HARRO

The Customer Magazine
by Harro Höfliger

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What does DNA tell us?

The ScreenTape by Agilent Technologies verifies in as little as one minute whether a DNA or RNA sample can be used.

Harro Höfliger

Machines of the future

There are many Industry 4.0 concepts. But can they be used in the field of pharmaceutical production? Harro Höfliger's specialists are looking for solutions that offer our customers great advantages.

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Unfeasible does not exist!

Some powders are more difficult to package than others. But with the appropriate technology even the most stubborn material can be dosed.

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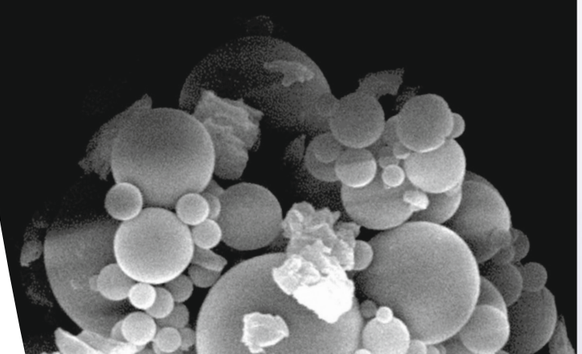

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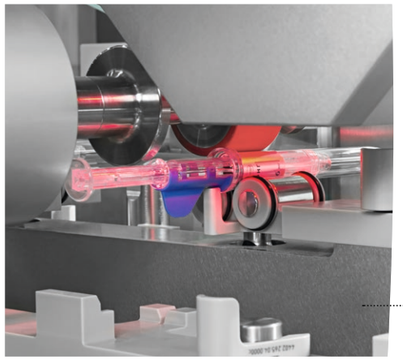

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Dear readers,
dear business associates,

With the turn of the year, we opened another new chapter. Auspiciously, a new empty page is in front of us and wants to be filled. Resolutions often spur us to come up with new ideas – to improve upon the year before. But not everything that is new is necessarily better. This also applies to the numerous Industry 4.0 concepts that will make production easier and more effective in the future. It is important to focus on solutions that are tailored to the industry and the companies involved.

With our specialty machine engineering know-how and insider knowledge in the pharmaceutical field, Harro Höfliger specialists are looking for solutions that provide a significant added value to you, our customers, but also to our internal engineering department, now and in the future. Among other things, we test digital maintenance solutions that allow us to quickly resolve unplanned machine downtimes, and we evaluate smart devices that enable your staff to handle in-house maintenance or format changes without major training efforts and expenses. Utilizing deep-learning methods, we are working to make image processing even more precise, and with virtual machine start-ups we make processes even safer.

In Backnang, we are also investing in the future: This year, the ground-breaking ceremony will be held for the expansion of the site where the Packaging and Web Technologies divisions will be housed. With the expansion, we are creating a second location equivalent to Allmersbach im Tal, where the Pharma Technologies and Assembly Technologies divisions are located.

As you can see, we are starting new chapters again this year, in order to continue our – and your – success story. We are looking forward to our continued partnership, close cooperation and mutual inspiration.

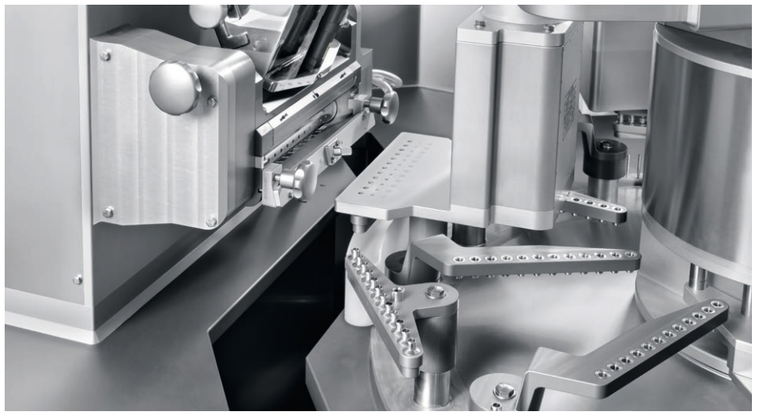
Your

Thomas Weller,
CEO at Harro Höfliger

Reliable and efficient calibration

For capsule filling with the drum and pellet dosing system, the VisioAMV sensor (AMV = Advanced Mass Verification) has proven effective for capacitive mass measurement for years. The calibration, for which a high-resolution weigh cell is used, had to be carried out manually up to now. Optionally, Harro Höfliger now offers a fully automatic calibration feature for the entire Modu-C family, including the containment version, which is controlled directly via our user-friendly HMI. In addition to a time-saving of more than 80 percent compared to manual calibration, it also offers seamless logging.

