projects with pharma customers for various therapy areas for the micro pump started

Sensile Medical, a subsidiary of Gerresheimer AG, has signed a contract with the Swiss biopharmaceutical company SQ Innovation AG for the development, market launch and mass production of a micro pump for the treatment of edema in heart failure. Sanofi, on the other hand, has terminated the project with Sensile Medical to develop a micro pump for delivery of insulin to treat diabetes.

"Our micro pump technology is highly advanced and very competitive. It can be used for a variety of treatments across medical conditions. The new SQ Innovation agreement illustrates the attractiveness of our micro pump technology. The pipeline of projects for the micro pump is very promising and we continue to see significant potential in this unique technology," said Dietmar Siemssen, CEO of Gerresheimer AG.

Sensile Medical, a Gerresheimer company, and SQ Innovation AG signed a partnership for the micro pump for the treatment of edema in heart failure for European and American markets. The market launch of the SQ Innovation product is to take place after completion of development and obtaining market authorization. Sensile Medical's

micro pump for Parkinson's treatment has already been approved for the European market in September 2018 and has been launched. A different project, the micro pump for delivery of insulin to treat diabetes, has been terminated by Sanofi for strategic reasons.

Gerresheimer has started several projects with pharma customers for usage of the micro pump in various therapy areas, which illustrate the future potential.

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Flexibility through collaborative work

The CDMO increasingly relies on close interaction of humans and machines.

- Successful implementation of collaborative dual-arm robot YuMi
- Innovative response to rising customer demands for greater flexibility
- Acquisition of more robots planned

Vetter's core competencies include the manufacturing of safe, user-friendly, complex packaging systems such as the assembly of pens, autoinjectors and safety devices. Thanks to the many years of experience and expert knowledge of its employees, the contract development and manufacturing organization (CDMO) is able to meet the various requirements demanded of a drug product by regulatory authorities, customers and patients alike. In order to ensure customers' high quality standards, while at the same time offering a high degree of flexibility, in the future the pharmaceutical service provider will increasingly focus on collaborative work. Following a successful pilot project which included the use of a dual-arm robot in secondary packaging, the company is now planning the purchase of additional robots.

While large industrial robots work in restricted areas where humans are not permitted to enter during operation, collaborative robots provide close cooperation between humans and machines. In fact, at this year's HANOVER TRADE FAIR, collaborative work was featured as one of the central topics. At Vetter, the collaborative dual-arm robot YuMi (You and Me) has been supporting automated secondary packaging processes since 2018. By inserting finished drug products and components into folding boxes, it performs an important task with a high degree of continuity and precision. Employees supply its work station with the required material and define its specific sequence of moves.

The acquisition of collaborative robots enables Vetter to meet the increasing demand for greater flexibility of its customers worldwide, and is playing an ever-greater role due to the growing diversity in packaging solutions and the trend towards smaller batches. „Fully automated systems allow fast throughput times and high quantities, but they lack flexibility due to long set-up times. This is exactly where our collaborative robot YuMi can make full use of its strengths," says Bernd Stauss, Senior Vice President Production and Engineering. Its high level of flexibility is based on a simple operating concept and excellent user-friendliness. These two qualities enable a wide range of deployment options and fast adaptation to changing product and packaging requirements.

With the first collaborative robot now having been successfully deployed in a pilot project lasting more than a year, the company will be acquiring two more models. The first model will be used to assemble a prefilled syringe barrel with plunger rod and finger flange. After its successful implementation in secondary packaging, the second model will be used for what is known as speed-bin-picking in aseptic production where prefilled syringes are placed into trays after terminal sterilization.

Vetter Pharma International GmbH
D 88212 Ravensburg



Collaborative work in secondary packaging. (Source: Vetter Pharma International GmbH)

Imec Awarded a Grant from NASA to Advance Space Health Diagnostics

miDiagnostics' disposable blood testing device to be evaluated by imec for use in zero gravity environments

Today, imec, a world-leading research and innovation hub in nano-electronics and digital technologies announced it has received NASA funding to test a technology for monitoring astronauts' health status under zero gravity conditions using a first-of-its-kind disposable diagnostic device developed by imec's spin-off, miDiagnostics. Imec will design test parameters and perform experiments in different gravity scenarios using one of miDiagnostics' devices that is built around a silicon-based nanofluidic processor that performs a series of blood sample manipulations yielding a cell blood count with fast

turnaround time.

"Human exploration into deep space requires the development of medical devices and diagnostics of small mass, volume and power requirements, designed for a more autonomous practice of medicine," said Susana B. Zanello, Ph.D., research and development manager at imec's design center in Kissimmee (Florida) and principal investigator on the project. Responding to the need for easily deployable medical devices with minimal instrumentation, miDiagnostics is developing a near-patient diagnostic platform, based on a nanofluidic processor embedded

in a single-use, low-cost, test card.

Presently, miDiagnostics has developed a research prototype that can perform a complete cell blood count (CBC) from only drops of blood. In other configurations, the same platform will enable accurate and instantaneous point-of-need diagnostics for a suite of cellular, biochemical and molecular tests. "The device is currently in development for standard earth-based conditions, said Peter Peumans, VP life sciences technologies at imec and CTO of miDiagnostics. "But it should also function in gravity-independent environments, as it relies solely on capillary forces."

Imec will test the device in parabolic flight, which offers different gravitational loads. This specific environment will allow testing of the functionality of the nanofluidic system and its independence from gravity—from sample capture at the inlet port to its migration within the nanofluidic channel network. "While the macroscopic part of this process is relatively straightforward to assess, imec intends to look inside the device to validate the correct sequence of events and the correct functioning of the sub-components, as well as its robustness," explained Veerle Reumers, Ph.D, research and development manager at imec's design center in Kissimmee (Florida) and co-investigator on the study.

"This technology demonstration, facilitated by the Flight Opportunities program, aims to address NASA's need for technologies that support human exploration and further commercial activity both in Earth orbit and in cislunar space and beyond," stated Dr Zanello.

"We are very excited that our technology has been selected by imec to demonstrate its operation during parabolic flights, and is a good example of how imec and miDiagnostics are working together to bring diagnostics to the most remote places," said Nicolas Vergauwe, CEO of miDiagnostics.



New furnace for the innovative and sustainable production of clear-glass containers for solid and liquid drugs

Gerresheimer in Essen produces many millions of glass containers for the pharmaceutical industry every year. The long-established company has recently completed the routine renovation of its clear-glass furnace. Despite being more powerful, its improved technology means it uses less energy and is therefore significantly more sustainable than its predecessor. This high-performance furnace means that new capacity is available with immediate effect to satisfy the high demand for the production of injection and infusion bottles from type II glass for parenteral solutions. At the same time, the renovation was used as an opportunity to fundamentally modernize the plant in all areas. New furnace technology, the further enlargement of the clean room as well as the automatization of the testing and packaging systems safeguards the company's leading position.

"We want to make production more environmentally friendly while remaining an efficient partner for our customers," says Dr. Jürgen Unruh, CEO of Gerresheimer Essen GmbH, adding that the investment will also help to secure the approximately 400 jobs at the plant.

Modern and sustainable production – fewer nitrogen oxides

Enlargements will be made to the production hall and the clean room and the testing and packaging technology will be further automated and brought up to date with the latest technology. By using state-of-the-art technologies, the energy efficiency of the new white glass tank can be improved while at the same time reducing specific CO₂ emissions. An essential contribution to the optimization of sustainability. Gerresheimer is using the renovation as an opportunity to fundamentally modernize the plant. This includes, for example, installing a candle filter that drastically and sustainably reduces nitrogen oxide (NO_x) content. The new construction will also significantly improve the noise protection for the plant's neighbors.



The Gerresheimer Management Board learns about the construction of the new furnace at Gerresheimer's Essen plant (from left to right: Markus Rocholz, Chairman of the Works Council, Dietmar Siemssen, Chief Executive Officer of Gerresheimer AG, Dr. Jürgen Unruh, CEO of Gerresheimer Essen GmbH, and Dr. Bernd Metzner, Chief Financial Officer).

Center of Excellence for parenteral solutions using type II glass

Gerresheimer has the broadest product range available on the market. As the Center of Excellence for the production of type II glass, the company's plant in Essen will in future also be able to offer parenteral solutions which meet the high expectations and demands of its customers. In doing this, Gerresheimer can fall back on a variety of hardening and tempering methods which allow the smallest bottles for injections as well as typical infusion bottles with larger volumes to be produced. Guaranteeing glass quality and hydrolytic resistance in line with type II glass is the top priority here.

A progressive plant with tradition

Gerresheimer Essen produces special bottles for the pharmaceutical, cosmetics, and food industry. Its precursor was Glashütte Wisthoff, which was based in the valley of Ruhr in Essen's Horst district since 1971, emerging from the Königlich privilegierte Glasmanufaktur founded in 1723. Now part of the Gerresheimer Group, it is probably the oldest industrial company in today's city of Essen. In four years, i.e. 2023, the company will therefore be able to look back on a 300-year



A view of a clean room

New furnace for the innovative and sustainable ...

history, making it the oldest industrial company in Essen that is still in operation.

Global production of moulded glass

The Gerresheimer Group has production sites for moulded glass in Europe, the Americas, and Asia. Three of these are German sites based in Essen, Lohr, and Tettau. In addition to the injection and infusion bottles for parenteral applications, Gerresheimer also produces syrup bottles, shaped bottles, dropper bottles, tablet bottles, wide-mouth jars and other types of jar for consumers in the healthcare industry. The cataloged product range currently includes several hundred standard shapes, plus many custom designs.

