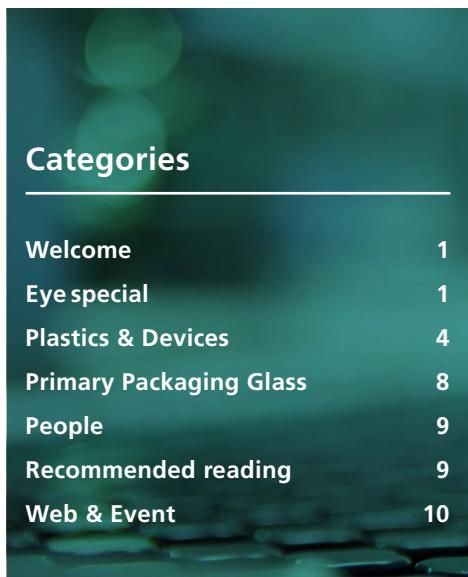


UPDATE. 15



Welcome



What kinds of ophthalmic products does Gerresheimer manufacture? That's the subject of this new issue of Update's title story. Our ophthalmic product range extends from DropAid, a new eye-drop administration aid, to child-resistant packaging and ready-to-fill syringes which are used in cataract surgery and for inner eye therapeutic procedures.

In this sensitive field of ophthalmology, quality is a key issue. Requirements of quality for syringes, for example, that are used for pharmaceutical applications are increasing all the time. You can read about what quality management means for our syringe production operations in this Update. Here, and in many other areas, we apply the Quality by Design principle. Another article about mold qualification makes it clear that Quality by Design is a reliable and cost-effective way to bring complex products to market.

Enjoy reading!

Jens Kürten

Group Senior Director
Communication & Marketing
j.kuerten@gerresheimer.com



EYE SPECIAL

DropAid

for easy use of eye droppers



People who use eye drops know how difficult they are to put in safely without assistance. Sometimes the small sized eye drop bottles can also be difficult to open. Gerresheimer's packaging experts have developed an application aid called DropAid to eliminate this problem. DropAid is an application aid for daily use. It helps dropper bottle users to open the bottle and, when placed on the bottle neck, it makes it easy and simple to positioning the dropper correctly above the eye.

"We put ourselves in the shoes of the person who has to use the eye drops and considered how we could make it easier to use. That's how we came up with this small but extremely useful DropAid that we'd like to recommend to all our customers who manufacture eye drops. It will also help them to ensure better compliance in the medications," said Niels Düring, Global Senior Vice President Plastic Packaging at Gerresheimer.

DropAid is incredibly easy to use, so it's ideal for senior patients and children. It has a circular aperture which fits perfectly onto the eye drop bottle top and helps to open it with very little effort or pressure. If DropAid is placed vertically on the bottle neck with the

crescent part clipped onto the open bottle, it can be rested firmly on the side of the eye so that the correct number of drops can be given.

DropAid fits "System A Dropper Bottles" for ophthalmic applications. Gerresheimer's products for ophthalmic and nasal applications include LDPE, HDPE, PP and other materials for bottles and droppers and CLC bottles. For ophthalmic Gerresheimer also produces lens cases, bottles for nasal sprays with nebulizer or pump systems. Further materials, sizes and designs are also available, and the range includes child-resistant and senior-friendly closures.



Prefilled syringes in ophthalmic use

A variety of new laser technologies and the latest developments in prefilled syringes add to the range of therapy options available to the ophthalmologist for an increasingly wide range of applications. Prefilled syringes thus contribute to the improvement in successful eye disease treatment rates. Convenience in use and risk minimization are two of the major advantages associated with the use Gx RTF® syringes in ophthalmics.

The two largest eye therapy areas are the anterior segment of the eye where cataract surgery is performed and the inner eye, which can be affected by diseases such as wet macula degeneration, diabetic macular edema (DME) and retinal vein occlusion.

Treatments in the anterior eye segment

In cataract surgery the opaque lens is basically removed and replaced by an intra-ocular lens (IOL). In order to protect the delicate cornea cells during surgery, a prefilled syringe is used to administer hyaluronic acid into the anterior chamber and lens cavities.

Inner eye therapies

The other major field of application is treatment of the inner eye by intravitreal injections of monoclonal antibodies to prevent pathological growth of blood vessels, corticosteroids to fight bacterial infections and silicone oil to fix the retina back in place after retinal detachment. This recent development in prefilled syringe treatments has caused a shift from surgery to injection and brings therapy options to many patients which were not previously available to them.

Convenient for eye surgeons to use

Not only patients but also eye surgeons benefit from this development. A prefilled syringe is very convenient to use. These new application systems substitute the classic vial filled with liquid or lyophilisate. Unlike vials in combination with disposable syringes, the prefilled syringe eliminates a number

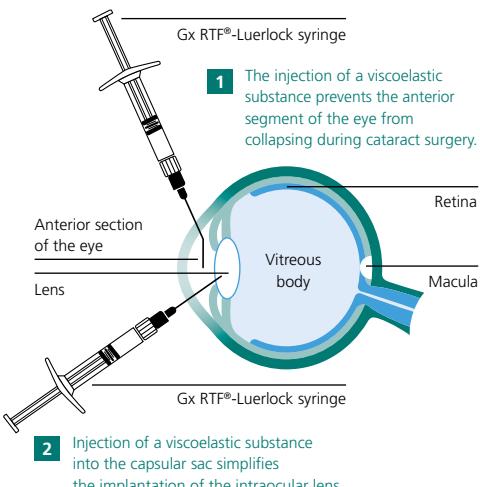
of preparatory steps. Dose errors are also minimized since the syringe already comes with the filled volume in the right concentration.