The possibility of using the system as an IPC (In-Process Control) during production increases process reliability. With the help of constant process controls, process deviations can be detected more quickly and countermeasures can be initiated.



Fully automatic calibration makes processes for capsule filling more reliable.

Expansion of the Backnang site

This year, the ground-breaking ceremony will take place for a 20 million Euro project. Harro Höfliger is investing heavily in the Backnang site in order to be able to meet the company's growth forecasts by 2030. Among other construction efforts, production areas and office space including the associated infrastructure will be expanded. In addition, a company-owned staff cafeteria will be built. In the future, the Packaging and Web Technologies divisions will be located in Backnang. This expansion will create a second location equivalent to Allmersbach im Tal, where the Pharma Technologies and Assembly Technologies divisions will be housed. The decision in favor of the future-oriented large-scale project in Backnang was also made because of the geographic proximity to the production and logistics center in Aspach and the good accessibility of the Satteldorf production plant, where large-scale systems are built.

Innovative products made in Russia for Russia

In 2008, Harro Höfliger opened its branch office in Russia. The current Sales Director, Alexander Haritonov, has been involved since the planning stage and tells us what sets the market apart.

How did the branch office in Russia come about?
In 2006, Harro Höfliger began to increase their efforts to establish more contacts with Russian pharmacists and to explore the market. I was involved right from the start as I worked in the sales department in Allmersbach and at the same time completed my Master of Business Administration. The title of my degree thesis was "The opening of a representative office for Harro Höfliger in Moscow". In 2008, the time had come: We had received enough inquiries to open a Russian branch office. We joined forces with Bausch+Ströbel and Uhlmann who already had a presence there. In 2011 I returned to Moscow and took over the local sales activities for Harro Höfliger.

Who do you collaborate with?
I am in daily contact with the sales staff of the other Excellence United partners on site. Meanwhile, Fette has also joined. Our customers benefit from our collective expertise. We also have joint appearances at trade shows. My team members in Moscow include our experienced Service Technician Mikhail Shakula, Spare Parts Specialist Rawil Aymadinov and Sales Coordinator Olga Roschina. In addition, I work closely with my Russian speaking colleague Alexey Bruev in Allmersbach im Tal. This provides our Russian customers with a competent contact person, both on site and in Germany.

What characterizes the Russian market?
First and foremost, the Russian market is a generics market. About ten years ago, the state recognized that Russia is heavily dependent on Western imports. The main imports are technologically complex pharmaceutical products. The government would like to change this and therefore is supporting local pharmacists in the development of such drugs. Harro Höfliger and their technologies are in great demand.

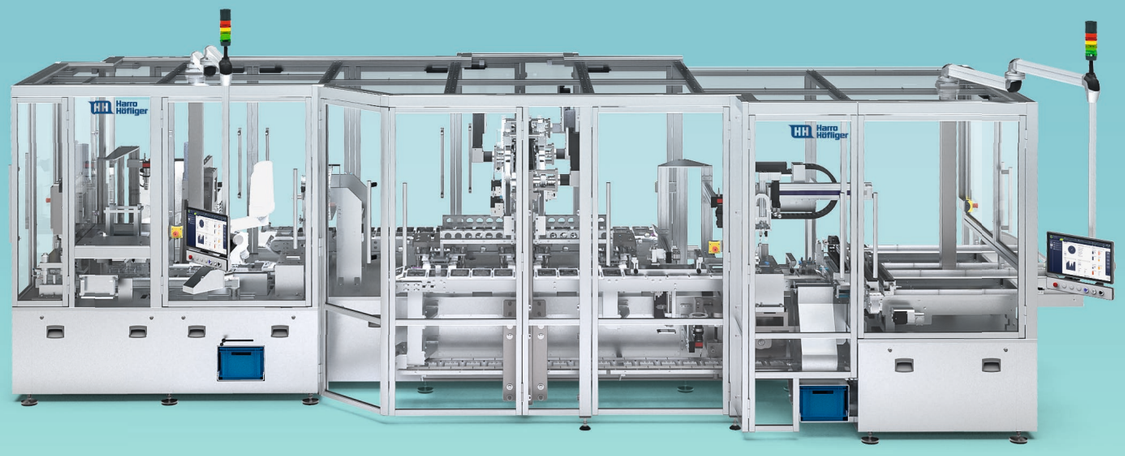
Which technologies are of particular interest to customers?
Capsule filling technologies play a major role. Recently, interest in powder inhalation, assembly automation, medical devices and web converting has also increased. With one customer, for example, we manufactured the first asthma powder inhalers in Russia. In this instance, our expertise in micro-dosing was sought-after. Another milestone was the first sterile specialty syringe assembly machine for a leading Russian pharmaceutical company. In addition to international corporations, our customers also include small, dynamic companies that are looking for market niches. With our service offerings ranging from consulting and networking to trials and project studies, we support our customers in implementing their product ideas.

