

Customer Newsletter

November 2020

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Vials and syringes for vaccinations

How vaccines can be stored and administered safely

Until the vaccine against Covid-19 becomes available, hygiene rules and concepts should help to ensure that as few people as possible become infected. In addition, it is important that the body's immune system is also protected by vaccinations, such as those currently available against influenza, during the cold season. The influenza vaccine, as well as the vaccines currently under development to protect against Covid-19, are often filled in so-called injection vials made of type 1 borosilicate glass.

In autumn and winter the flu season is at its peak. And every year the question arises whether the flu wave will strike again. Perhaps the flu vaccination has never been as important and useful as it is this year. Vaccines and medications must be filled and packaged so that they can be administered safely and sterile. This is mainly done in vials and syringes made of glass, because glass is particularly low-reaction and impermeable. It is therefore very suitable for storage, which is an impor-

tant aspect for vaccines. Gerresheimer specialises in the development and production of vials, syringes, many other primary packaging materials and also delivery systems and is well positioned worldwide.



Ready for corona vaccination

Gerresheimer prepares for the market launch of corona vaccines. The first deliveries of injection vials to pharmaceutical manufacturers, who in future will fill their active substances in them, will start this quarter. Deliveries will pick up speed in 2021. Gerresheimer intends to supply more than a third of the expected total requirement of 2 -3 billion vials.

Gerresheimer also produces syringes and drug delivery devices with which vaccinations and other drugs can be administered.

VACCINATION

Gx® Vials – ready to fill, safe and quickly available

Gerresheimer injection vials are the international standard for primary packaging for parenteral drugs which also include vaccines. The large worldwide demand for vials is met by the Gerresheimer Group's plants in Europe, America and Asia, where they are manufactured to high quality standards for customers in the pharmaceutical industry. Gerresheimer has already received many orders for vials for drugs and vaccines against Covid-19.

Pharma Plus Vials
 exceeding the standard

Pharma Plus injection vials are designed to exceed the pharmaceutical industry's requirements for critical dimensions and cosmetic quality. The vials are manufactured using state-of-the-art technology and are inspected during production using image processing technology.

Gx® Elite Vials
 Extremely stable and
 free from cosmetic defects

A Gx® Elite Vial is a flawless container (cosmetic defects less than 100 microns) with two to three times the strength, a high process capability (Cpk) for critical features and improved delamination resistance. Gx® Elite is a product development that exceeds all known market requirements for a Type I borosilicate injection vial.

Gx® RTF Vials
 sterilized and ready for filling

The Gx® RTF injection vials are made of borosilicate glass type I and are formed according to cGMP, washed in a clean room, packed in trays or nest and tub and sterilized. Gerresheimer offers its own packaging configurations, but also the well-known Ompi EZ-fill® packaging format. This means that the vials are ready for the subsequent process steps in filling.



Gerresheimer produces the vials in all sizes in accordance with international standards and pharmacopoeia requirements. All Gx® Vials (Standard, Pharma-Plus, Elite and RTF) are manufactured and inspected using the latest technology and image processing techniques. The quality level of the agreed specification is decisive. Gerresheimer can use its camera systems for a wide range of parameters with or without restricted tolerances and for differently agreed quality levels, also known as AQLs (Acceptable Quality Levels).

**Gerresheimer experts talk about their primary packaging containers
 for vaccinations and medicines:**


Bernd Zeiss
 Head of Global Technical Support
 Gx Solutions & Syringe Systems



"Three worldwide achievements have saved most lives in the post-war period: Antibiotics, non-smoking campaigns and vaccinations. Modern vaccines are safe and well tolerated.

They protect the vaccinated person as well as all fellow men from many infectious diseases via the herd immunity achieved with mass vaccinations. In addition to vials, from which an active ingredient must first be drawn into a disposable polymer syringe before being injected, ready-to-use syringes have been used for many years for vaccinations. Here, doctors and nursing staff have considerably less effort to expend in preparing the injection than with vials. The dose is already prepared for injection in the syringe.

For example, 1 mL glass syringes are usually used for flu vaccinations. The 1 mL standard format is a short syringe with a relatively voluminous body. For better handling, the syringes are usually equipped ex works with a clipped-on plastic enlargement of the finger rest, which also prevents the plunger rod from being accidentally pulled out ("backstop"). Vaccines are usually injected intramuscularly; a corresponding needle (25G, 5/8 inch) is often already integrated, so that a further step in preparation for the injection is not necessary. If the needle is to be chosen free-

ly, Luerlock syringes are available where, depending on the patient and body region, suitable disposable cannulas can be attached for the injection.

Lothar Haaf
 Director Product Management
 Vials & Ampoules Europe



"For basic immunization of children, vaccines are used to protect against diphtheria, tetanus, pertussis, poliomyelitis, Haemophilus influenzae b (Hib) and hepatitis B. These vaccines are often filled in ready-to-use syringes. Pneumovax 23 is a pneumococcal vaccine. Single doses are also filled in vials here, for example. As a rule, standard vials or Pharma-Plus vials are used when vials are used. Depending on the quality requirements and filling facilities of the customer, Gerresheimer can also offer Gx® Elite glass vials or Gx® RTF vials".