Gerresheimer AG
D 0468 Düsseldorf



Year on year, Gerresheimer produces glass containers for numerous solid and liquid drugs at glass sites all over the world in accordance with the guidelines of the relevant pharmacopeias.

Record breaking numbers for Lab Innovations 2019



2020 show set for 4 & 5 November with 84% of stand space already rebooked by returning exhibitors following 2019 success

04th - 05th November 2020: Lab Innovations 2020, Birmingham (UK)

Lab Innovations celebrated its 8th edition on 30 & 31 October 2019, trumping all records for the event. Attracting 3,860 attendees - an impressive 24% increase on the previous year - this makes it the largest Lab Innovations to date. Over 160 exhibitors displayed a diverse and innovative product offering to visitors from more sectors than ever before, emphasising the event's place as the UK's largest annual trade exhibition dedicated to the entire laboratory industry.

Returning once more to Birmingham's NEC, with lab procurement decision makers making up 75% of those in attendance, Lab Innovations 2019 was clearly an event driving the business of science. It saw an increase in lab managers of 9%, scientists 9%, procurement managers 32%, chemists 65% and lab technicians 24%; demonstrating a true hunger for future-proofing laboratories across the UK.

Josh Chapman, Managing Director, Scientific Laboratory Supplies emphasised the growth and quality of professionals, commenting, "Lab Innovations is an unmissable event for us as we are able to meet a wide variety of lab professionals from a multitude of sectors. Both SLS and our suppliers are able to make hundreds of new business connections and showcase products to thousands of people across two

days, which would otherwise take months to do. Every year the event grows and the quality of visitors this year has been second to none."

The buzz of activity across the two days of the event was bursting with business, networking and innovation. Home to a host of sustainable solutions and technologies to future-proof laboratories, Lab Innovations featured exhibitors showcasing products applicable to a plethora of sectors including food & drink, cleanroom, pharmaceuticals, academia, medical and more. Paul Vanden Branden, Director at SciMed commented, "Lab Innovations is the only show where we can display everything we do. Pretty much everyone in this room will be interested in something. Over a couple of days, we can meet existing and new clients from across the country, which would usually take us 2 or 3 months of visiting different sites."

Building on its reputation as the largest annual gathering of the entire UK laboratory community, Lab Innovations invested in a new meetings concierge service for 2019, enabling visitors and exhibitors to pre-book meetings in advance and make business connections prior to the event. The new matchmaking tool added a further dimension to the available networking opportunities to maximise value for

Record breaking numbers for Lab Innovations 2019

the entire industry.

Visitors were able to source hundreds of products, technologies and solutions for their laboratories from 162 exhibitors. With so many products under one roof, novel products were highlighted in brand new guided 'Innovation Trails' which featured:

- SPECTRO's SPECTROGREEN inductively coupled plasma optical emission spectrometer (ICP-OES) with new revolutionary Dual Side-On Interface (DSOI) technology
- Shimadzu's Nexera UHPLC with A.I. that detects and resolves issues automatically to simplify lab management and increase throughput
- SCP Sciences' NovaWAVE SA standalone microwave digestion tunnel system for improving productivity through automation
- A&D Instruments' Apollo GF-A/GX-K series multi-functional precision balances with impact shock detection
- BRAND's HandyStep® touch, the first repetitive pipette with touch-screen operation
- Eppendorf's new Conical Tubes 25mL that fill the gap between the

- volumes of traditional conical tubes for cell biology applications
- Appleton Woods' BioEcho EchoLUTION cell culture DNA Kit with proprietary single-step technology

Needing more time to see all the items on display, many lab professionals returned on Day Two to ensure they were up-to-date with all the possibilities for their laboratories. Alice Thomas, Chemist at EDF Energy commented, "We came back for a second day because there were so many stands that we could not get through them all in one day. We came to find certain things to upgrade our lab and searching the internet doesn't do the products justice. We were able to ask in-depth questions and there is a real value to having face-to-face discussions rather than through phone or email."

The subject of sustainability in the lab remains pertinent and continued to be a big focus for the event. The Sustainable Lab feature returned by popular demand for a second consecutive year, showing visitors how even small improvements in technology, procurement and best practice can reduce running costs to make funding go further. Director of Green Light Laboratories, Andy Evans, hosted packed hourly tours in the Sustainable Lab, demonstrating case studies on smart equipment monitoring, fridge performance and fume cupboard loading.

Polly Warwick, Laboratory Analyst at Oscar Mayer, summarised the event, "It has been really, really interesting because we can actually interact with each company exhibiting. We are always on the lookout for new things to buy for the lab and someone from our company comes every year. It is great that sustainability is being really thought about now, especially at this year's show."

The sustainability theme was extended into the conference programmes with busy sessions advising on the Laboratory Efficiency Assessment Framework (LEAF), the recycling of metal from electronic waste and the separation of the rare earth metals, along with the recycling of lithium ion batteries.

With new technological developments and digitisation expanding the boundaries of research and science, the popular Insights and Innovation seminars supported lab professionals in future-proofing their laboratory and learning best practice for lab management. Expert speakers demonstrated new technologies that will help accelerate or improve processes, benefit research and keep their laboratory at the forefront of the industry. Topics included 'Combining AI and Computer Vision to Address Research Challenges' and 'Using Virtual Reality in The Lab', 'Evolution of UKAS Assessments', 'Cannabis Testing - growing pains & how to reach the highs' and 'New Approaches to the Skills Crisis'.

Plans for Lab Innovations 2020 are well under way and the organisers already have more fresh ideas to grow the event even further next year. Easyfairs Divisional Director, Alison Willis commented, "Lab Innovations 2019 has been the biggest and best event to date with a clear dynamism and buzz from both exhibitors and visitors, who are keen to return next year. With over 84% of our current floor space already rebooked, the success and value of Lab Innovations 2019 is evident – we are now really looking forward to an even bigger and better show in 2020."

Lab Innovations 2020 will take place on 4 & 5 November at the NEC, Birmingham, UK.



K 2019 gives a Clear Signal for Responsible Handling of Plastics



Strong Impetus for Industry: High Propensity to Invest among the approx. 225,000 Trade Visitors from 165 Countries - Circular Economy is "Hottest Ticket" for the Global Plastics and Rubber Industries

K, the leading global trade fair for the plastics and rubber industry, has drawn to a close in Düsseldorf after eight days on Wednesday (23 October 2019). The 3,330 exhibitors from 63 nations proved impressively: plastics continue to be an innovative, indispensable, future-oriented material. But they also unanimously underscored the necessity of having operational circular economies along the complete material chain and to this end already presented concrete solutions. Companies struck a nerve with people with this focus because the approximately 225,000 visitors from 165 countries took great interest especially in recycling systems, sustainable raw materials, resource-saving processes. Furthermore, K 2019 was characterised by a high propensity to invest as before. The intention among the international trade audience to get perfectly geared up for the future with the latest technologies was clearly perceivable.

"K 2019 came at precisely the right point in time. Its enormous importance for the sector is underpinned by its high acceptance levels all over the world. There is no other place the industry is represented so internationally and completely as here in Düsseldorf every three years," says Werner Matthias Dornscheidt, President & CEO of Messe Düsseldorf, and explains: "Especially in times of great challenges, a platform like the K is indispensable. It provides guidance and perspectives, sets sustainable economic impulses, shows forward-looking trends and concrete approaches. The industry and its professional associations enjoyed the unique opportunity here to present sector-specific solutions and debate questions of socio-political relevance on a global scale. And they have capitalised on this opportunity outstandingly well."

Ulrich Reifenhäuser, Chairman of the Exhibitor Advisory Board at K 2019, was absolutely delighted at K 2019 results: "The plastics and rubber industry succeeded in proving once again that plastics are not only very valuable materials with outstanding properties but also that this industry assumes responsibility along the entire value chain. The buzzwords at K 2019 "Reflect. Re-Think. Think Laterally. Think Afresh." were mirrored 1:1 by exhibitors' stands. Never before has the industry addressed an issue so unanimously and worked on solutions so consistently as is the case now in the fields of environmental compatibility, saving resources and avoiding waste. There is a spirit of new departures prevailing in the industry and current dynamics are overwhelming."

And the positive mood prevailing at K 2019 was also echoed by concrete demand at exhibition stands: "It became clear that global demand for innovative machinery and raw materials is particularly high right now, despite the current tensions in world trade or the business climate in some consumer sectors. This year's K has by far exceeded our expectations and was able to generate key impetus for sustainable governance and new business models," said Reifenhäuser.

The nations especially well represented on the part of visitors after Germany were Italy, the Netherlands, India, Turkey and China, follo-

wed by the USA.

Furthermore, a marked increase in the number of trade visitors from the Russian Federation, Japan and Brazil could be registered. The number of executives among K visitors rose slightly yet again: to the tune of 68% came from top or middle management. With over 90 percent, visitor satisfaction was again at a top level. While for German trade visitors increased efficiency ranked first as the currently most important issue, the expansion of product and service portfolios was in the foreground for European and non-European trade fair guests.

Once again, K was able to score points as a premiere platform where many trend-setting products and applications were presented to the world public for the first time. The innovations were not only admired, but also many concrete negotiations were conducted and contracts signed. "We found the propensity to invest extremely high and across all nations. In particular, business with new customers was very positive this year. We are also confident about very strong follow-up business," says Reifenhäuser. For the guests from throughout the world investment in expansion ranked particularly high on the list, especially in extruders and extrusion lines. The survey among visitors also showed that the interest in machinery and equipment for plastics reclamation and recycling is noticeably higher abroad than in Germany.