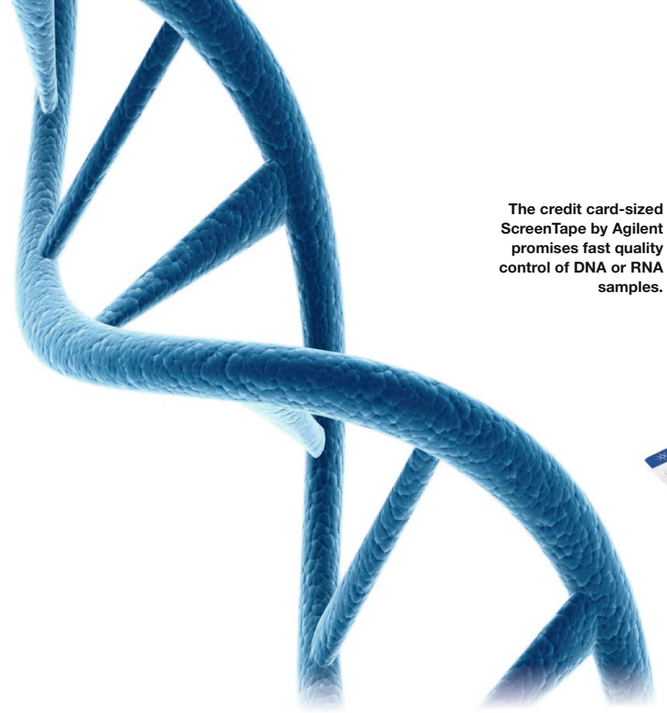
Whether international corporation or small, dynamic company – Sales Director Alexander Haritonov (left) advises them all. His Russian-speaking colleague Alexey Bruev supports him in Allmersbach im Tal.

Helmar Lünig, raff digital, Adobe Stock/yulenochekk

The lab in credit card format

The decoding of genetic information has become an indispensable part of an ordinary day at a modern laboratory. The ScreenTape by Agilent Technologies has been designed to support quality control and facilitate workflows. For the production of the ScreenTape, the biotech company relies on technology from Harro Höfliger.





The credit card-sized ScreenTape by Agilent promises fast quality control of DNA or RNA samples.

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Even the slightest deviations in human genetic material can be responsible for the onset of disease – and in many cases, therapies can only be developed if the genetic background is known. It was a real sensation when in 2003 the first human DNA was completely decoded after more than 13 years of work, and costs amounting to hundreds of millions of euros. Nowadays, the decoding of genetic material is commonplace in many laboratories and only takes a few hours. And while costs have also come down dramatically, a price of around 1,000 euros per analysis is not insignificant. Furthermore, since genetic material reacts very sensitively to external influences such as temperature fluctuations, satisfactory sample quality must be ensured before each sequencing.

Reliable quality assurance

This is where Agilent's credit card-sized ScreenTape comes in, which promises rapid quality control of DNA or RNA samples. "The ScreenTape works according to the principle of electrophoresis, in which nucleic acid strands are separated from each other. Normally this is a very time-consuming procedure," explains Jan Eickhoff, Manufacturing Engineer at Agilent Technologies. Each ScreenTape has 16 lanes – enabling the analysis of 16 different samples. The corresponding analytical instrument automatically places the sample on one of the lanes and then, depending on the field of application, analyzes various parameters such as quantity and purity. The results are

"Harro Höfliger has proven to be a reliable partner who does not give up until the machine is running smoothly."