Challenges in ophthalmology

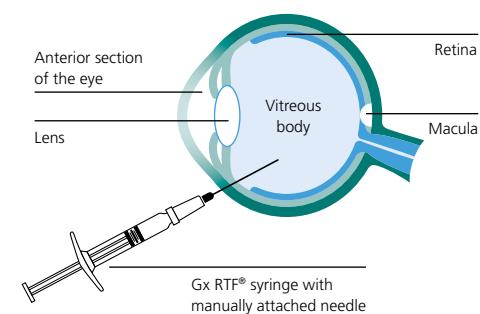
There are some challenges associated with prefilled syringes. Unlike vials prefilled syringes are siliconized for lubrication. Even though silicone oil is absolutely harmless to the human body, it can have an impact on vision, especially after several treatments. This is due to free floating silicone in the glass body which then floats in the patient's path of vision after injection. Gerresheimer's Baked-on® siliconization offers a solution because this lubrication method reduces the amount of freely floating silicone oil droplets by more than 90%.

The performance of baked-on® staked-needle syringes has been tested with a variety of different plunger stoppers, and 3-year data on break-loose and gliding forces is available on request. Breakage of a syringe is an extremely rare event, but with glass syringes in combination with highly viscous liquids administered by high pressure, surgeons and patients do have some concerns about this kind of failure. Another risk which has to be considered is that the needle or Luer lock might pop off. Gx RTF® syringes address these problems with features such as the Gx TELC® closure. It is a unique Luer lock closure offering a tamper evidence feature which is fitted so tightly to the cone that it is practically impossible to detach. Another alternative which also covers the breakage risk is the ClearJect® COP syringe: This syringe is

Cataract surgery



Injection into the vitreous body



not just unbreakable, it also has a one-piece Luer lock adapter and syringe.

Low-volume content of new drug formulations poses several challenges to prefilled syringes. Firstly, the graduation on the syringe has to be as exact as possible. Secondly residual volume must be minimized in order to avoid wastage of the very expensive drug formulation due to the need for over-filling. By providing an extremely exact graduation and adapting the syringe dimensions, Gx RTF® syringes allow for this kind of high-end application.



Focusing on eye and nasal drops

More stringent laws on child-resistant packaging

Since 2011, three times more children under the age of 5 years have died in household accidents than in road traffic accidents. The biggest risks to children in the home are inadvertent poisoning with household chemicals, cosmetics or pharmaceuticals. Therefore, new legislation on OTC eye drops and nasal sprays has recently been introduced in the USA. Primary packaging manufacturers like Gerresheimer can help to minimize these risks with new solutions.

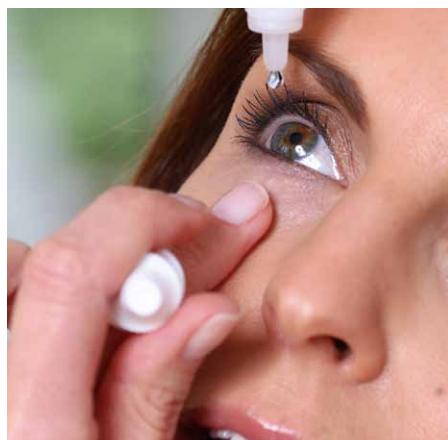
Household chemicals and prescription drugs

Child-resistant packaging is the norm for many household chemicals and prescription drugs. Generally they require specific action sequences to open which small children, in particular, are unable to perform. To open the packaging, a combination of simultaneous or sequential actions is generally necessary. The popular squeeze and turn closures have to be squeezed and turned simultaneously in order to open them. In addition to the combination of two actions, packaging often has large sized caps which hinder small children's hands from pressing the two diametrically opposed release points at the same time. Push and turn closures have to be simultaneously pushed and turned before they can be screwed off. Pump sprays and packaging products with pull-up lids have other safety features to prevent them being opened or activated.

There is evidently now demand for similar child safety standards for non-prescription drugs and food supplements.

New statutory provisions on OTC eye and nasal drops

The little bottles containing nasal drops for colds or eye drops for conjunctivitis are often left in the bathroom, the kitchen or the bedroom where children can easily reach them: And despite containing bitter substances such as naphazoline, oxymetazoline, tetrahydrozoline or xylometazoline, children are still tempted to try them. In December 2013 the U.S. CPSC (United States Consumer Product Safety Commission) introduced a guideline to prevent this kind of "misuse" specifying that all prescription and OTC drugs



containing more than 0.08mg imidazolines have to be in child-resistant packaging. Imidazolines (e.g. tetrahydrozoline, naphazoline, oxymetazoline, xylometazoline) are a family of drugs which are vasoconstrictors indicated for nasal congestion and/or ophthalmic irritation. Products containing imidazolines can cause serious adverse reactions, such as central nervous system (CNS) depression, decreased heart rate, and depressed ventilation in children who accidentally ingest them. From 1997 through 2009, according to CPSC, 5,675 children younger than five years suffered severe injuries after ingesting products containing imidazolines, especially eye drops.