VACCINATION

New: Gx RTF[®] syringes now also with twist-off closure system Gx TWILC[®]



Gerresheimer Gx RTF[®] Luer lock syringes
with the new twist-off closure system Gx[®] TWILC
(Twistable Integrated Luer lock Closure)
available in the sizes 1.0 ml long and 1.0 ml short

The integrated seal cap consists of two components: an elastomeric component, which is available in different formulations and a rigid, translucent polymer cap. The elastomer component is inserted into the plastic cap, screwed together with a Luer Lock adapter, and pre-assembled on the syringe. Compared to traditional Luer Cone systems, this solution offers a syringe closure with increased stability, thus protecting the drug product. The twist-off closure system responds to the containment needs of different drugs: vaccines, hyaluronic acid, biotech drugs and other viscous drugs. It has been developed and produced according to ISO 11040-7 standard and fit perfect on Gx RTF[®] syringes. Gerresheimer will offer 1.0 ml long and 1.0 ml short Luer Lock syringes with the integrated twist-off closure in the first step. Additional formats will follow.

Gerresheimer will offer its Gx RTF[®] syringes with SG ITC (Integrated Tip Cap) twist-off closure of the Stevanato Group. With this technology, which is often asked for on the market, Gerresheimer includes an especially user-friendly system solution for Luer Lock syringes in its program.

Increased safety and user-friendliness for medical specialists

The seal cap is securely screwed onto the Gerresheimer Luer Lock syringe, so that accidental removal of the cap is prevented. The familiar twist-off function offers medical specialists improved user-friendliness without impairing the integrity of the pre-fillable syringes. The structured surface simplifies the removal of the cap. "We combine our syringes with system components that are primarily aimed at user-friendliness and safety," Manfred Baumann (Global Executive Vice President Sales & Marketing, Administration

& TCC, Member of the Management Board, Gerresheimer Regensburg GmbH) explains. "The new SG ITC twist-off closure suits these aims outstandingly." Gerresheimer already delivers syringes equipped with the seal cap, which can be processed on existing filling lines, under the name Gx[®] TWILC (Twistable Integrated Luer lock Closure). The 100-hole nests are packaged in a tub and sterilized with ethylene oxide gas (EtO).

"We combine
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The integrated seal cap consists of
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which is available in different formulations
and a rigid, translucent polymer cap.

BIOLOGICAL SOLUTIONS



New laboratory and regulatory services for biotech customers

Gx® Biological Solutions offers enhanced services for pharmaceutical primary packaging in the US and in Europe

Gerresheimer adds essential laboratory and regulatory services to its broad portfolio of products, solutions and services for biotech companies. Specialized laboratory technicians and an experienced team of further specialists offer these services in the two innovation and technology centers in Bünde (Germany) and Vineland (New Jersey/USA).

Gx® Biological Solutions offers full service for biotech companies regarding product development of primary packaging and drug delivery solutions, material and functional testing as well as comprehensive regulatory support. The partnership with Gerresheimer shortens the time to market for pharmaceutical companies, minimizes risks and saves resources.

„Our Glass Innovation and Technology Centers, with their new laboratory and regulatory services, take a lot of the work off our customers on the long road to regulatory approval,” says Stefan Verheyden, Global Vice President of the Gx® Biological Solutions Team.

Glass Innovation and Technology Center, Bünde (Germany)

The new center is located at the production site for glass syringes, injection vials and cartridges in Bünde. The range of services includes laboratory and regulatory services by regulatory experts for DMF III (Drug Master File) and the new MDR (Medical Device Regulation). Product support is provided by the

relevant product and material experts. They take care of the correct specification and can guide regarding fill & finish questions. Chemical analyses help in finding the appropriate packaging system with regard to material in direct contact to the drug formulation, such as glass, tungsten, adhesives, silicone oil or polymers. Customer-specific developments and design proposals are also developed and adapted to intelligent solutions as required. Throughout the whole value chain of drug development, subsequent testing and analyses can be conducted. Material and particle analysis, extractables and leachables testing, container closure integrity investigations, drug container interaction and aging tests, residual volume, fill & finish support and orienting stability tests are just a couple of examples of the cutting edge services that Gerresheimer will offer.

BIOLOGICAL SOLUTIONS

Additionally, a sample stock will hold many frequently used possible container formats for biopharmaceutical development enabling our customers to rapidly respond to any urgent market requirements they might face. The Gx innovative portfolio includes strengthened glass vials (both in non-sterile and ready-to-fill format) silicone-free syringes, safety devices, also in already assembled, sterilized and nested format (Gx® RTF), and other intelligent primary packaging solutions.



The comprehensive range of services offered by the innovation and technology centers shortens the time required for market launch of biopharmaceuticals.

Glass Innovation and Technology Center, Vineland (NJ/USA)

In parallel Gerresheimer has expanded the reach of the existing Glass Innovation and Technology Center in Vineland (NJ/USA) with a comparable extended service offering as specified for the Bünde site. Next to the existing material science capabilities, an extensive offering of functional testing will be

added. The bundling of development capacities with dedicated lab and regulatory services for primary packaging such as injection vials and cartridges has clear advantages when it comes to significantly reduce "time to market". At Vineland, experts and engineers who specialize in glass technology work in an en-

vironment that encourages collaboration through open offices, project, laboratory and meeting rooms. The environment also enables interactive collaboration with customers on site. The Innovation Center was the first of its kind for Gerresheimer's primary packaging glass business and was built in 2019 next to the plant in Vineland. In this way, the Innovation Center develops and tests new products and processes in close proximity to a production site and can incorporate the operational know-how of engineers from this plant. In addition, Gerresheimer's other American production sites can also use the service. It comprises a detailed analysis of the primary packaging material; for example, the material, surfaces and functions of injection vials are tested and chemical analyses are carried out. Gerresheimer also accompanies and supports its customers with regulatory support, official documentation and registration.