Jan Eickhoff, Manufacturing Engineer at Agilent Technologies

The machine developed by Harro Höfliger precisely joins the two main components of the ScreenTape, which consist of film material: The Printed Layer with its imprinted electrode connections and the thermoformed Process Layer.

available after about one minute. Thus, it can be determined even before the time-consuming and expensive sequencing run whether the genetic material is suitable for further evaluations.

Precise lamination

Since production first began, Harro Höfliger has been providing one of the technologies used by Agilent to manufacture the ScreenTapes. After developing a punching machine and a line for packaging the tapes into four-side sealed pouches, the third joint project, the “Trinity”, is about to go into operation. The machine developed by Harro Höfliger precisely joins the two main components of the ScreenTape, which consist of film material: The Printed Layer with its imprinted electrode connections and the thermoformed Process Layer. The two layers are laminated in three stations running in parallel.

Before and after lamination, various camera systems check for the presence of contamination or scratches on the sensitive film material; a rather important aspect because the samples are optically evaluated in the analyzer.

Guaranteed process reliability

Since the product is made of sophisticated film material and can only be sealed within a narrow temperature window, the Harro Höfliger Engineering & Innovation Services specialists have set up and thoroughly tested the “Trinity” lamination unit in advance. “This is how we were able to make sure that the process works in principle. In addition, it enabled us to make joint decisions about the control technology involved and develop parameters for the subsequent machine,” explains Jan Eickhoff. Another important aspect of quality assurance is the database link of the “Trinity”: All process and batch data is digitally recorded, making it possible to trace the creation of each individual tape down to the last detail.

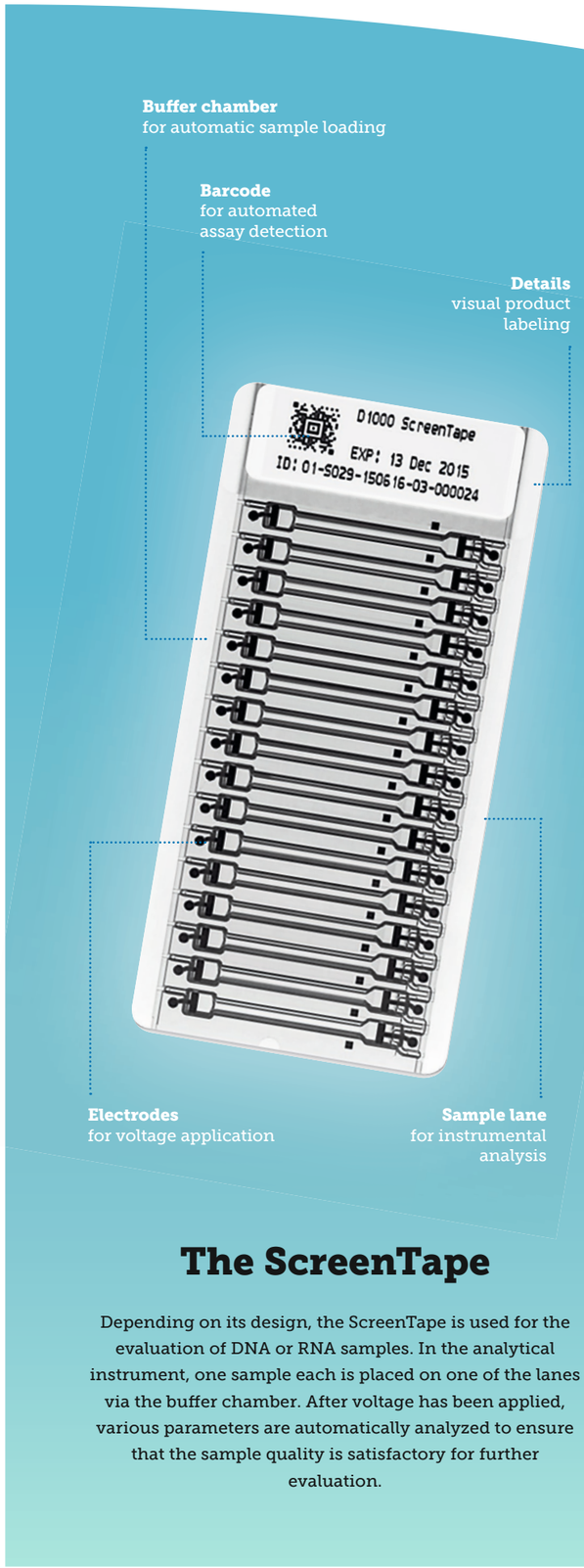
Jan Eickhoff is convinced that the fields of application for sequencing processes – and thus the market for the ScreenTape – will continue to grow. “Among other things, this technology will open the door to personalized medicine, where decisions on what helps patients are made on a case-by-case basis.” ■

shutterstock/Blackboard, Helmar Lünig, Agilent Technologies

About Agilent

Agilent Technologies Inc. (NYSE:A) is a global leader in life sciences, diagnostics and applied chemical markets. With more than 50 years of insight and innovation, Agilent’s instruments, software, services, solutions, and people provide trusted answers to customers' most challenging questions. The company generated revenues of $ 4.91 billion in fiscal 2018 and employs 15,550 people worldwide.