Flexible materials – rubbers and thermoplastic elastomers (TPE) – also proved a fixture at K again. Although the elastomer segment has traditionally been smaller than the plastics range at K, there was a surprisingly high number of companies presenting elastomer-specific products and services – be it raw materials, additives and compounds or special machines and equipment for reclamation and converting.

The extensive supporting programme at K 2019 boasting keynotes and high-calibre discussions such as on renewable energies, material efficiency or zero-waste production met with avid interest among the international audience, especially the Special Show K 2019 "Plastics shape the Future". This year the innovative power of the material and the industry in terms of resource-saving processes, digitalisation, functionality, renewable energies, circularity and sustainability were centre stage. And such critical themes as marine litter, the throw-away mentality associated with plastic packaging and the use of finite resources for their production were not ignored either. Proving one of the highlights was a humanoid robot that was built during K 2019 by young researchers from FabLab Lübeck e.V. serving as an example to show where developments are headed in future when additive manufacturing and robotics are combined with cutting-edge materials such as plastics.

At the Science Campus both exhibitors and visitors to K 2019 were given a condensed overview of scientific activities and results in the plastics and rubber sector. Numerous universities, institutes and funding agencies provided opportunities for direct dialogue.

K 2019 gives a Clear Signal for Responsible Handling of Plastics

The next K Düsseldorf will be held from 19 to 26 October 2022.

Exhibitor Testimonials for K 2019

„Milliken's booth was a major hit at K 2019, with thousands of visitors from across the globe drawn to our circular economy solutions. Our team demonstrated the various ways in which our advanced plastics additives and colorants are helping to make the reuse and recycling of plastics possible. A particular highlight was our joint press conference with PureCycle Technologies, where our partnership on closed-loop recycling attracted strong international media attention. We are already looking forward to K 2022.

Veerle De Wolf, Marketing Communication Manager EMEA, Milliken

“We are very satisfied with the outcome of the trade fair. We had surprisingly many visitors from a great number of countries. Alongside Germany, Austria, Turkey, India, Poland, Italy, France and Brazil were particularly well represented. At the Wittmann Battenfeld stand in Hall 15 our process engineering and HIQ technologies as well as our developments in digitalisation met with particular interest. Also attracting special attention was our application in Circular Economy with Zeroplast where we demonstrate the possibility to injection mould all types of materials, even completely bio-based materials. At the WITTMANN stand in Hall 10 the new robotics developments went down especially well, above all the new WX138, and the WLAN Teachbox. We also observed increased interest in granulators. We succeeded in closing a number of concrete deals, which is not unusual especially for the K fair, and therefore also expect follow-up orders.

Michael Wittmann, Wittmann Group General Manager

“ARLANXEO was highly satisfied overall with both the visitor and customer response at K 2019. The focal theme of ARLANXEO's trade fair appearance were products and developments for the mobility of the future with a focus on new rubber solutions for tyres, energy storage as well as a wide variety of other automotive applications. These themes meet with definite interest since such trends as electrification or autonomous driving will change transport fundamentally in the next decade and we are called upon to jointly come up with answers for more sustainable, comfortable and safe mobility in the future.”

Stefan Rittmann, Executive Vice President Strategy & Business Development as well as Managing Director of ARLANXEO Deutschland GmbH

“To us K in Düsseldorf is one of the world's most important trade fairs for all things plastics. Under the heading ‘Quality Works – Energizing the Future’ we have presented high-quality solutions for the plastics and rubber industry at our very busy trade fair stand. On approximately 700 square metres the themes New Mobility, Urbanisation and Digitalisation were centrestage here. K makes an important contribution to the dialogue with our customers and interested visitors. Not only our exhibits but also our expert lectures at the stand were very popular and in high demand. Here AI (Artificial Intelligence) was of particular interest for shortening developing times. Our verdict: K 2019 has proved a resounding success for LANXESS once again.”

Udo Erbstößer, Project Manager for K 2019 at LANXESS

“K2019 has set an exclamation mark: the sector is in motion! The leading global trade fair with its highly international visitor profi-

le again provided BASF with a perfect platform. From automotive through packaging to consumer goods – we registered a broad interest across all application industries. Proving particular attractions for visitors and experts alike were our cooperation projects with customers such as our concept motorhome VisionVenture, and digitalisation and sustainability projects such as ChemCycling.”

Dr. Guiscard Glück, Vice President Product Development & Creation Center, BASF Performance Materials

“Our trade fair stand was extremely well attended from day one. Our customers came from Peru to Japan, from the USA to Indonesia and our currently most important markets China and India were very well represented with numerous visitors. We were especially delighted to note that our guests at the stand were interested not only in the omnipresent recycling theme but also showed avid interest in our other sustainability themes such as energy and CO₂-savings or the efficient use of raw materials.”

Karlheinz Weinmann, Head of Corporate Communications at Brückner Maschinenbau

“Our sector-specific focus has met with a very positive response among our customers. We have demonstrated our core packaging expertise very well by means of two interesting exhibits. In the medical technology segment we showcased an interesting pipette exhibit. And our automotive segment has also clearly positioned itself with two exhibits: in the LSR field with our partnership with Nexus and with our attractive IMD part, which we demonstrated with our new Intelect 500. Usually, our expectations about concluding business deals at K is of rather secondary importance. But things were very different at this K edition since the entire industry is waiting for a signal about how the economic situation will develop further. To our great surprise, the business contracted here this time even exceeded last K's results three years ago. This shows both the success of our strategy and the growing willingness to invest at present. Post-show business is set to develop even more positively than business during the trade fair itself. Our project pipeline has markedly improved with K 2019.”

Gerd Liebig, CEO, Sumitomo Demag Plastics Machinery GmbH

“K always occupies a special place in our strategic exhibition considerations: our long preparatory work has really produced outstanding results. And the mood was clearly better than could have been expected given the economic climate. On some days we were almost overrun. The combination of digitalisation themes with the arburg-Xworld and the sustainability efforts we are undertaking with our arburgGREENworld works ever so well.”

Dr. Christoph Schumacher, Head of Marketing and Corporate Communications, Arburg GmbH + Co KG

“This time around K became the leading trade fair for the circular economy and plastics recycling. The trade audience took an avid interest in our technological innovations for the highest possible process and regranulate qualities. This already became clear on the first few trade fairs days when looking at the crowds of visitors at EREMA's exhibition stands and the sales deals concluded. We also received plenty of positive feedback for our Circonomic Centre on the outdoor premises. In cooperation with partners from the entire plastics value chain we have managed to provide strong impulses here with a view to rolling out new circularity projects even faster in future.”

Manfred Hackl, CEO EREMA Group

K 2019 gives a Clear Signal for Responsible Handling of Plastics

"This year's K has fulfilled all of our expectations. We are very happy with the quality of conversations we had. On top of that, we sensed a marked demand in Europe, Asia and the USA for the themes we cover and the products we offer including recycling, Industry 4.0 and, of course, our new and further developments in twin-screw extruders, dosing systems and bulk materials handling. These developments all contribute to boosting the efficiency of our customers' manufacturing processes."

Bettina König, Director Global Marketing Communications, Coperion

"The K trade fair has convincingly demonstrated that sustainability has now also reached the top of the agenda in the plastics industry. There is more to this than just recycling – efficient and sustainable use of resources is also in great demand. Our research study on a new bio-polymer raw material based on apple pomace met with particular interest as it is suitable for versatile applications and can be used for making barrier plastics."

Dr. Stefan Hanstein, Department Biogenic Systems, Fraunhofer IWKS

K 2019 has by far exceeded our ambitious expectations, already in the first days, the visitor interest was enormous. Five days after the start of the show, the number of customer visits had already exceeded the number we had at the end of the show in 2016. There were many positive, technical discussions with a strong focus on process optimization, quality and efficiency increase as well as on sustainability – all topics, which are realized by the use of our measuring and testing systems. Special attention was paid to our new measuring system, which allows for the first time for a 100 % measurement of the pipe directly after and through the pipe head. The percentage of international visitors was quite high, especially from China and India. Overall, we draw a very positive result about our participation in the show, which has demonstrated that there are many strong investment plans. We have experienced the K as a very forward, future-oriented show."

Harry Prunk, Vorstand SIKORA AG

"We are extremely satisfied with K2019. We have met a great number of existing and potential new partners – and this from all over the world and the most varied application areas such as automotive or additive manufacturing. Our innovations such as the latest generation of polyamide elastomers PEBA and the conductive and low extractable

fuel lines aroused great interest. There was also a substantially stronger interest taken in our bio-based VESTAMID Terra than 3 years ago. We have been able to launch concrete projects for various markets."

Dr. Ralf Duessel, Senior Vice President & General Manager High Performance Polymers, Evonik

"At the joint Fraunhofer pavilion 11 institutes showcased innovative, sustainable and efficient solutions and developments for converting plastics. A great number of our visitors – especially from Germany, Italy, China and India – voiced a demand for recycling, bio-based plastics, resource efficiency and circular economy, and for the up-cycling of polyethyleneterephthalate (LBF). This means that the trade fair and our exhibits responded very well to the trends also of relevance in society."

Prof. Dr. Christian Oehr, Deputy Head of the Institute, Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB

"Saving resources through sustainable production, recycling and quick colour changes were our central themes at the K trade fair and will be beyond. We are pleased with the positive response across the board and the avid interest taken in our sustainable demo bottle of foamed PCR and bio-based polyethylene, to name but two. With this project we were able to prove credibly that we are not only paying lip services when it comes to sustainability."