PRIMARY PACKAGING PLASTICS

Gerresheimer supplies the primary packaging for dexamethasone

Gerresheimer has been commissioned by a well-known customer to produce plastic containers in which the active ingredient dexamethasone is to be filled. According to a study, the active ingredient can reduce the mortality of people who are seriously ill with Covid 19. Only recently, the medical journal and other media reported that the World Health Organization (WHO) had called for an increase in the production of the active ingredient dexamethasone.

"Thanks to globally standardized processes and technologies, we are able to produce flexibly, locally and sustainably. This also includes optimizing procurement and transport routes for our customers," says Jens Friis, Vice President Europe & Latin America at Primary Plastic Packaging, responsible for sales. "For the packaging of dexamethasone, we supply 100ml drug cans with closures." He explains that already in December 2019 the first mould was successfully transferred to the production site in Vaerloese, Denmark, in order to be able to supply local European markets in an optimal way.

As a specialist for pharmaceutical primary packaging, Gerresheimer for the packaging of the active ingredient. Even at the beginning of the corona pandemic, the company responded flexibly to its customers' requests for containers for filling hand disinfectants. At Gerresheimer the factors of procurement security, supply chain management and clearly defined throughput times are decisive key factors for high customer satisfaction in the service of people's health.



This is the plastic can DB39 from Gerresheimer in which the dexamethasone tablets for the treatment of seriously ill Covid 19 patients are filled.



Dexamethason

Dexamethasone is an active ingredient from the group of corticosteroids. Corticosteroids influence metabolism, water and electrolyte balance, the cardiovascular and nervous systems, among other things. They are well known in medical practice and are used, for example, in immune disorders.

According to recommendations of the World Health Organization (WHO), critically ill patients with Covid-19 should be

systematically treated with certain corticosteroids. Analyses have shown that dexamethasone can reduce the mortality rate in critically ill Covid-19 patients. It does not fight the virus itself, but slows down the often overreacting immune system.

A prominent example is US President Trump, who was treated with dexamethasone as part of his Covid-19 disease.

PRIMARY PACKAGING PLASTICS

Gerresheimer is now also producing US type containers and caps in Europe

The demand for plastic containers and closures in US-type format for the European market is currently increasing at Gerresheimer. Gerresheimer will relocate the production of the containers and caps for Europe to the location in Haarby in Denmark so that it can be supplied in a time-saving and energy-saving manner.

"Sustainability has many facets for us and our customers. It's not just about what we produce, but also how and where. Creating better options for shorter delivery routes is an important point because it saves time, money and energy. For this reason, we are now producing our US type containers, which we have previously produced in India for the entire world market, for European needs in Europe," says Niels Düring, Global Executive Vice President at Gerresheimer Primary Plastic Packaging.



Due to the increased demand, the Triveni containers in the US standard with induction sealing for use in the European market are produced directly in Denmark.

The specialist for primary plastic packaging

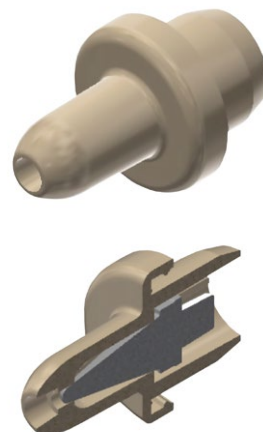
As a specialist in the pharmaceutical industry, Gerresheimer offers a wide range of packaging solutions for solid, liquid and ophthalmic products. Our leading brands Duma®, Dudek™ and Triveni for solid dosage forms, our edp PET bottles for liquid dosage forms and our products for ophthalmic applications are part of our comprehensive and innovative product range. Our broad standard range includes a wide variety of containers and closures, PET bottles, eye drops, nasal sprays, atomizers and countless customer-specific developments.

Gerresheimer takes over the irradiation with gamma rays

As an extended service, after the production of the bottles, Gerresheimer also offers irradiation with gamma rays by selected and specialized partner companies on request.

Primary packaging plastics

Dose eye drops even more precisely with DropControl



DropControl prevents uncontrolled drops from flowing out of the bottle during dosing.

The outer part of the pipette has only been changed slightly for this, while the inner part has been given an insert that is connected to the outer part.

With DropControl, Gerresheimer has developed a new type of dropper insert for modern drugs with low viscosity for ophthalmology, which prevents the drug from flowing in uncontrollably during use.