The Consumer Healthcare Products Association believes that a number of design modifications will have to be introduced as a result of the new rule. Standards on child-resistant packaging for this product segment are currently not widespread and only a few primary packaging manufacturers offer solutions that fit existing customer products. As a result, there has been a flurry of activities among primary packaging manufacturers of

dropper bottles, nasal sprays and nebulizers, with the time aspect being a central issue.

Child-resistant packaging products will probably become even more widespread when they are extended to food supplements and other products. Depending on the country and its legislation, the pressure on primary packaging manufacturers to develop new child-resistant packaging products will increase. Even when there are no official regulations making child-resistant standards compulsory, it is in the interests of the packaging manufacturers to develop efficient solutions that both protect patient health and the product, so that they will have a competitive advantage. Bearing this in mind, primary packaging manufacturers will play a leading role in improving child safety in the home.

You can find further information about child-resistant packaging in the article by Christina Desirée Holder and Marek Miszczak, Gerresheimer Plastic Packaging, which was published in February's EPM Magazine.



PLASTICS & DEVICES

Twist-Off Advanced: a new product in the DUMA® range



The developers at Gerresheimer believe in the principle of 'you can make a good thing better' and are now presenting the results of their work, an improved Duma® Twist-Off container called Duma® Twist-Off Advanced for solid pharmaceuticals. The improvements extend from more uniform wall thickness, through optimized closure design to compatibility with all other high quality Duma® Twist-Off and Duma® One-Liner closures.

"As a result of our longstanding collaboration with our customers we have been able to integrate their suggestions and requirements for sustainable increased barrier in our containers. We continuously optimize our products, even the proven pharmaceutical packaging products, so that we can deliver added value to our customers and patients," said Niels Düring, Global Senior Vice President Plastic Packaging.

Duma® Twist-Off Advanced containers are more stable than their predecessors because the thinner areas have been eliminated and they have a more uniform wall thickness distribution. Their permeation has also been further reduced and their barrier properties improved. The new design is compatible with all other high quality Duma® Twist-Off closures, including the Duma® OneLiner. Duma® Twist-Off Advanced also has a full set of documentation for product registration.

The new Duma® Twist-Off Advanced containers with closures are available in sizes 15, 35, 75, 100, 150 and 600 ml.

The Gerresheimer Duma®, Dudek™ and Triveni branded products include a broad range of containers in HDPE and closures in LDPE & PP for the pharmaceutical market. A wide choice of solid dosage, closure and security systems makes the range fully adaptable to the individual requirements of the customer. It includes containers with screw caps, snap closures, child-resistant and senior-friendly closures.

The Technical Competence Center at Gerresheimer Regensburg GmbH in Wackersdorf has won an "Excellence in Production" award



From left to right: Peter Dechant (Director Commercial Affairs TCC/SEC), Michael Wiglenda (Director Technical Competence Center) and Holger Heining (Head of Molds), Gerresheimer Regensburg GmbH, Wackersdorf, Germany.

End of 2014 Excellence in Production Awards were presented in Aachen, Germany. The overall winner and therefore "Tool-Maker of the Year 2014" was Gerresheimer Regensburg GmbH's Technical Competence Center in Wackersdorf. It also won an award in the category of "Internal Tool-Maker with more than 50 Employees". Gerresheimer is regularly among the Excellence in Production finalists, and it won categories in 2009 and 2011.

11 finalists were selected from the 292 companies that applied for the famous Tool-Maker of the Year Awards in 2014. The awards were presented by the RWTH Aachen University's Laboratory for Machine Tools and Production Engineering and the Aachen Fraunhofer Institute for

Production Technology for the eleventh time in 2014. Representatives of industrial and engineering associations, the scientific, business and political communities formed the expert jury.

The jury was particularly impressed by Gerresheimer's very detailed and standardized order processing concept which is more or less unique in the tool-making industry. Gerresheimer Regensburg manufactures tools and automation systems for the pharmaceuticals and medical technology sectors. The typically stringent quality and development speed requirements in these sectors are met by way of integrated project management at the company's Technical Competence Center (TCC) in Wackersdorf. The TCC can autonomously develop fully inte-

grated systems, from injection molding machine and tool technology to automation, and it also provides a comprehensive range of tool-making services. The service portfolio includes series production, production equipment design, process development, project management, quality planning, tool making automation technology and production initiation/pre-series production. Two further TCCs cater to the needs of the US and Asian markets.

PLASTICS & DEVICES

Quality – Made to measure

Gerresheimer uses integrated processes for mold qualification

During the development phase, Quality by Design (QbD) systematically determines the quality of both the product and the production process. Strategically applied, Quality by Design is not only the most reliable, but also the most economic approach to introducing complex products to the market. Pharmaceutical and medical technology specialist Gerresheimer has been strategically applying an integrated mold qualification and validation concept for a fast and cost-efficient time-to-market, which provides process windows for reliable large-scale production and offers options for different deployment scenarios and qualification levels.