Christian Kirchbaumer Head of Marketing Communications, Kautex Group

"The K experienced a great crowd of visitors, which was not a matter of course this year. Our expectations were exceeded, although it can be seen that the proportion of visitors from the automotive industry is lower than three years ago. It is certainly too early to draw a conclusion before evaluating the visit reports. What we can certainly say, however, is that interest in innovative processing technologies that lead to greater efficiency, productivity and sustainability remains high. The focus continues to be on digitisation. It is an important trailblazer for the recycling industry, as K 2019 made clear."

Dr. Stefan Engleder, CEO, ENGEL Group

Messe Düsseldorf GmbH
D 40001 Düsseldorf



(Photo: Messe Düsseldorf / ctillmann)



(Photo: Messe Düsseldorf / ctillmann)

K 2019: Arburg sets trends



- Very positive mood: plastics industry enthused by Arburg innovations
- "arburgXworld": digitalisation enhances production efficiency
- "arburgGREENworld": sustainable applications and solutions for closed circular economy

More of Arburg's digital world than ever before, concentrated expertise on the circular economy, 20 exhibits on its own and partners' stands, including exciting product debuts and innovative applications: at K 2019, Arburg showed itself to be an innovative and sustainable industry leader, helping its customers to achieve even more production efficiency in plastics processing. With "arburgXworld" and "arburgGREENworld", the company has succeeded in catching the spirit of the times, as demonstrated by the extremely positive public response.

19th - 26th October 2022: K 2022, Duesseldorf (D)

"Many of our customers regard the current economic situation not only as a challenge, but also as an opportunity. There were so many visitors at our stand who looked for information on innovations and trends in the injection moulding sector and who asked us very specific questions," summed up Michael Hehl, Managing Partner and Spokesman for the Management Team.

"We brought together more than 550 employees and trading partners from over 50 countries at K 2019, and showed industry professionals: 'Wir sind da,'" added Juliane Hehl, Managing Partner currently responsible for technology and marketing at Arburg. "Besides the big topics of digitalisation and the circular economy, our customers were particularly interested in specially configured injection moulding machines – and the first of our machines available for ordering online, the new Allrounder 270 S compact, was very well received.

"arburgXworld": Arburg presses ahead with digitalisation

Under the "arburgXworld" banner, Arburg presented highlights and innovations from its comprehensive range of digital products and

services. These included a variety of new apps for the customer portal bearing the same name – from "Machine Finder" for finding the right Allrounder and "Virtual Control" for simulating the machine control system, through to "Self Service" for guided error analysis and troubleshooting. The "Configuration" app allows customers to configure a new machine – the Allrounder 270 S compact – by themselves for the very first time and order it online. As of K 2019, "arburgXworld" will also be available internationally in 18 languages.

At a total of eleven interactive stations along the "Road to Digitalisation", visitors were able to learn more about smart machines, smart production, and smart services. Digital service solutions such as Arburg Remote Service (ARS) and the new filling and plasticising assistants (which enable the machine to "know" its product or cylinder module) were particularly in demand. Another "digital treat" provided by Arburg was free use of a fast Wi-Fi connection over the entire exhibition site for trade visitors with an eTicket. The "Arburg K 2019" app enabled users to register themselves and find out all about the company's exhibits and applications online.



The Arburg stand at K 2019 draws a lot of attention: trade visitors to the 1,500-square-metre exhibition space found information on new products, innovative applications, and topical issues. There was a huge amount of interest in Arburg's digital and sustainable solutions for efficient production. (Photo: Arburg)



Besides the eight machine exhibits, "arburgXworld" and "arburgGREENworld" showcased Arburg's digital world and concentrated expertise on the circular economy at K 2019. (Photo: Arburg)

K 2019: Arburg sets trends

arburgGREENworld: application examples for the circular economy

With its "arburgGREENworld" program, Arburg placed the focus on resource efficiency and the circular economy at K 2019. The program is based on the following four pillars: "Green Machine" for efficient machine technology, "Green Production" for innovative processes and resource-friendly production, "Green Services", which covers services and the transfer of expertise, e.g. in processing recyclates, and "Green Environment" for Arburg's internal processes.

Arburg showcased two exhibits as specific application examples in regard to the circular economy:

- A new Allrounder 1020 H in the Packaging version processed PP material from Borealis together with 30 percent added single-type PP recyclate to produce thin-walled cups. Erema is the partner firm for manufacturing the recyclate. This application proves that if plastics are collected in a sensible and reliable manner, they can also be re-introduced into the value chain.
- The second application made it clear how PCR from household waste can be returned to the production cycle as a raw material for durable technical products. In addition, an electric dual-component Allrounder 630 A produced handles made of foamed PCR and TPE for the safety doors on Allrounder injection moulding machines.

Machine premieres – clamping forces from 350 to 6,000 kN

The hydraulic Allrounder 270 S compact with a clamping force of 350 kN celebrated its premiere at K 2019. It is the first Arburg machine that can be configured and ordered online in just a few steps via the "arburgXworld" customer portal – quickly, easily, and also about 25 percent more cheaply, compared with standard hydraulic machines.

At the other end of the scale is the new Allrounder 1020 H in "Packaging" version. The high-performance hybrid machine with 6,000 kN clamping force and new size 7000 injection unit used an 8+8-cavity stack mould to produce 16 thin-walled round cups in a cycle time

of 4.3 seconds. The new clamp-design Allrounder with Gestica control system is equipped with four assistance packages as standard, making it "ready for digitalisation".

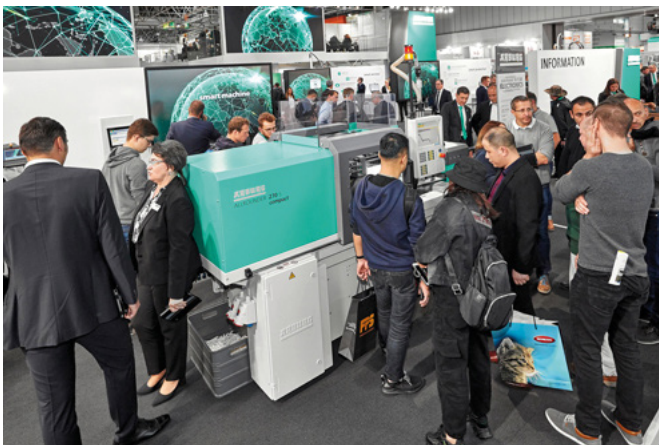
Arburg's range of vertical rotary table machines now includes a 1,600-mm table diameter option in the form of the Allrounder 1600 T. This new machine, which was displayed on Lauffer's stand, has a clamping force of 2,000 kN, can be fitted with injection units ranging from sizes 170 to 800, and can be automated up to a complete turnkey system.

Applications – from Uvex glasses to night lights

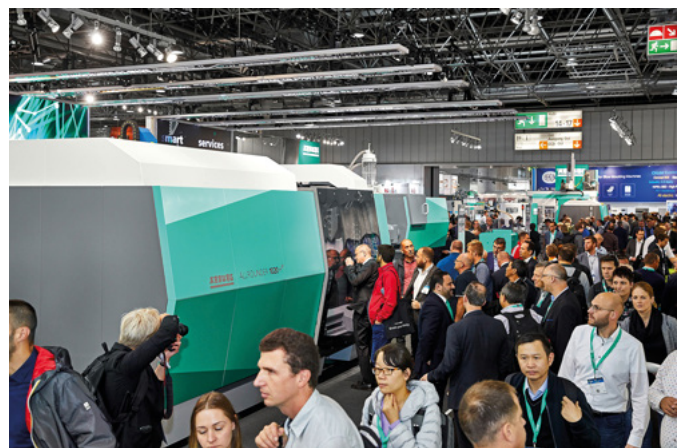
A "smart" networked turnkey system built around an Allrounder 570 A with the filling and plasticising assistants integrated in the Gestica control system produced ready-to-wear sunglasses in a cycle time of some 50 seconds. The system included a six-axis robot for the handling, 100 percent check, and subsequent packaging in fabric bags, involving human/robot cooperation. The Arburg Turnkey Control Module (ATCM) merged the process and test data that was displayed on an individual website after the DM code was scanned.

A particularly compact production cell manufactured delicate LSR cover caps for micro-switches. An electric Allrounder 270 A was equipped with a size 5 micro-injection unit, an 8 millimetres screw and an LSR cartridge with a capacity of 290 millilitres for injection moulding the liquid silicone (LSR) caps, each weighing just 0.009 grams. A clean air module with ionisation, situated above the clamping unit, prevented electrostatic charges. The moulded parts were removed by a Multilift H 3+1 robotic system, visually inspected directly in the gripper, and packed in paper bags.

An electric Allrounder 370 E Golden Electric used a 1+1-cavity family mould to alternately produce a magnetised cog wheel with eight poles and a rotor with four poles in a cycle time of about 85 seconds. Thanks to the two mould cavities and flexible Selogica control system, the items could be produced with no need for conversions or non-standard sequences. A plastic-bonded magnetic compound was processed based on PA6. Magnetisation took place in the mould itself via permanent magnets. The 2-component vacuum gripper of the Multilift Select was additively manufactured as a functional hard/soft part on an Arburg Freeformer 300-3.