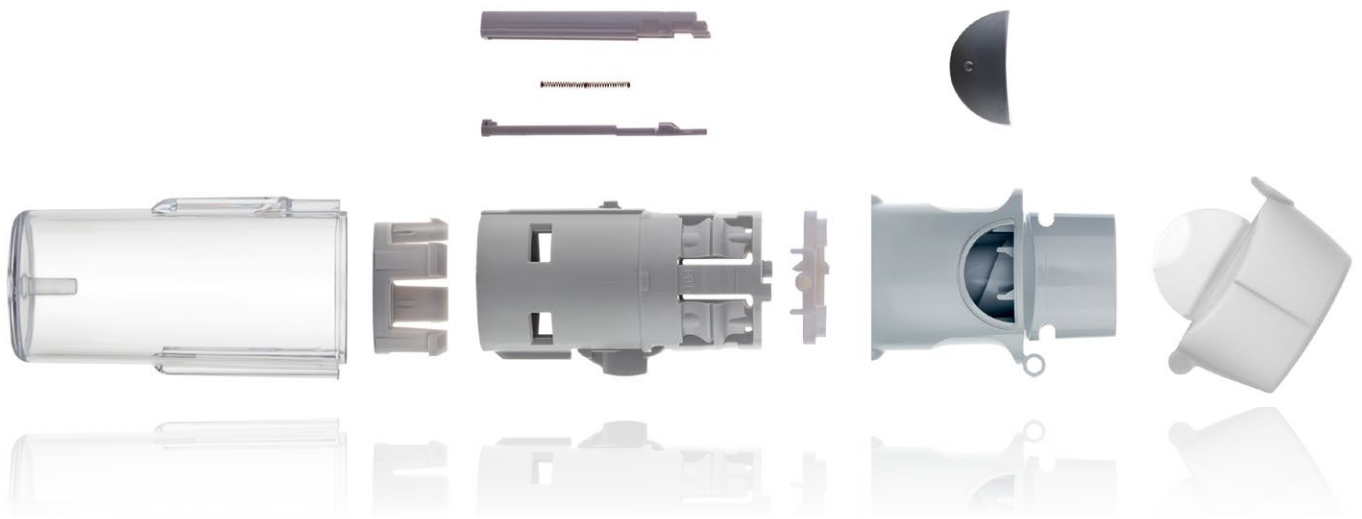
"Lots of people need eye drops regularly. It is therefore important that these vials function reliably and simply to the last drop. With DropControl, it is now even easier than before," says Niels Düring, Global Executive Vice President at Primary Packaging Plastics.

DropControl is designed to prevent uncontrolled drops from flowing out of the bottle during dosing. The outer part of the pipette has only been changed slightly for this, while the inner part has been given an insert that is connected to the outer part.

Dropper bottles for all common volumes

DropControl is produced for the various dropper bottle types A, C, E and F by Gerresheimer under clean room conditions in sizes of 5, 10, 15 and 30 ml. The bottle and the dropper are made of LDPE, the cap of HDPE.

MEDICAL DEVICES



Order for Gerresheimer:

Development and production of the Respimat® reusable inhaler housing module



Gerresheimer develops and produces the Respimat® reusable inhaler housing module

Gerresheimer has been commissioned by Boehringer Ingelheim with the development and large series production of the housing module for the new generation of Respimat® inhalers.

This environmentally-friendly successor model to the established Respimat® inhaler can be successively loaded with up to six active agent cartridges, thus ensuring less waste and a considerably reduced CO₂ footprint during the product life cycle. Gerresheimer has developed the housing module for the new inhaler and built the pre-series and series molds, as well as the pre-series and series special-purpose machines. Gerresheimer is also carrying out the large series production.

The Respimat® is an inhaler for the treatment of respiratory diseases that is firmly established in the market. Patients with chronic lung diseases like COPD use bronchodilation drugs on a daily basis to relieve their illnesses. Correspondingly high is the consumption of inhalers, which usually need to be replaced when the active agent has been exhausted. Boehringer Ingelheim has therefore decided to develop a new, reusable version of the Respimat®. This further development of the inhaler takes the feedback of patients into account. Thus, with a view to the ergonomics of the Respimat®, the grip has been further improved by an extension of the housing. The readability of the dosage display has also been improved.

MEDICAL DEVICES



Challenging for product development and industrialization was the necessity the new inhaler be immediately available in large numbers for its market launch. Gerresheimer, therefore, had to immediately transition from the development phase to a robust, high-volume, series production. In order to meet such a demanding schedule, the development

phase and the creation of the equipment for large series production were advanced simultaneously. The foundation was first established with low-cavity molds and semi-automated processes, on the basis of which the development of high-cavity molds and completely automated processes for high-volume, large series production were immediately com-

High-volume line for the assembly of the RespiMat® reusable inhaler housing module in a clean-room ISO class 8 in Pfreimd, Germany

menced with. In this way, the development of the series equipment be initiated 10 months prior to the planned design verification. Also decisive for the success of the project was the availability of our own clean room production for small series, with which samples could be promptly tested under real conditions.

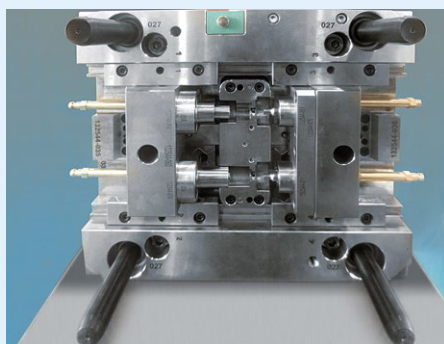
A risk-based approach that ensures the systematic mastering of all risks of the production process was used for the jump to large series production. Due to this robust development approach, all functional tests for the design verification of the low-cavity molds and later for the implementation of the high-cavity series molds were passed immediately. High-volume series production has also been running for several months now without problems.