DQ: Design Qualification
IQ: Installation Qualification
OQ: Operational Qualification
PQ: Performance Qualification

According to Good Manufacturing Practice, injection molds have to be qualified and validated during every phase of the development and industrialization process. This procedure is comprised of four stages: Design Qualification (DQ), Installation Qualification (IQ), Operational Qualification (OQ) and Performance Qualification (PQ). Often, the qualification service of mold manufactures only includes some parts of this process. "Molds that are not inspected on the injection molding machine that is later used for large-scale production under real production conditions will have to undergo post-delivery requalification procedures. For the customer, this

means additional cost and extra time", Dr. Peter Mayr, Head of Quality Assurance Technical Competence Center, Gerresheimer Regensburg GmbH, Wackersdorf, explains. "Hence, Gerresheimer offers customers a complete and integrated qualification and validation process, which is carried out under real production conditions, on the actual injection molding machine and under relevant production conditions." Part of this qualification process is the definition of a process window for a reliable production: Gerresheimer carries out a screening according to the SIM approach in order to determine the critical production parameters. A

factorial Design of Experiments (DoE) – analyzed with Minitab, a program that was specially developed for quality-related applications – allows the determination of the process mean and the process limits for the production.

When some stages of the process – i.e. DQ and IQ – are carried out by Gerresheimer's Technical Competence Center (TCC) and OQ and PQ are conducted at the envisaged production location, the overall qualification process becomes more cost-efficient and faster. This approach allows a seamless run of all qualification and validation processes without the need for requalification measures. For international projects, however, it may be better to carry out the predominant part of the qualification process on the development site and then relocating the injection molding machine complete with mold – or the mold itself – to the final production site afterwards. "We offer customers with global business activities two transfer scenarios, which involve a repetition of part of the OQ on the customer's site in order to analyze the mold's performance under different ambient conditions or on a different injection molding machine", Michael Wigleenda, Director Technical Competence Center, Gerresheimer Regensburg, Wackersdorf, explains.

Different qualification levels

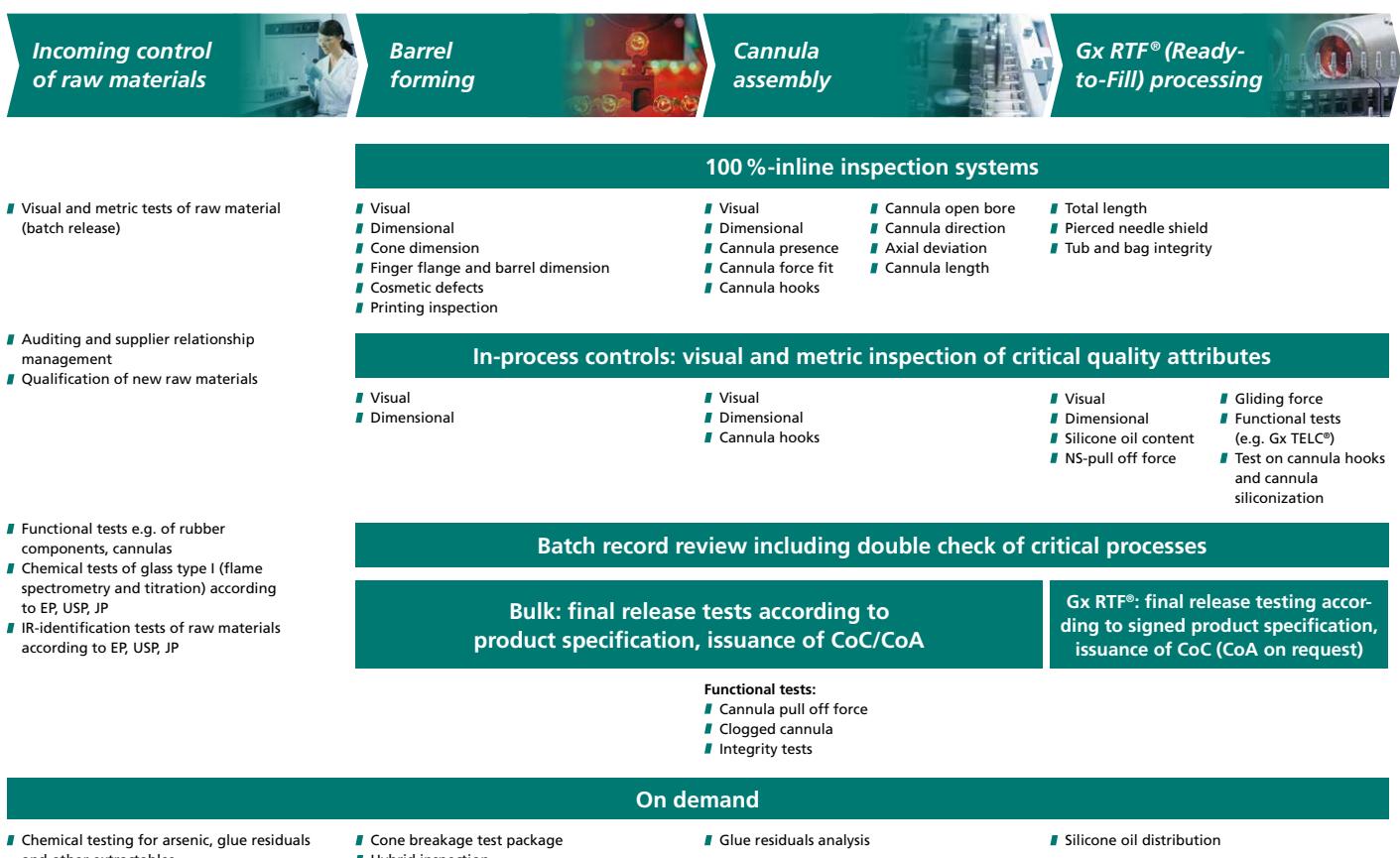
"Our qualification service also offers different qualification levels, which are tailored to the customer's project". Molds that are only used for prototype production, for example, are perfectly covered by an "Prototype level" qualification, which includes DQ and parts of the OQ. Molds for clinical tests or large-scale production require full qualification according to Gerresheimer's "standard level", which features qualification and validation based on the mean process parameters. For particularly complex products, a high potential deployment risk or complex-regulation markets Gerresheimer's "STANDARD PLUS level" qualification is the best option. In this option, test runs are carried out with maximum and minimum parameters of the process windows.