The hydraulic Allrounder 270 S compact is the first injection moulding machine that customers can configure for themselves and order online via the "Configuration" app in the "arburgXworld" portal. (Photo: Arburg)



The Allrounder 1020 H in Packaging version, featuring a clamping force of 6,000 kN, celebrated its premiere at K 2019. As a practical example of a circular economy, new PP material was processed together with 30 percent added single-type PP recyclate to produce thin-walled cups. (Photo: Arburg)

K 2019: Arburg sets trends

A vertical Allrounder 375 V with an upstream stamping/bending cell and Multilift Select that was mounted to save space overmoulded loaded parts with glass bead-filled PA6 (GB30) to produce plug inserts. Next, the pre-moulded parts were supplied by workpiece carriers to the stand of Arburg's partner, Plasmatreat, where they were turned into finished hybrid connectors using an electric Allrounder 470 A.

With a clean room cell based on an electric Allrounder 470 A, Arburg demonstrated how functional products can be created with Film Insert Moulding (FIM), using the IMSE technology of its Finnish partner, Tactotek, as an example. For this purpose, 3D touch films with integrated electronics and LEDs were inserted into the mould and laminated, removed by a six-axis robot, transferred to an LED testing station, and set down. They were then manually assembled with a circuit board and base to make a desktop night light with a second connection for charging a smartphone. In general, the FIM process is

ideal for high-quality touch functions, for example in car interiors, and also for the electronics sector and medical technology.

Freeformer 300-4X additively produces fibre-reinforced parts

In the area of industrial additive manufacturing, Arburg showcased its new Freeformer 300-4X with four-axis part carrier at K 2019. The machine's additional rotary axis means that continuous fibres can now be fed in, set down as required, and overmoulded with plastic to locally reinforce functional parts. At the trade fair, the Freeformer 300-4X produced a hand orthosis locally reinforced with carbon fibres in hard/soft combination.

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analytica 2020: The leading guide to the smart laboratory



- The world's leading trade fair is the meeting place for the global laboratory industry
- International exhibitor participation is growing strongly
- The focus on digital transformation is being further expanded

From March 31 to April 03, 2020, analytica will open its doors on the fairgrounds of Messe München. Even now there are already signs of an increase in the number of exhibitors. One focus of the world's leading trade fair for laboratory technology, analysis and biotechnology with the accompanying analytica conference: the digital transformation of the laboratory world.



Today, reliable analyses are more important than ever – for controlling the global movement of goods as well as for meeting climate targets and developing new materials or medicines. According to the 2019 Trend Report of the industry association Spectaris, the world market for analysis, bio- and laboratory technology is growing by five to eleven percent annually, depending on the segment. "We feel the positive mood in the industry when we register exhibitors for analytica," says Susanne Grödl, Exhibition Director analytica at Messe München. Above all, interest from abroad is growing strongly: Thus, exhibitors from the USA will for the first time be present in the form of a joint booth. China is planning a much larger trade fair presence than in 2018, and the United Kingdom, Spain and Korea have likewise booked national booths again. Five months before the start

analytica 2020: The leading guide to the smart laboratory

of the trade fair, 814 exhibitors have already registered – 369 of these international ones, an increase by 15 percent over the corresponding period in 2018. The number of German exhibitors has risen by six percent to 445 by now.

The supporting program: Forums, Live Labs, and more

“The megatrends of digitalization and networking are keeping the industry occupied,” emphasizes analytica Exhibition Director Grödl, “hence we are expanding the Di-

gital Transformation Forum in terms of both space and contents.” In addition to keynote speeches, there will be a special show in Hall B2. Industry giants, medium-sized companies and start-ups will be presenting their concepts for the digital transformation live here. Further highlight: With virtual reality glasses, analytica visitors will be able to experience tomorrow’s smart laboratory already today.

The Biotech Forum (Hall A3) and the Laboratory & Analysis Forum (Hall B1) with best-practice presentations by the manufacturers will also be held again. The program of the Biotech Forum also includes the Finance Day on April 02 and the Personalized Medicine theme day on April 03. And anyone who would like to use their visit to analytica for their own career planning should miss neither the Job Day on April 03 nor the extensive continued training offered by analytica.

Practical tips for laboratory work can also be had from the Food Analysis (Hall A3) and Material Analysis (Hall A1) Live Labs. In the fully equipped laboratory lines, international market leaders demonstrate their products and systems in action. Crowd-pullers furthermore include the “explosive” demonstrations at the special show on workplace health and safety.

analytica conference: Focus on research

“Talking Science” is the motto of the analytica conference. It will take place on the first three days of the trade fair at the ICM Congress Centre of Messe München and bridge the gap between routine analysis and research with some 200 lectures. Renowned scientists from all over the world will not only present the latest methods of chemical analysis and bioanalysis, but will also discuss artificial intelligence and big data, resistance to antibiotics, nanoparticles and many other subjects.

Whether at the analytica conference or in the exhibition halls: The exchange of information between the various industry players is always a priority. “By bringing together equipment manufacturers, users and scientists, investors and decisionmakers from all over the world and from all analytical disciplines, we drive the innovative power of the industry,” summarizes Susanne Grödl. In times of change, interdisciplinary global dialogue plays a key role. analytica offers a unique platform for this.

31st March - 03rd April 2020: analytica 2020, Munich (D)



interpack 2020: Exhibitor database online



- Trade fair and parallel ‘components’ event fully booked
- New digital tools for trade fair preparation

07th - 13th May 2020: interpack 2020, Duesseldorf (D)

interpack 2020 is fully booked, meaning that around 3,000 exhibitors from approximately 60 countries will present their solutions at the most significant event for the packaging and associated processing industries from 7 to 13 May 2020. The parallel event for the supplier industry, „components – special trade fair by interpack“ in Hall 18 is also fully booked.

A unique offer

Effective immediately, interested parties can access the “Exhibitors and Products” section at www.interpack.com to obtain an overview of this unique offer and the participating companies. The “Branch Search” section provides eight target-group icons for fast access. Users can click on the icons for a list of exhibitors who have corresponding products in their portfolio for the respective branch. Various selection options allow future visitors to further refine their results and save them in a personal account using the MyOrganizer function. Users can select individual exhibitors as favourites and add notes – and can, of course, synchronise the list with the interpack app, which is available for iOS and Android. The function also offers a personalised version of the trade fair layout, which makes finding your way around the 18 trade fair halls much easier.

Optimised hall layout

interpack’s optimised structure adds to this, with focal points for user industry offers such as the pharmaceutical and cosmetics industry (Halls 15 to 17) and for sub-segments of the industry such as packaging materials and supplies and the manufacturing thereof (halls surrounding the North Entrance). The offerings in these halls have also been more clearly structured so that it will be easier for visitors to find the exhibitors that are of interest to them here. Presentations that focus on specific process steps have also been grouped closer together.

New conference: “Life without Packaging?”

Sustainability has been a subject that has been shaping the industry for years and that has recently become a hotly debated issue as a result of the discussion about plastic packaging in particular. The new “Life without Packaging?” conference controversially highlights the subject areas of packaging, sustainability and the environment and presents different perspectives. Critics and advocates will both have their say and will discuss necessities and what to avoid. The event will

focus on sustainability and environmental impact, hygiene and the reduction of food waste. The one-day conference will take place at the CCD Süd from 10.30 a.m. to 4.30 p.m. on 12 May, the penultimate day of the fair. Tickets cost € 299.00 and are available from the interpack’s online shop at www.interpack.com. Here, interested parties will also find details on the speakers and the conference programme.

The SAVE FOOD Festival

The SAVE FOOD Festival will take place at a central location at the Rheinterrassen in Düsseldorf from 8 to 10 May. The festival’s core elements include an interactive exhibition, conferences and the presence of start-ups. The latter are part of the Startup Week Düsseldorf, an event that comprises around 130 events, workshops and pitches, which will take place at various locations throughout Düsseldorf. A shuttle will be available between the trade fair grounds and the Rheinterrassen. The SAVE FOOD Festival is also open to interested citizens.

Matchmaking with artificial intelligence

The completely revised Matchmaking tool is a highlight among the new, digital offers that help efficiently plan visits to the trade fair and will be available to future interpack visitors and exhibitors from mid-November. The tool enables users to set up meetings prior to the trade fair. Over time, the system learns from its interactions with the user and suggests potential contacts. These contacts can then be assessed, either positively or negatively, by swiping in the app – similar to a well-known digital dating app. The decisions continuously improve suggestions.

Visitor’s Guide Pre-Show

As a rule, excellent preparation ensures that your visit to the trade fair is a success. The interpack 2020 Visitor’s Guide Pre-Show can help you. It depicts the complete trade fair layout including all exhibitors and also provides helpful tips on what to remember in the days leading up to interpack. The printed guide is distributed via mailings and is a supplement in trade magazines. For the link to the digital version, please visit www.interpack.com.

Sumitomo (SHI) Demag CEO sums up K-2019 highlights



With Euro 25 million in sales confirmed over the eight day exhibition Sumitomo (SHI) Demag CEO Mr. Gerd Liebig hailed the show an unprecedented success.

At times, the Sumitomo (SHI) Demag stand in Hall 15 appeared to be at full capacity with visitors exploring the company's market-leading exhibits. Although the visitor numbers were down on the previous K hosted in 2016, the quality of customers visiting Sumitomo (SHI) Demag's stand was of a much higher quality. As Mr. Liebig noted: "We had some excellent customer meetings. In addition to the large number of new projects, we were also surprised to see that markets hit hard by the economic crisis, such as Germany, Spain and Italy, are now clearly signaling a revival with a significantly improved project situation."