Gerresheimer mold making in China certified

Medical technology specialist expands its range of services in Asia

To date, injection molding tools have been maintained and optimized at the Gerresheimer location Dongguan (China). Since certification according to DIN ISO 9001 in July 2020, the company now also builds complete molds. Gerresheimer in this way makes itself more independent of local mold makers and can offer the professional, cost-efficient construction of injection molding tools for its customers extending beyond its own needs.

Mold prototypes are produced by a team of 8 employees for our customers at the Dongguan location. The maintenance and optimization of molds are still part of the service offering. In addition to this, molds for series production in Asia, Europe, and the USA are manufactured there. "With the expanded portfolio of offerings in mold making, we adjust to the needs of our various customer segments. In the pharmaceuticals and medical technology markets, cost-efficient molds that can be delivered quickly for start-ups and development pro-



jects are required. We now offer the appropriate solution for precisely this," explains Manfred Baumann, Global Executive Vice President Sales & Marketing, Administration & TCC, Gerresheimer Medical Systems.

Mold making in Dongguan consciously understands itself not as competition, but instead as supplementing the more comprehensive offering of services at the German location of Wackersdorf. While highly complex, high-cavity molds can be built for phar-

maceutical and medical technology large series production there, the offering of services in China is limited to molds with an average degree of complexity. What really distinguishes mold making in Dongguan much more is the combination of German quality standards with the speed and the attractive prices of the China location.

Gerresheimer already started in 2018 with redesigning its department for mold maintenance and optimization at the South Chinese production location in Dongguan into a full-fledged mold making facility. In 2019, a start was made toward creating the process description, which is the prerequisite for certification according to the quality management standard DIN ISO 9001. The certification audit then took place in May 2020 – for the first time in an online process due to the corona pandemic. The quality management system of the location is now certified by the DQS, taking effect on July 19, 2020.

PLATFORM SOLUTIONS

Drug delivery devices with micropumps from Gerresheimer

Simple, fast and resource-saving designed and produced.

Patch pump therapy is a practical method of applying medication. Especially patients with chronic diseases such as diabetes, cardiac arrhythmia, Parkinson's disease benefit from these small, handy devices, because they can take care of themselves largely independently and live and arrange their everyday life with significantly fewer restrictions than before. The devices can be worn directly on the body, no tubes need to be connected and the cannula or needle is inserted automatically. The devices often have programmable delivery rates that allow for very flexible and rational adaptation to the needs of the patient.



The product solutions can be adapted to suit a wide range of different therapies, medications, and primary packaging.

Connected competences – everything from one source

The subsidiary of Gerresheimer, Sensile Medical AG, is a specialist in drug delivery platforms with digital, electromechanical and electronic capabilities. The company has developed a new kind of patented micro pump which forms the heart of the micro infusion devices. Customers benefit from Sensile's affiliation with Gerresheimer in that they can obtain everything from a single source here: From the initial idea through development to the finished drug delivery device they are supported by competent experts. This saves time, money and resources. "The combination of skills of Gerresheimer and Sensile Medical is ideal for our customers," Dr. Oliver Haferbeck, Global Senior Vice President Innovation and Advanced Technologies and CEO Sensile Medical AG. Everything comes from a single source: plastics expertise, primary packaging and micropump technology with electronics and networking of drug delivery devices," he says.

Small, safe and high-precision dosing

SenseCore is small and enables liquid medications to be delivered to the subcutaneous tissue safely, easily and with high precision: At home and when traveling, but always with absolute reliability. Using advanced drive mechanisms allows the micro pump to cater for different requirements for specific delivery profiles. This high level of flexibility means that the micro infusion devices are compatible with many different medications. As the integrated rotary piston pump consists of only two plastic parts, it can be produced at low cost. The SenseCore pump is designed so that only the valve that is required is open at any given time. When both pump parts are stopped, both valves are always closed at the same time. This feature allows for double safety to prevent free flow.



Product solutions for various therapies

The micro rotary piston pump is offered in a wide range of customer-specific platform solutions which enables highly precise injection of the medication over the whole delivery period in comparison to conventional devices. Deliveries ranging from a few microliters in 24 hours up to 5 ml per minute are possible. The delivery profile can either be fixed or set to be patient-specific, and if necessary the patient can administer small, additional quantities of the medication, known as boluses. Some devices which are provided with an adhesive plaster and can be discreetly stuck onto the stomach, for example, do not have a display and are also notable for the fact that the needle-like cannula, which is always invisible to the patient, automatically penetrates the skin when the pump is activated and is retracted again after the medication has been administered. The product solutions can be adapted to suit a wide range of different therapies, medications, and primary packaging.

PLATFORM SOLUTIONS



A sustainable dual concept

To meet the expectations that pharmaceutical companies have in relation to sustainability, Sensile's product solutions pursue the dual concept of disposable and reusable subunits. This protects the environment and reduces therapy costs. All elements that come into contact with the drug or the patient are disposed of after use, whereas the more valuable part of the device including the motor, battery, and electronic controller as well as the display, where applicable, are reused.

Convenient monitoring through digital services

The Bluetooth connection to smartphones and computers enables easy integration of the pump device into mobile apps and other digital services. It allows easy configuration of therapy, convenient monitoring of ongoing therapy, and control of therapy via the mobile app in real time.