PLASTICS & DEVICES

Total quality control

Gerresheimer Bünde's quality management system extends across the entire value chain

Pharmaceutical glass syringes have to satisfy increasingly high requirements of quality. The maximum admissible rate for critical defects that impair the syringe's integrity is now 1 ppm. As a result, quality management is one of the most important processes in syringe manufacturing. It involves both the systematic control of production processes and comprehensive product inspections.



Defects can occur at any stage of the value chain. For example, the supplied raw materials may have existing defects, and defects can also be caused during syringe molding or needle mounting or sometimes in the filling, sterilization or packaging process. That is why Gerresheimer Bünde implements quality inspections and process management across all stages of the production process, from raw materials delivery to finished product dispatch.

We apply the principles of Quality by Design (QbD) and Statistical Process Control (SPC)

in our product development and production operations. Our products and processes are designed to reliably deliver the defined product quality at all times. This necessitates a full understanding of both the product itself, as well as the effects of variables such as material properties and process parameters on the quality of the product. When all critical quality attributes have been identified and it has been established which process parameters have decisive influence on the specification-compliant production of these attributes, it is possible to define the process window for stable production. If there are



any critical deviation tendencies later on in the statistical process checks, the relevant parameters are immediately adjusted to ensure cost-effective production.

PLASTICS & DEVICES



Raw materials receiving inspection

The receiving inspection is the first important determinant of final product quality. All of the raw materials for syringe components such as tubular glass, needles and plungers, and even the pallets for the packaged products, are closely scrutinized in dimensional, visual, chemical and functional tests. For example, the tubular glass is tested to ensure conformity with the dimensions in the specification. Deviating diameters and even oval deformities in the tubes would indicate potential integrity breaches and functional impairment. The tubular glass is also inspected for defects such as cracks, chips and scratches, lines, inclusions and impurities.

Syringe molding

In the molding process the syringe's shoulder, cone and finger flange are produced, and then the syringe is printed. Both the molding process and the subsequent conveying process are potential sources of new defects, so end-to-end, in-line quality inspections are also performed here to check for specification-conforming dimensions, cosmetic defects and correct printing. The G3 camera system developed by Gerresheimer, with 10 high resolution cameras on each production line, is used for automated 100% inspections. It can inspect syringe dimensions, including complex areas such as the finger flange, and identify cosmetic defects on the shoulder, body, finger flange and cone. Visual inspections are also performed on the syringes by specially trained personnel so that defects which cannot be identified in the automated inspection process can be found.

Needle mounting

When the needles are glued into place we inspect a range of other product attributes. These include the presence, orientation, pull-off force and integrity of the needles, as well as critical parameters such as axial deviation and total syringe length including needle. To ensure the low-pain use of the needle it is important that the tip is smooth. Our camera systems check this with a resolution of up to 20 µm. This is where the bulk product manufacturing process ends and, after the final tests, the Certificate of Compliance (CoC) and Certificate of Analysis (CoA) are issued. The customer can also request additional tests such as analyses of arsenic, tungsten and glue residue.

Gx RTF® process and sterilization

The majority of syringes manufactured at the Bünde plant are ready-to-fill (RTF) prod-

ucts. These syringes are additionally washed, siliconized and sterilized, and they have fixed (RNS) or flexible needle protection elements (FNS) mounted. Quality inspections at this stage of the value chain include checks on the positioning, pull-off force and integrity of the needle protection elements, another check on needle position and tip and an inspection of the siliconization in the syringe body and cannula, including a measurement of the plunger's glide force. After sterilization with ethylene oxide (EtO) external laboratories perform microbiological tests to check sterility and the existence of endotoxins, as well as to establish any possible EtO and ethylene chlorohydrin (ECH) residue. Finally, the packaging and printing is inspected. After these final tests, the CoC and, if requested, a CoA are issued for the RTF syringes. Further customer-specific tests, such as tests for extractables and leachables, the evenness of the siliconization and a CT integrity test are also possible.



PLASTICS & DEVICES

We have opened our first Development Center in China



At the end of 2014 Gerresheimer opened a Technical Competence Center for medical plastic systems in Dongguan City, China. Now we have three such centers in Wackersdorf (Germany), Peachtree City (United States of America) and now in China.