Mr. Liebig stressed, that the new El-Exis SP 1000 ton machine unveiled at the show demonstrates Sumitomo (SHI) Demag's continued investment in its product range. "We remain the number one supplier globally of packaging machinery, and our two exhibits at K once again fortified our strength in this market."

The company's clear precision and productivity strategy and investment across each industry sector also appealed to visitors, with the medical and automotive exhibits showcasing cutting edge processing technologies and collaborative partnerships with leaders in their respective fields. "The Nexus/LSR exhibit clearly positioned our automotive competence. Likewise, the medical showcase demonstrated how we can assist moulders to be GMP compliant and capture opportunities in mass-medical precision moulding," explains Mr. Liebig.

Despite the rising propensity to invest, the CEO maintains a cautious economic focus. Emphasising that he doesn't foresee an end to the crisis, Mr. Liebig says that Sumitomo (SHI) Demag will continue to increase production capacity and stabilise the company. This includes

investing in R&D and production support, such as MyConnect, to assist customers with application optimisation.

Mr. Liebig also confirmed the company's intention to significantly expand its automation strategy.

"What our exhibits at K-2019 showcased is our focus on innovation. We are known the world over for being very strong in packaging. We'd like to bring the same clear focus and global recognition for our clean room medical machines and validation support, as well as our automotive sector offerings," adds Mr. Liebig.

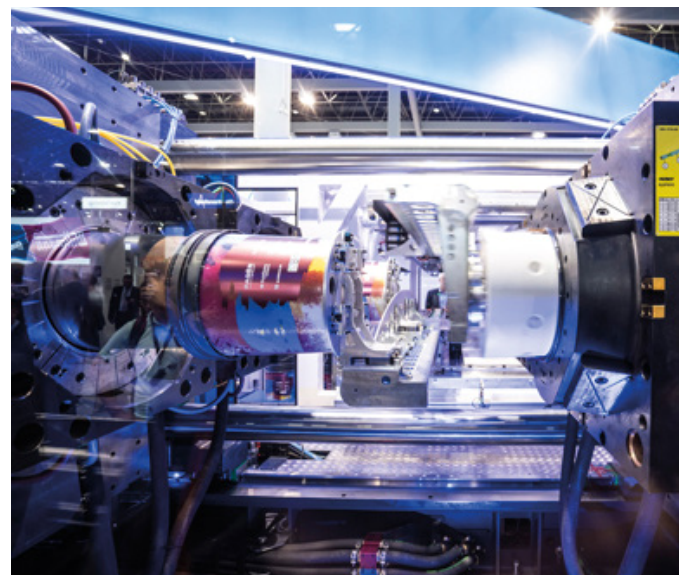
With a strong executive team, all experts in their respective sectors, Mr. Liebig believes that the company is well-positioned to ensure its strategy stays aligned to market needs. Citing automotive as an example, he says that from customer meetings at the show it's evident that injection moulding in vehicle manufacturing is on the rise. The company plans new IntElect models targeted at the automotive and consumer markets for release in 2020.

Naturally, the circular economy was the dominant topic throughout K. Energy efficiency, processing recyclable materials and productivity are topics where Mr. Liebig feels Sumitomo (SHI) Demag can quantify the economic costs and make a difference. "This is where we continue to invest our know-how. The confidence that customers have in our machine range and development teams is our motivation to further elevate our level of innovation. Customers know that with Sumitomo (SHI) Demag they will get the fastest, most precise and energy efficient machine for their application."

Sumitomo (SHI) Demag
D 90571 Schwaig



CEO Mr. Gerd Liebig notes that visitors to the Sumitomo (SHI) Demag stand at K-2019 were of a high quality resulting in EURO 25 million in orders.



The packaging innovations on show, including the new El-Exis SP 1000 ton, proved to be a key attraction.

TDK expands its product range towards medical applications and showcased innovative solutions at Medica 2019



– TDK presented its product solutions for various kinds of medical applications and services under the brands TDK, EPCOS, Micronas, ICsense, TDK-Lambda, and Tronics

– Medica is the biggest European medical exhibition, which takes place in Dusseldorf from Nov 18-21, 2019

16th - 19th November 2020: MEDICA 2020, Dusseldorf (D)

TDK Corporation (TSE 6762) will present its product range for the medical market this year for the first time at the Medica show in Dusseldorf, Germany, at booth C42 in hall 9. The product range includes embedded motor controllers, magnetic, temperature, pressure and biomagnetic sensors, medical ASICs, power supplies, piezo components, and diagnostic chips for various medical applications. Represented at the booth will be TDK, EPCOS, Micronas, ICsense, TDK-Lambda, and Tronics branded products.

Product highlights include:

TDK biomagnetic sensors:

TDK has developed compact and highly sensitive biomagnetic sensors that can detect weak biomagnetic fields, which could only be measured by using a SQUID (Superconducting Quantum Interference Device) flux meter up to now. The biomagnetic measurement system uses a multi-channel sensor array that enabled the world's first measurement and visualization (imaging) of the cardiac magnetic fields using MR sensors. Unlike the SQUID flux meter, which is an expensive and bulky system that also requires a cooling device using liquid helium (Dewar), this system, which uses MR sensors, is capable of measurement with high sensitivity even at room temperature. It is also compact and has excellent operability and portability.

TDK flash memory storage:

TDK's NAND-type flash memory controller GB Driver, using TDK's unique NAND flash control technology, provides high-speed access while securing high reliability. It supports the use of NAND-type flash memory with the „all-in-one single chip solution“.

TDK biosensor Silmee™:

With the combination of high-precision sensors and its software technology/original algorithm, TDK biosensors can support various types of data collection activities. The wristband-type wearable biosensor which is capable for measuring and recording the amount of conversation/sleeping time/pulse/UV, as well as of activity; the patch-type wearable biosensor that can measure cardiac potential with high accuracy; the portable-type biosensor that transmits emergency call along with location information; the digital basal thermometer with a communication function.

TDK PowerHap and TDK PiezoHapt:

Compared with conventional haptic technologies, PowerHap™ offers unprecedented haptic feedback with very high forces of up to 50 N and a wide variety of customized feedback profiles. Four square designs are available with edge lengths from 9 mm to 26 mm and insertion heights of only 1.1 mm to 2.3 mm. These actuators can be mounted directly under flat surfaces. This achieves a high degree of water- and dustproofing, which is necessary for applications with high hygienic requirements such as medical equipment. The portfolio is supplemented by four rectangular versions for lateral mounting.

The PiezoHapt™ series is the world's thinnest actuator for haptic feedback. They impress with their extremely low overall insertion heights of only 0.35 mm or 0.3 mm for areas of 80 x 60 mm or 30 x 15 mm. The unimorph design of PiezoHapt is based on a thin multilayer piezo element bonded to one side of a vibration plate, which can be mounted directly underneath displays.

EPCOS temperature and pressure sensors:

TDK develops and produces NTC thermistors for a temperature range up to 300 °C with an excellent media resistance and long-term stability for medical equipment. Thanks to their small design, these glass elements offer a very short response time. The other product family with epoxy coating is extremely temperature shock resistant and offers a high accuracy over a wide temperature range.

The EPCOS pressure sensor elements offer high accuracy over a wide pressure range of 100 mbar up to 40 bar, the smallest footprint at now only 0.65 x 0.65 mm². Especially in applications like breathing and anesthesia, but also for technical gases used in hospitals, their long-term stability is offering high level of safety.

EPCOS film capacitors for defibrillators:

The EPCOS MKP series is designed especially for defibrillation applications. The compact size and light weight of the capacitors make them suitable for portable equipment. They offer capacitance values from 30 to 200 µF and are suitable for voltages of up to 5500 V DC.

Micronas embedded motor controllers and magnetic sensors:

The Micronas HVC 4420F enables the direct drive of small and tiny brush-type, stepper, or brushless electric motors in smart appli-

TDK expands its product range towards medical applications

cations. With flash memory extended to 64 KB and SRAM to 4 KB, the HVC 4420F stays flexible on the increasing functional and diagnostic demands. Currently, customers use own ideas and approaches on diagnostics, e.g. by implementing sensor data fusion strategy or application status surveillance. To ensure the intelligent function set, a more and more growing amount of software routines have to be implemented. Due to its larger memory and the built-in feature set, the HVC 4420F offers the storage capacity and processing capability to execute these actions which are unique in the environment of smart applications. Providing the complete motor-driving functionality on a single die with monolithic concept, the small size of the HVC 4420F makes it an ideal solution for non life-critical applications.

Furthermore, TDK will show its extensive portfolio of Micronas magnetic field sensor solutions, based on the Hall effect for many kinds of measurement tasks.

ICsense ASIC designs:

ICsense miniaturizes electronic systems for minimal device size and maximum battery life by making custom ICs. The ASICs (Application Specific ICs) are made for and sold to one single customer only. ICsense has Europe's largest fab-independent ASIC design team active in medical technology. ASIC developments for medical implants and wearables are done according to ISO13485. ICsense supports ASIC designs for FDA Class I, II and III and Active Implantable Medical Devices (AIMD directive). At Medica, ICsense will showcase developments in medical Sensor/MEMS, High-Voltage (stimulation), Power/Battery, Ultra-Low-Power devices and Communication.

TDK-Lambda power supplies:

TDK-Lambda presents a wide range of highly reliable power supply solutions such as the large switching power supply series CUS-M

from 30 – 1500W. Depending on the model, the power supplies are suitable for use in both Class I or Class II installations and capable of operating in ambient temperatures of up to 85°C without the need for forced air cooling. The quiet power supplies can be used up to a working height of 5,000 meters and have a 3 or 5 year warranty.