Working out all requirements with the customer at an early stage

With its experts from a range of different fields, Gerresheimer now offers all stages in the supply chain in-house "from a single source": from development through to the finished delivery device for subcutaneous ad-

Gerresheimer offers everything from one source – including the primary packaging that is needed for the patch pump

ministration of appropriate drugs. The experts in micro pump technology, Sensile Medical, are involved with the pharmaceutical companies at an early stage of medication and therapy development. At a "lab day" in Olten, or at the customer's premises, the pumping technology and the possibilities it offers are presented in detail and the interaction between the liquid and the pump (performance and compatibility) are thoroughly tested beforehand.

Focus on the customer's brand

The Gerresheimer industrial designers and product developers create various housing designs which optimally reflect the pharmaceutical company's branding. They develop a design and operating concepts as part of usability engineering and evaluate both as part of usability studies in accordance with IEC62366.

Global production

The Gerresheimer plastics experts in Germany, USA, the Czech Republic, North Macedonia, Brazil and China develop and produce the plastic parts for the devices which equally meet the requirements of the market and the users as well as delivering large series with the right plastics. The operating materials for the plastic parts and their assembly are developed and constructed in the company's own molding and specialty machines department. The in-house small series production in a Class 8 clean room pursuant to DIN EN ISO 14644-1 produces development samples, clinical samples and stability batches.

Worldwide mass production

Production capacities are available for large series production in Europe, the USA and in Asia. Gerresheimer does of course also provide the most sophisticated product refinement at the highest quality level as well as packaging and logistics. The overall package from Gerresheimer is completed by delivery of the primary packaging that is needed for the devices. With its full service concept, Gerresheimer is the ideal partner both for start-ups and for Fortune 500 companies.

"New possibilities are being created for Gerresheimer Medical Systems thanks to the electronics, software and hardware specialists from Sensile. We can now also talk to our customers about drug delivery devices with electronics and digital services," explains Dr. Oliver Haferbeck.

SUSTAINABILITY

Gerresheimer gradually switches to green electricity

The production sites in Pfreimd and Wackersdorf in Germany and in Horšovský Týn in the Czech Republic are supplied 100% with electricity from renewable energy sources

Gerresheimer has been supplying its plants in Wackersdorf, Pfreimd and Horšovský Týn with electricity, which is obtained 100% from renewable energies, with the emphasis on hydroelectric power.

For the globally active pharma and healthcare specialist, sustainability is one of the five strategic pillars of the company. The conclusion of contracts with the utilities for the supply of environmentally friendly, certified green electricity is a further step in the reduction of emissions and the most efficient use of resources.

As a globally active production company, Gerresheimer bears great responsibility for its products, for customers, patients, employees, partners, suppliers, neighborhood and the environment. Sustainability with a focus on ecology, economy and social issues is therefore firmly anchored in the corporate philosophy. In view of advancing climate change, Gerresheimer is intensifying its efforts to continuously improve the energy, consumption and emissions management of its plants. Because the company uses large quantities of energy in the manufacture of its products, Gerresheimer has for many years placed the focus of its sustainability strategy on the efficient use of energy and the avoidance of emissions. A decisive lever here is the use of electricity from renewable energy sources. "We have decided to extend our existing contracts with

the utilities and in future to source 100 % of our requirements from renewable energy sources. ", explains Oliver Burgel (Global Executive Vice President Operations, Procurement, HR & Quality, Management Board, Gerresheimer Regensburg GmbH). The green electricity certificates (guarantees of origin) comply with the currently applicable EU Directive on the use of energy from renewable sources and are managed by the Guarantee of Origin Register of the Federal Environment Agency. produces where its customers and markets are located. With plants in Europe, North and South America and Asia, Gerresheimer generates sales of around €1.4 billion. The wide range of products includes pharmaceutical packaging and products for simple and safe drug delivery: In-

sulin pens, inhalers, prefillable syringes, injection vials, ampoules, bottles and containers for liquid and solid medications with closure and safety systems as well as packaging for the cosmetics industry.

Bescheinigung
über die Stromlieferung aus Wasserkraft

Hiermit bestätigen wir, dass das Unternehmen

GERRESHEIMER
Gerresheimer Regensburg GmbH
Kumpfmühler Str. 2
93047 Regensburg

Im Rahmen des Stromlieferungsvertrags mit der
Zusatzvereinbarung regenerativer Energie
vom 01.06.2020 bis zum 31.12.2022
mit 100% Ökostrom aus Wasserkraft beliefert wird.
Die Jahresliefermenge beträgt ca. 26'700'000 kWh.

Die Stromlieferung erfolgt durch die
LEW
Lechwerke
Lechwerke AG – Schaezlerstraße 3 – 86150 Augsburg

SUSTAINABILITY

Gerresheimer is involved in the development of a new type of hybrid furnace for reducing CO₂ emissions

Gerresheimer is part of an industry-wide project to build the first large hybrid electric glass stove which is 80% powered by green electricity. In this project under the patronage of the European Container Glass Federation FEVE, companies in the industry are thus coming together for the first time to build together on the glass furnace of the future.