"Our Development Centers are important USPs that allow us to offer our customers crucial added value. The new center in China ensures that we can optimally meet the growing demand in the Asian market. In future, we will have development operations in addition to local production operations and we'll be collaborating closely with our customers in China," explained Andreas Schütte,

the Gerresheimer Management Board member with responsibility for Plastics & Devices.

The team at the new Technical Competence Center (TCC) in China will be implementing and managing large-scale projects independently. Gerresheimer's three Development Centers around the world prepare medical plastic systems such as insulin pens, inhalers, lancets and auto-injectors for industrialization. All crucial interdisciplinary functions up to a product's series production stage are performed there. The local projects implemented at the Development Centers in collaboration with the other sites include series design, manufacturing equipment engineering, process development, project management, quality planning, tool making, automation technology, production initiation and pre-series production.

At its Dongguan City production facility, we have been manufacturing drug delivery devices such as inhalers and lancets for diabetes sufferers, and infusion products, since 2006.

Stephane Pianigiani,
General Manager of
the Gerresheimer plant in Dongguan



General Manager Stephane Pianigiani says that the opening of the new Technical Competence Center in Dongguan is the highlight of his three-year assignment in China for Gerresheimer. During these three years the plant's workforce and sales revenue has tripled. Managing rapid growth has become part of his day to day work. He is still impressed by the speed of change in China and how motivated every single person is to supporting communal causes.

Stephane Pianigiani was born in Italy and grew up for ten years in Hong Kong. He went on to study economics in Nice/France, as well as political science and business administration in Italy. Stephane speaks French, Italian and English as native languages and Spanish fluently. His Mandarin is coming along slowly but surely. In 2003 Stephane Pianigiani joined Edp as Sales Manager. The company was taken over by Gerresheimer in 2008 and is now part of the Plastic Packaging Division. In 2011 Stephane's career at Gerresheimer took him back to China, the country where he grew up.

PRIMARY PACKAGING GLASS

Youth research project at Gerresheimer: Intelligent Glass

Roderich Wallrath (19, left) and Fabian Marischen (18, right) from Dortmund Technical University have been conducting research into sputter technology in a workshop at Gerresheimer Essen GmbH since August 2014. Sputter technology is a chemical process for coating glass. The coating gives the glass new properties, such as better light transmissivity, which is useful in applications such as car windscreens. It allows windscreen or roof light glass to adapt to sunlight strength. The coated glass is called switchable or smart glass because it 'intelligently' adapts to environmental conditions.

"We don't get asked every day if we'd be willing to support a youth research project. And this is a project that we believed was worth supporting because we're the glass experts. We were also very impressed to see how enthusiastically these two young men went about their research," said Bruno Bürkel, Executive Vice President of Gerresheimer Primary Packaging Glass.



Sputter technology explained in simple terms

This is how sputter technology works. If you take an airtight container and fill it with a certain gas rather than air, you can illuminate the gas by exposing it to electrical current. That's how a neon light works, for example. The illuminated gas is called plasma.

By setting the electricity or current properly, you can displace the plasma to any position you want. For example, you can displace it to an object inside the container. One of the properties of plasma is that it very slowly erodes a tiny part of the material that is close to it. Then, if you then hold a piece of glass in its path, the material that was eroded is deposited on the glass surface. This effect is called 'sputtering'.

However, it isn't called electrochromic glass, but 'smart glass'. A few luxury automobiles currently have this kind of glass. Another application for smart glass is temperature regulation on building facades, though it is still very expensive.

The two young researchers have now concluded their project, winning first prize in the "Jugend forscht" regional research contest. They also did very well in the national contest, taking third prize in the category of "Technology".

PEOPLE

Primary Packaging Glass

**Mark Howell is
Senior Vice President Sales
Tubular Glass Converting and
Moulded Glass Americas**



Mark Howell was appointed as Senior Vice President Sales for Tubular Glass Converting and Moulded Glass Americas on October 1, 2015.

Mr. Howell previously worked as Senior Sales Director – Container & Closure Business Unit within REXAM Healthcare (division of REXAM PLC). He had the full responsibility for overall global sales achievement for his business unit as well as the development and execution of sales strategies, business plans, forecasts and results. During his career at Rexam, Mark also served as Regional Sales Director and Plant Manager and achieved an MBA from the University of Notre Dame.

**Kailiang Chen is
Vice President Operations
Europe Tubular Glass
Converting**



Kailiang Chen was appointed Vice President Operations Europe Tubular Glass Converting with responsibility for operations at the plants in Wertheim/Germany, Boleslawiec/Poland and Chalon/ France on February 6, 2015.

Kailiang Chen will also be plant manager of the plant in Wertheim and appointed as General Manager for Wertheim. Kailiang Chen was previously Head of Supply Chain at the Danaher Corporation, a position that he had held since 2011, where he was responsible for new production lines among other things. Before that he was head of project management at Magna Mirrors Engineering GmbH, Germany. Kailiang Chen studied electrical engineering and IT.

**Lothar Haaf is
Senior Product Manager
Ampoules Europe Tubular
Glass Converting**

Lothar Haaf was appointed as Senior Product Manager Ampoules Europe Tubular Glass Converting on February 6, 2015. He is still General Manager of Wertheim, Germany.