A special innovation is the medically certified GXE600 series, which offers constant voltage / constant current (CVCC) operation and read-write programming through a robust RS-485 communication (Modbus RTU protocol). Both the output voltage and current can be adjusted over a very wide range using digital or analogue programming.

We will also exhibit the XMS500 Series, configurable Class I and II medical 500W power supplies, which have low airflow requirement and meet curve B EMI. Furthermore, TDK-Lambda will show an interesting selection of DC-DC converters.

Tronics MEMS Biosensor Platforms:

With its portfolio of Tronics sensors, TDK provides fully customizable MEMS platforms for the creation of unique biosensors and bioMEMS devices. The Tronics FlexusMEMS platform allows for the creation of fully flexible biosensors utilizing biocompatible materials for use in the medical wearables market. The biofunctionalized silicon microneedle platform allows for painless sensing of biomarkers such as glucose, lactic acid, pH, and O₂ levels in the body. TDK's customizable microfluidic platform can be used to create advanced diagnostic chips for blood sensing and protein analysis.

TDK-Micronas GmbH
D 79108 Freiburg

SP Acquires Spain Based i-Dositecno

SP Industries, Inc. ("SP"), a leading designer and manufacturer of state-of-the-art laboratory equipment, pharmaceutical fill-finish manufacturing solutions, laboratory supplies and glassware, announced today that it has acquired the assets of privately held i-Dositecno. Located in Mataro, Spain, i-Dositecno is a global provider of complete sterile filling lines for pharmaceutical, cosmetic and ophthalmic applications.

"i-Dositecno has a well-earned reputation for producing high quality, fill-finish equipment complemented by strong software engineering capabilities and innovative servicing and support," stated SP CEO Brian Larkin. "At SP we are continually focused on bringing value to our customer relationships and i-Dositecno's current portfolio, engineering expertise and broad capabilities in liquid filling particularly for syringes and other cartridges in addition to vials, are a very strategic complement to our Hull and VirTis freeze dryers and PennTech aseptic vial processing lines."

Larkin continued by saying, "As biological drug development and treatment protocols have become more specialized, we expect short-run aseptic liquid filling to continue to drive pharmaceutical growth.

With the addition of i-Dositecno to our SP brand, we now join a very select group of manufacturers with the capability to provide full lines. And, while SP has traditionally had a stronger equipment footprint in the United States, i-Dositecno's efforts and success have primarily been within Europe and Asia. These relationships, as well as the addition of a Spain location to our current UK manufacturing within Europe provide significant opportunity to better serve the world-wide market. Key manufacturing, engineering, sales and service personnel from i-Dositecno have joined the SP team to assure continuity in operations and service. Oriol Casoliva, founder and past CEO of i-Dositecno will join SP's Executive Leadership Team and we look forward to benefiting from his vision and depth of knowledge in maximizing i-Dositecno and SP's performance within the aseptic pharmaceutical manufacturing space."

SP Industries, Inc. (SP)
PA 18974 Warminster
Vereinigtes Königreich

Lightweight yet stable

By simulating the glass-moulding process digitally, Gerresheimer is reducing the development time for glass containers

Glass production begins with engineering the mould. The more accurately the moulds are designed and made, the greater the quality of the bottle. A perfect and even distribution of glass is the key to success when it comes to ensuring the robustness and sustainability of these highly sensitive products. Gerresheimer employs innovative simulation software for this purpose. This adjusts the production parameters using CFD (computational fluid dynamics) as a basis, which improves the products and reduces development time. At CPH Worldwide in Frankfurt from November 5 to 7, Gerresheimer showcased a wide range of pharmaceutical glass containers for solid and liquid drugs at booth 111B10.

“Our customers are demanding sustainable and therefore lightweight yet stable products,” says Philipp Amrhein, Manager of New Product Development & Mould Design at Gerresheimer in Lohr. To ensure it is in the position to meet these requirements, the company is using simulation software developed to calculate sturdiness and simulate the production process for moulded glass. The moulding production process and design of the moulds are being optimized, taking account of all the chemical and physical parameters of the glass. CFD simulations are also being used to optimize the respective process, which reduces stresses in the glass container and is an effective way to improve the quality of the production process.

Cutting development time by up to 70 percent

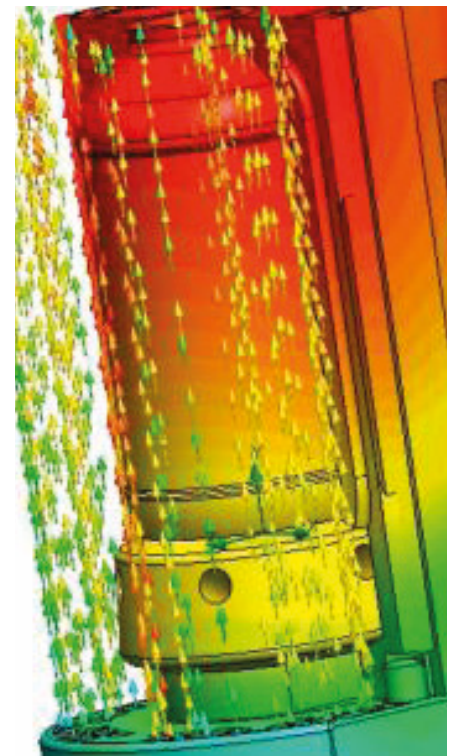
While getting a stable production process used to require lengthy empirical testing, this can now be achieved in just a few minutes using computer-based simulation

software, more or less at the touch of a button. The results are then immediately transferred directly to the three-dimensional CAD software for mould design via interfaces and used directly by the mould-processing machines to create mould tools. The simulation software also reduces development time by up to 70 percent.

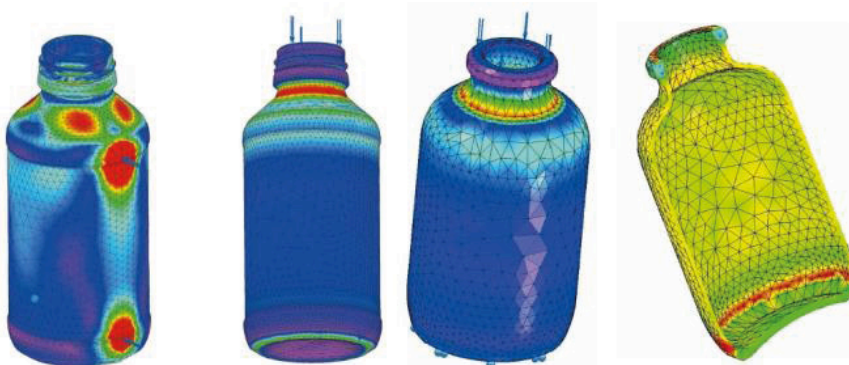
Detecting weaknesses faster

The well-known finite element analysis (FEA) method is used to determine which stresses arising from the production requirements work on the glass containers. These results can be used to prevent weaknesses even before the items have been sketched out. The computer-based simulation of the moulding process and the product requirements from day-to-day mould design are now part and parcel of operations. As an element of Gerresheimer’s continuous improvement process, it is essential.

Gerresheimer AG D 40468 Düsseldorf



Designing mould cooling

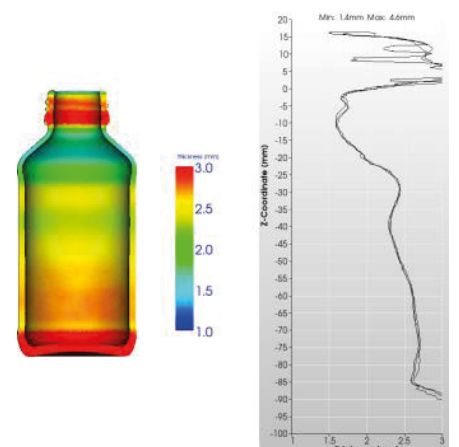


Impact stress

Vertical stress

Thermal stress

Analyzing stresses using FEA sturdiness calculations



Result of the process simulation – analyzing variations in glass wall thickness

European Heat Pump Summit überzeugt die Fachwelt

Der European Heat Pump Summit – powered by Chillventa beschenkt sich zum 10-jährigen Jubiläum mit hervorragenden Ergebnissen. Rund 260 Teilnehmer davon 60 % aus dem Ausland und eine mit 22 Ausstellern ausgebuchte Foyer-Expo. 35 renommierte Referenten aus dem In- und Ausland boten erstklassige Wissensvermittlung auf hohem Niveau und gaben Einblicke zu aktuellen Fragen rund um Status Quo und Bedeutung der Wärmepumpe. In der diesjährigen Veranstaltung drehte sich alles um die industriellen, gewerblichen und kommunalen Anwendungen der Wärmepumpe.

„Der European Heat Pump Summit 2019 war ein voller Erfolg! Im zehnten Jahr überzeugte die Veranstaltung auf ganzer Linie. 257 Teilnehmer, die aus 26 Ländern angereist waren, untermauerten dies noch einmal deutlich. Wir freuen uns außerordentlich über das großartige Commitment der Wärmepumpen-Branche. Damit ist der European Heat Pump Summit einer der wichtigsten Events rund um das Thema Wärmepumpe in Europa und weltweit“, freut sich Daniela Heinkel, Director Chillventa und European Heat Pump Summit bei der NürnbergMesse.