Decarbonization of the industry

This "furnace of the future" is a fundamental milestone in the industry's decarbonisation journey towards climate-neutral glass packaging. It will be the first large-scale hybrid oxy-fuel furnace in the world to run on 80% renewable electricity. It will replace current fossil-fuel energy sources and cut CO₂ emissions by 50%.

Pilot Project

For the very first time, the industry has adopted a collaborative approach in which 20 glass container manufacturers have mobilized resources to work on and fund a pilot project to prove the concept.

"Sustainability is an important strategic goal, and the reduction of our carbon footprint plays an important role in this. Therefore, this project is another important step towards more sustainability and efficiency for us and the entire industry. We are happy to contribute our extensive experience of the glass melting process and will hopefully be able to use the new technology in a few years' time," said Andreas Kohl, Global Senior Vice President Operations, Technics and Quality Moulded Glass.

Important milestone for glass sector

The industry already uses electric furnaces in several of its 150 glass production plants throughout Europe, but these are only used on a small scale and exclusively for the production of clear glass with new raw materials and therefore contain very little or no recycled glass. With the new technology, it will be possible to produce in furnaces of more than 300 tons per day in any glass color, using a high percentage of recycled glass.

Conservation of resources at Gerresheimer

In its plant in Momignies, Belgium, it already operates a 100% electrically heated furnace with a slightly lower capacity for the production of cosmetics packaging made of clear and opal glass. For about ten years now, post-consumer recycling (PCR) glass has been used here. During this time Momignies has been able to successively increase the amount of recycled cullet to over 40% and thus reduce energy consumption. Gerresheimer traditionally uses a high proportion of cullet for many of its glass melts, a strategy which makes an important contribution to resource conservation and emission reduction. The use of recycled glass also helps to conserve natural resources, as glass is made from quartz sand, sodium carbonate, calcium oxide, dolomite, feldspar, potash and iron oxide for coloring.



"Environmental concerns and threats associated with climate change motivate us to continuously improve our energy, resource and emissions management,"

says Andreas Kohl.

"Our production facilities are already among the most modern in the world. Raw materials and resources are used as efficiently as possible, while standardized methods and tools for waste-optimized and low-emission processes are used along the entire value chain to achieve continuous improvements".

Kohl is confident that Gerresheimer will come closer to its goal of reducing CO₂ emissions with each furnace construction, as the improved technology helps to save energy and reduce CO₂ emissions.

Read the detailed article in the interview with Andreas Kohl in Glass Worldwide, September / October 2020, Factory spotlight: Innovative investments match stringent customer requirements, pages 40-44.

PEOPLE

Volker Ritzert is Global Vice President Syringes Medical Systems



Volker Ritzert has been appointed Global Vice President Syringes Medical Systems on November 1, 2020.

In this new position he is responsible for the entire global syringe business at Gerresheimer, sales and business development globally in cooperation with operations. The rapidly growing market for prefillable syringes plays a special role in our growth strategy formula G. Under the management of Volker Ritzert we will expand this separate segment extensively.

Volker Ritzert was Managing Director of the automotive company ABL-TECHNIC Group GmbH since 2018. Prior to that he was Managing Director and Director Operations, Sales and Service at Lechner AG. Further stations included senior management positions at the automotive companies Valeo, Faurecia and Brose. He started his career as Technical Director at Heinze & Co. Volker Ritzert is a graduate engineer, Process Engineering Karlsruhe Institute of Technology.

Ron Malawy is Senior Plant Director Skopje Medical Systems



Ron Malawy has been appointed as Senior Plant Director Skopje Medical Systems in North Macedonia, effective from October 7, 2020. Ron joined Gerresheimer in 2015 as Senior Plant Director Peachtree City Medical Systems. In 2019 he became also President and CEO of the plant. Before that he worked in different functions as plant manager and project manager in the USA, Mexico, China and Spain for MWV. He further worked for Golden State Foods as Operations Manager Liquid Products and for Organic Milling Company as Operations Manager.

Fred Howery is President and CEO of the Peachtree City site



In addition to his function as Senior Plant Director Peachtree Medical Systems, Fred Howery has been appointed as President and CEO of the MDS site in Peachtree City, effective since October 12, 2020.

Fred joined Gerresheimer in the summer of 2019 as Senior Plant Director Peachtree Medical Systems. Before that he was Operations Manager at Comar. He further worked for DentalEZ and for Medplast as Operations Manager and for Anholt Technologies as Plant Manager.

Birgit Heindl is Senior Plant Director Pfreimd Medical Systems



Birgit Heindl has been appointed as Senior Plant Director Pfreimd Medical Systems effective from September 2, 2020.

Initially, Birgit Heindl started with Gerresheimer on January 1, 2012, as Manager Production Unit in Pfreimd. From August 1, 2014 until September 02, 2020 she has headed the Plant Quality

Management at the Pfreimd site. During this time, Birgit Heindl successfully set up the Quality Organization for the future, proactively and successfully accompanied quality projects (e.g. reduction of the cost of non-Quality) and, together with her team and the production, was able to significantly reduce customer complaints. Prior to her engagement at Gerresheimer, she held various positions at KRONES AG, including COO in China.

Georg Scheele takes over the technical management of the plant Moulded Glass Essen



Since July 1st, 2020, Georg is Technical Director Essen Moulded Glass. Before joining Gerresheimer Essen Georg held the position as Head of the Foundry at Trimet Aluminium in Essen. Prior to that he worked for Aluminiumwerke Wütöschingen, where in his last function he was the Head of Bolt Foundry, Quality Assurance and Division Manager Process Management and Product Development.