Lothar Haaf has commercial and technical responsibility for the Gerresheimer ampoule portfolio in Europe. He joined Gerresheimer in May 2004 as Head of Technology and Quality. He was appointed as Plant Manager in Wertheim in December 2007. In August 2013 he was promoted to General Manager of Wertheim.

Primary Packaging Glass

**Jim Baldwin is
Vice President Operations
Americas Tubular Glass
Converting**



Jim Baldwin was appointed Vice President Operations Americas Tubular Glass Converting on January 1, 2015.

Jim joined Gerresheimer in 1987 at the Tubular Glass Converting plant in Warsaw, Indiana/USA. In 2000, Jim transferred to the Morganton, North Carolina/USA, Tubular Glass Converting plant as Production Maintenance Manager and was promoted to Plant Manager of the Morganton plant in 2006.

Plastics & Devices

**Peter Danielsen is the new
Global Key Account Manager
for Johnson & Johnson**



As of January 1, 2015 Peter Danielsen is appointed Global Key Account Manager for Johnson & Johnson in addition to his present responsibilities with Plastic Packaging Key Account Management.

RECOMMENDED READING



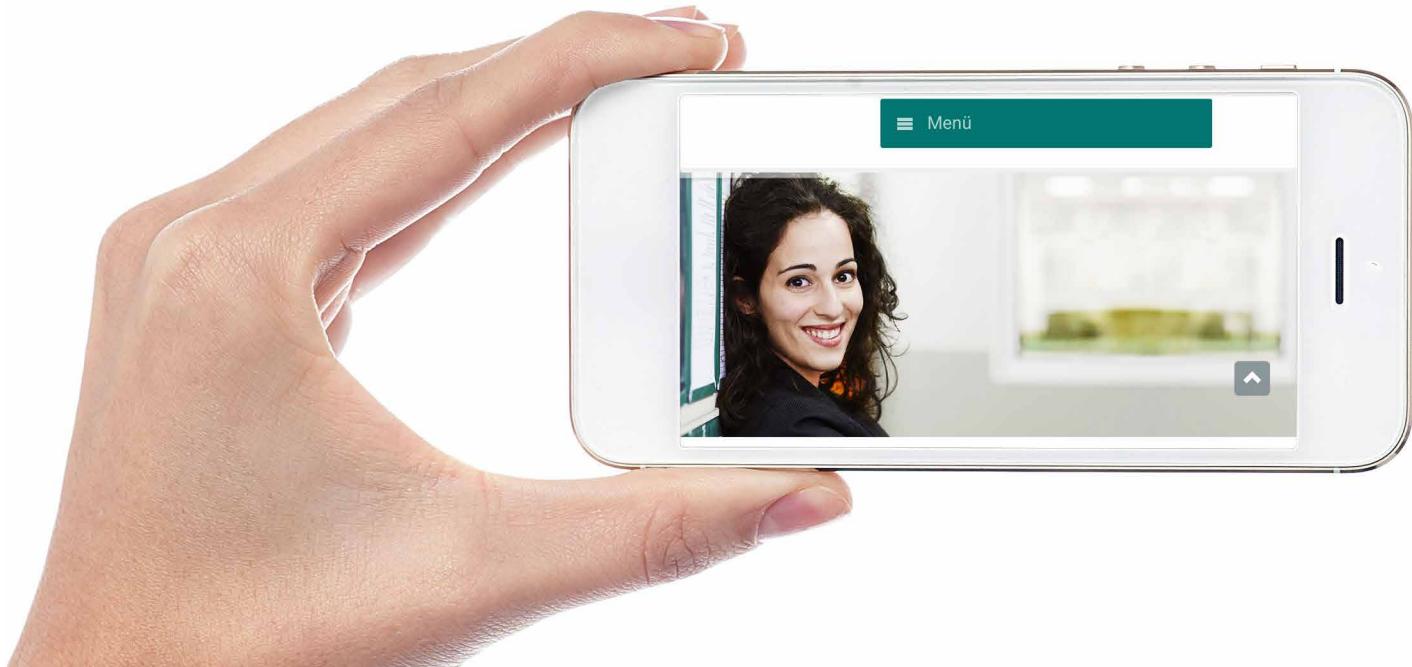
**Crack prevention and
process control in
ready-to-fill production**

Dr. Andrea Behrenswerth and Marc-Oliver Luther of Gerresheimer Bünde, with Bernhard Hinsch of Hinsch Consulting, Hamburg, explain the most frequently occurring defects in syringe production, their causes and approaches to preventing them. They also explain the methods used by Gerresheimer Bünde for defect identification and classification.

[http://ondrugdelivery.com/
publications/55/Issue_55_Hi_Res.pdf](http://ondrugdelivery.com/publications/55/Issue_55_Hi_Res.pdf)
p. 48–52

WEB & EVENT

Our website “Jobs & Career” section has a brand new look and a responsive design



These days, people don't just use their desktop PCs to access the internet. They also use many other devices such as smartphones and tablets. Potential job applicants looking for new career challenges regularly go on the internet with their mobile devices so that they can keep up to date. That's why we decided to give our "Jobs & Careers" webpages a more user-friendly design.