Die Kombination aus Congress und Foyer-Expo überzeugte

Der Mix aus fachlich hochwertigen Vorträgen mit theoretischem Fachwissen im Kongress und der Praxisbezug in der Foyer-Expo boten den Teilnehmern ein breites Wissensspektrum und genug Platz zum Netzwerken. Wie auch in den Vorveranstaltungen, bot die Foyer-Expo beste Möglichkeiten mit den Ausstellern in den fachlichen Dialog einzusteigen und Antworten auf individuelle Fragestellungen zu erhalten.

Hochwertiges Kongress-Programm von Profis für Profis

In 35 abwechslungsreichen Fachvorträgen konnten die Teilnehmer aus aller Welt ihren Wissenshorizont erweitern. Im Fokus standen 2019 die industriellen, gewerblichen und kommunalen Anwendungen der Wärmepumpe.

„Einmal mehr unterstreicht der European Heat Pump Summit zum 10-jährigen Bestehen, dass er eine der wichtigsten Dialog- und Wissensplattformen der Wärmepumpen-Branche ist. Sichtbar wird dies in den erstklassigen Vorträgen. Der Bogen wird hier inhaltlich weit gespannt zwischen Wissenschaft, Entwicklung in der Industrie, Technik und Praxis. Der Netzwerkgedanke stand auch beim Summit 2019 im Mittelpunkt: „Connecting Heat Pump Experts“, bringt es Dr. Rainer Jakobs, Koordinator European Heat Pump Summit, auf den Punkt.

Neben innovativen Technologien in der

Komponentenherstellung und der konkreten Anwendung von Wärmepumpen in Industrie und Gewerbe wurden aktuelle Fragestellungen zu Kältemitteln und dem Einsatz von hybriden Anlagen und Hochtemperaturwärmepumpen beleuchtet. Zudem ging es um folgende Themen: Marktentwicklungen, Gesetze und Richtlinien, Neues aus Forschung und Entwicklung, Aktuelles zu Entwicklung von Komponenten und Produkten.

Partnerschaftliche Kooperationen

Die NürnbergMesse veranstaltet den European Heat Pump Summit in enger Kooperation mit ideellen Trägern und Partnern aus Handwerk, Wirtschaft und Forschung, darunter: bwp, DKV, ehpa, IEA HPT TCP, IZW, VDKF und ZVKKW.

Next Stop

Das nächste Event des Kälte-, Klima-, Lüftungs- und Wärmepumpen-Netzwerks der NürnbergMesse ist die REFCOLD INDIA. Vom 21. bis 23.11.2019 findet die hochspezialisierte Fachmesse dieses Jahr im Hitex Exhibition Centre in Hyderabad, Indien statt.

Die größte Veranstaltung ihrer Art in Indien ist die ACRES India vom 27. bis 29. Februar

2020. Im kommenden Jahr wird sie in Greater Noida, Delhi durchgeführt.

Premiere nicht verpassen: Erstmals organisiert die NürnbergMesse einen Chillventa Pavilion auf der Climate World. Interessierte können vom 10. bis 13. März 2020 im Crocus International Expo Center, Moskau, auf dem Gemeinschaftsstand neue Kontakte knüpfen.

Der European Pavilion powered by Chillventa auf der China Refrigeration in Wuhan schließt sich vom 8. bis 10. April 2020 an.

Last, not least, die Chillventa: Die internationale Weltleitmesse der Kältetechnik beendet das Kältejahr 2020. Sie ist DER zentrale Treffpunkt der weltweiten Marktteilnehmer in den Bereichen Kälte, Klima, Lüftung und Wärmepumpen. Vom 13. bis 15. Oktober 2020 heißt es dann auf dem Messegelände Nürnberg: „Chillventa Connecting Experts – Worldwide!“ Nicht vergessen: Chillventa CONGRESS startet am 12.10.2020, dem Vortag der Messe, mit einem Wärmepumpenschwerpunkt.

Die Wärmepumpen-Profis treffen sich dann wieder zum nächstem European Heat Pump Summit am 26. und 27. Oktober 2021 am Messeplatz Nürnberg.

NürnbergMesse GmbH
D 90471 Nürnberg



Top quality injection vials for greater patient safety

The Gx Elite vials and Gx RTF vials set a new standard for type I vials made from borosilicate glass at booth 111B10 at CPHI Worldwide in Frankfurt from November 5 to 7, 2019.

"Our GX Elite vials made from high-quality type I borosilicate glass are our response to greater demands for even more patient safety," said Hans-Ulrich Pieper, who is responsible for glass products made from tubular glass (Tubular Glass Converting) as Senior Director Sales Pharma Parenteral Solutions Europe & MENA PPG. He described how avoiding glass-to-glass contact in the production process can significantly affect the quality of the injection vials.

Extremely stable and free of cosmetic defects

The Gx Elite vials are the result of a careful product development process spanning several years. The highly shatter-resistant vials are extremely durable and free of cosmetic defects. They also boast an incredibly robust structure, while their resistance to delamina-



tion protects the drug inside. Simple handling and a range of packaging options ensure that Gx Elite vials can be supplied for end-to-end use on various filling lines. This cuts costs while improving quality, as countless past and ongoing tests by no-table customers have shown.

Gx RTF vials – ready for filling

The Gx RTF injection vials are made from type I borosilicate glass and meet all current requirements of the applicable ISO standards and pharmacopeias (USP and Ph. Eur.). They are moulded in accordance with cGMP, washed in a cleanroom, packed in trays or in nests and tubs, and sterilized. Gerresheimer offers its own packaging arrangements as well as the familiar Ompi EZ-fill packaging design. This means the vials are ready straight away for the next steps in the filling process. The benefits are obvious: sterile delivery, a simplified fill and finish process, the highest quality standards, flexibility thanks to various possible packaging arrangements, and a wide range of filling and sealing technologies. These all combine to reduce overall manufacturing costs across the product's entire lifecycle.

Gerresheimer injection vials for international standards

Injection vials set the benchmark for primary packaging for parenteral drugs.



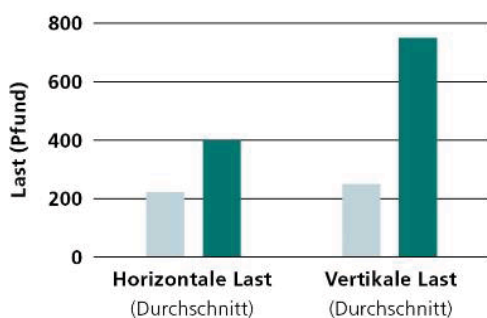
Gerresheimer's come in all sizes and comply with the relevant international standards and pharmacopeias. The company's range includes solutions for bioengineered drugs and other specialist pharmaceuticals.

Intelligent defect recognition with state-of-the-art HD cameras

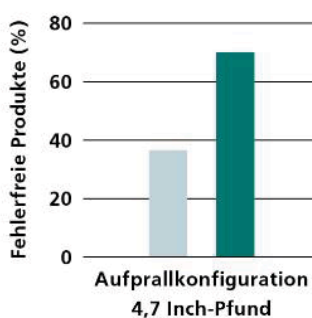
All of Gerresheimer's tubular glass plants that produce vials work with standardized monitoring, inspection, and packaging technologies, which essentially comprise the Gx G3 and Gx RHOC systems. The inspection systems are developed in house and form part of a close-knit testing system that ensures the highest precision and quality assurance in line with the latest standards. Complete with state-of-the-art HD cameras, the Gx G3 inspection system makes sure that cosmetic defects are identified reliably, for instance. The intelligent software detects and classifies the defects in a few fractions of a second, while the Gx RHOC system ensures dimensional quality with HD matrix cameras and a hypercentric ID camera.

Gerresheimer AG
D 40468 Düsseldorf

Kompressionstest



Aufpralltest Seitenwand



Standard Gx® Elite



Gx Elite vials are a clear step up from standard products, performing significantly better in hydrostatic and side impact tests.

Modbus Temperature Probe for Air, Gases and Liquids



**The EE074 measures accurately the temperature of air, gases and liquids.
The probe features a RS485 interface with Modbus RTU protocol.**

The EE074 from E+E Elektronik is suitable for accurate temperature measurement of air, gases and liquids. The robust stainless steel probe can be used for climate and process control in the food and pharmaceutical industries, in clean rooms or in agriculture.

The EE074 temperature probe offers a high measuring accuracy of ± 0.1 °C and a wide measuring range of up to $-70 \dots 105$ °C ($-94 \dots 221$ °F). The IP68 stainless steel enclosure and the fully encapsulated electronics lead to an excellent measuring performance and a longer lifetime even in harsh and condensing environment. The RS485 interface with Modbus RTU protocol facilitates the design-in of the probe.

Immersion Well for Measurement in Liquids

With the optionally available immersion well, the EE074 can be used for temperature measurement in pressurized liquids up to 25 bar (363 psi). The innovative clamp ring allows for fastening the probe in the immersion well without screws and thus without tools. The sensing head with 6 mm diame-

ter is also compatible with other standard immersion wells.

Easy Installation

Various probe and cable lengths make the EE074 a flexible and versatile temperature probe. The M12x1 connector and the choice of optionally mounting accessories minimize installation time and costs.

Configuration, Adjustment and Calibration

An optional adapter and the free configuration software facilitate the setup and adjustment of the EE074.

Due to its mechanical design, the probe can be calibrated in a dry-block or liquid bath calibrator.



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EE074 temperature probe from E+E Elektronik with and without immersion well. (Photo: E+E Elektronik GmbH)

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