Dr. Jürgen Unruh, Senior Plant Director Essen Moulded Glass, retired on 10 August 2020. After his long career in mining, Jürgen Unruh took over as manager of our Moulded Glass plant in Essen in 2011 and has since then successfully developed the plant further. During this time he has rebuilt two large furnaces in 2013 and 2019, introduced packing robots, strengthened the Type II glass technology and achieved a sustained improvement in the environmental balance.

PEOPLE

Kay Rohn becomes Senior Plant Director Tettau Moulded Glass



Kay Rohn has been appointed Senior Plant Director Tettau Moulded Glass on July 1, 2020. He has been Technical Director in Tettau since November 2019 and has undergone a comprehensive onboarding phase in several Moulded Glass plants.

Before joining our plant in Tettau, Kay Rohn worked for H.C. Starck Hermsdorf for sixteen years, where he was Deputy Production Manager. In his last position he was Managing Director of the FPR Division. In this function he was responsible for the operational and commercial areas.



Kay Rohn succeeds Bernd Hörauf, who retired on 01 July 2020. Bernd Hörauf has worked for Gerresheimer since 1983, since 2002 as General Manager of the Tettauer Glashüttenwerke und since 2004 as plant manager. His expertise in glass and his proximity to large and small cosmetics customers have made him an icon in the European glass world far beyond the factory. His commitment has always gone far beyond the pure business aspect. He played a decisive role in various positions in the continuous success of the glass products from Tettau. Despite spatial restrictions in the narrow valley, the glassworks was repeatedly expanded and thus became one of the world market leaders in the field of cosmetic glass.

Lara Maria Kasnitz is Group Manager Corporate Social Responsibility (CSR)



On October 1, 2020, Lara Maria Kasnitz took over the newly created position of Group Manager CSR. Lara Maria Kasnitz's last position was Assistant Manager Sustainability Services at KPMG AG Wirtschaftsprüfungsgesellschaft. At Gerresheimer she will support the further development and implementation of the global sustainability strategy, drive forward sustainability reporting, ratings and projects, and improve sustainability awareness throughout the organization through training and corresponding awareness campaigns.

New Leadership Team at Advanced Technologies

Oliver Haferbeck



Oliver Haferbeck took over the lead at Innovation and Advanced Technologies as Global Senior Vice President as of October 1 and also CEO of Sensile Medical AG. Oliver Haferbeck was most recently CEO and founder of the consulting company timpact GmbH. From 2016 to 2018 he was Principal of European Markets at the medical technology company Senseonics. Prior to this, he was Managing Director of Roche Diabetes Care Deutschland GmbH from 2012 to 2016. There, in addition to the pumps and sensors division, he successfully managed the German sales organization and developed the products in the direction of networking, digitization and artificial intelligence. He began his career at Deutsche Bahn from 1998 to 2012 in various management functions in marketing and corporate strategy.

Daniel Diezi



Daniel Diezi will manage and build the new Digital Hub as Vice President Digitalization & New Business Models at Advanced Technologies. From 2016 he was with Zühlke Technology Group AG, most recently as Head of Life Sciences & MedTech. From 2008 to 2016, he was with Thommen Medical AG, where his responsibilities included Americas and Asia Pacific. He started his career at Georg Fischer JRG AG.

Farid Seddighi



Dr. Farid Seddighi will become Head of Global Product Group Pumps Medical Systems on January 1, 2021. He has been with Sanofi Aventis Germany as Head of Device Manufacturing Technology Hub since 2015. From 2002 to 2015, he worked for the Carl Zeiss Group as Product & Project Manager, Senior Key Accounter and Director Customer Support Lithography Systems. After obtaining his doctorate in physics, he started his career at Lambda Physik AG from 2000 to 2002.

WEB & EVENT



Live at CPhI China

Gerresheimer presents innovative specialty products for the packaging and administration of medicines

16. to 18. December 2020
SNIEC Shanghai | Booth N5P21

First LIVE pharmaceutical
trade fair in the pandemic

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Invitation

Virtual Pharma Day

December 10, 2020

**Dear Business Partner,**

We are delighted to invite you to this year's Gerresheimer Pharma Day. We hope you will be able to join us on our fully virtual journey through our future growth path.

This event will present many examples how we want to achieve our strategic goals of driving innovation, providing state-of-the-art technology and service as well as delivering excellence in all aspects of our business.

We are looking forward to meeting you!

Kind regards,

Jens Kuerten

Group Communication & Marketing

[Click here for more information and registration](#)

Agenda

1st Session (Asia & Europe):
8:00 am – 11:15 am**2nd Session (Americas & Europe):**
2:00 pm – 5:15 pm**Opening – Corporate movie****Focus – Transform – Grow:**
Our Strategy for Sustainable, Profitable Growth
Dietmar Siemssen, CEO**Driving Innovation & Digitalization**
Dr. Lukas Burkhardt, Management Board**Q & A****Break****Innovation and Tech Show – Interactive Expert Talks**

Stream 1: Innovation

Stream 2: Technology & Service

Stream 3: Excellence

Wrap up / Summary

Dietmar Siemssen and Dr. Lukas Burkhardt