Details of the new design

Our "Jobs & Careers" section is the first port of call for potential applicants who are interested in working at Gerresheimer. It contains information about entry opportunities, current job vacancies, career news and employee experience reports.

Now the webpages in this section have been upgraded with modern design modules and a new image world. The photos featuring the production staff were shot at our plants in Horšovský Týn (Czech Republic), Lohr am Main and Essen (Germany). The new layout is modern, bright and appealing.

Only minor modifications have been made to content and structure. One of these is in the "Training, Study & Internship" section which now has an own webpage effectively addressing the young target group.

One elementary aspect of the new design is that it now incorporates responsive design technology so that website content is optimally displayed on various devices.

Responsive design

Responsive design enables the website to automatically identify which device is accessing it and optimize the viewing experience for that device. Both the content and navigation elements change depending on screen size and resolution. Now the functions, design and content of our "Jobs & Careers" section are flexibly arranged so that they can be optimally viewed on a desktop, tablet or smartphone.



Take a look!

Visit our website at
www.gerresheimer.com/en/jobs-careers
to see all the changes.

WEB & EVENT

Gerresheimer achieved all targets in 2014

We brought financial year 2014 to a successful close.

"Financial year 2014 was a good year for us. We hit all of our targets. Demand for our packaging for the pharmaceutical industry remained high. Since we tap into important megatrends with our innovations and products, Gerresheimer is very well positioned for the future," said Uwe Röhrhoff, Chief Executive Officer of Gerresheimer AG.

Pharmaceutical packaging manufacturer Gerresheimer boosted revenues by 1.9% to EUR 1,290.0m in financial year 2014 (December 1, 2013 to November 30, 2014). At constant exchange rates, purely organic growth in the Company's revenues was 3.7%. Most recently, Gerresheimer had projected organic revenue growth of around 4% for 2014. The Company achieved this increase in revenues largely with plastic phar-

maceutical packaging as well as products for the simple and safe administration of medicines, such as insulin pens, asthma inhalers and prefabricated syringes. As expected, sales of glass pharmaceutical primary packaging slowed somewhat, particularly due to the weakness of the US market. Growth in the market for cosmetic glass packaging was restrained, while sales of laboratory glassware picked up slightly.

Gerresheimer's capital expenditure in financial year 2014 was EUR 126.6m, representing 9.8% of revenues at constant exchange rates (prior year: EUR 119.1m). Thereby, the Company's target for capital expenditure in 2014, which had been 9% to 10% of revenues, has been fully met. The Company is further expanding production capacity for drug delivery systems such as insulin pens and asthma inhalers, especially in the USA and Czech Republic. In fall 2014, Gerresheimer opened the third Technical Competence Center across the globe in China. A new plant for the manufacture of injection vials and ampoules currently under construction in India is scheduled to open in 2015. In the United States, a large facility will be completely refitted in 2015, and production technologies are to be further standardized and improved in numerous other plants around the world.

GERRESHEIMER EVENT CALENDAR 2015

MAY 05–08
Respiratory Drug Delivery (RDD)
Nice, France
Palais des Congrès d'Antibes

MAY 12–14
FCE Pharma
Sao Paulo, Brazil
Transamerica Expo Center (TEC)
Gang C1/C2 | Stand C150

MAY 15–18
China Medical Equipment Fair (CMEF)
Chongqing, China
Chongqing International Expo Center

MAY 18–19
PDA Pharmaceutical Packaging Conference
Baltimore, USA
Four Seasons Hotel Baltimore

JUNE 09–11
MD&M East
New York, USA
Jacob Javits Convention Center

JUNE 24–26
CPhI China
Shanghai, China
SNIEC

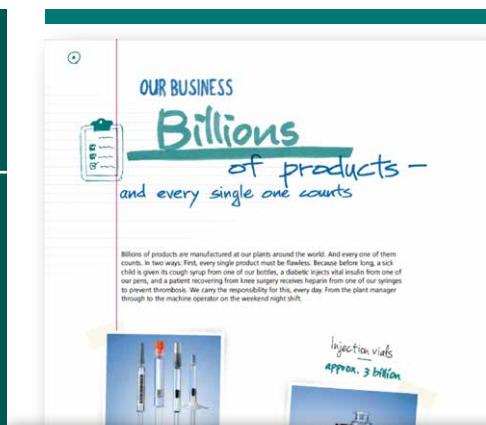
SEPTEMBER 22–24
MedTec China
Shanghai, China | Stand P301

OCTOBER 13–15
CPhI Worldwide
Madrid, Spain
IFEMA, Feria de Madrid | Stand 4F30

NOVEMBER 03–04
PDA Universe of Prefilled Syringes
Vienna, Austria | Stand 64/65

NOVEMBER 16–19
Compamed/Medica
Düsseldorf

DECEMBER 01–03
CPhI India
Mumbai, India



Annual Report 2014 – Our mission

Last year's Annual Report 2013 featured an unconventional "workbook-like" design. The positive feedback that we received encouraged us to take the concept one step further. With its grey cover and lots of handwritten comments, photos and little drawings it has a layout similar to one of the notebooks that we regularly use at work. The Annual Report 2014 is called "Our Mission".



New DropAid for easy use of eye droppers

- | Easy and convenient opening
- | Safe eye dropping
- | Precise and correct medication