Agilent Technologies



The ScreenTape

Depending on its design, the ScreenTape is used for the evaluation of DNA or RNA samples. In the analytical instrument, one sample each is placed on one of the lanes via the buffer chamber. After voltage has been applied, various parameters are automatically analyzed to ensure that the sample quality is satisfactory for further evaluation.

This way please

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In May 2019, the European Medicines Agency (EMA) presented a draft of a new directive for quality standards of drug-device combinations (DDCs). It poses major challenges, in particular for medical device manufacturers.

Strict requirements for development documentation for the approval of drugs are a matter of course for drug manufacturers. Until recently, manufacturers of medical devices, in contrast, were subject to rather vague requirements under the Medical Devices Directive. This changed in May 2017 when the EU Medical Device Regulation (MDR) replaced the old directive and regulated the requirements for the documentation of medical devices in much more detail. The draft of the European Medicines Agency (EMA) with its regulation on quality standards for drug device combinations goes one step further.

What is at issue?

Drug device combinations (DDCs) consist of a device and a drug to be administered with it. A distinction is made between integral and non-integral DDCs. We speak of an integral DDC when a device – a syringe, a pen or an inhaler – is already filled with a drug during production. A non-integral DDC consists of an unfilled device that has been specifically designed for a particular drug and is packaged with the drug. For both variants, only the proof of efficacy of the drug had to be provided so far. Manufacturers did not have to submit any development documentation for the approval of the device.

This is now changing: For the first time, the EMA directive demands that medical device manufacturers must specify how a device influences the quality of the entire product. In the future, they will have to submit complete and precise development documentation for the device as well, including proof of integrated risk management. Over the next few months, this will create some bustle and the occasional outbreak of sweat, especially among medical device manufacturers. In contrast to pharmaceutical products, where the new requirements only apply to new approvals, medical device manufacturers also have to re-document products that have already been approved and register them anew. It's a Herculean task, with the clock ticking on top of everything else: The new directive is to take effect as early as 2020. An application for an extension of the deadline was rejected by the responsible EU authority.

Backed by experience through the thicket of regulations

Since the beginning of the year, Harro Höfliger has also been supporting customers in the development of new devices and medical products or in the optimization of existing ones with its "Device Services" offering. And although the company is neither a pharmaceutical manufacturer within the meaning of the German Medicines Act (Arzneimittelgesetz) nor a manufacturer of medical devices within the meaning of MDR, the service offering also includes preparing and providing detailed development documentation for the device. As a basis serves Harro Höfliger's compliance with the European ISO 13385 standard and the US Federal Food and Drug Administration (FDA) 21 CFR820 guideline. In recent years, both directives have converged to such an extent that they are almost identical.

In addition, Harro Höfliger incorporates the requirements of the ICHQ9 guideline into the device documentation and thus covers information on quality and risk management that must be documented. The three guidelines together meet all the requirements of the new EMA specifications. Consequently, Harro Höfliger customers receive detailed and EMA-compliant development documentation for their device, which they can use for their product approval.

Targeted support

There are already initial inquiries from customers, who in view of the structured device development documentation of Harro Höfliger also desire support with the documentation for their complete product. This shows the degree of uncertainty regarding the new EMA Directive. With our experience in the field of machine and device documentation as well as the ALL YOU NEED service philosophy, Harro Höfliger can provide extensive support in this area. ■

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The EMA directive demands that medical device manufacturers must specify how a device influences the quality of the entire product.

Unfeasible does not exist!

Some powders are more difficult to package than others. The experts at Harro Höfliger find the appropriate solution for all powders. And if needed, a new invention is created – always true to the motto: The product determines the process.

Tricky powders

These are some of the most stubborn materials.

Sometimes even the smartest powder specialists at Harro Höfliger are tearing their hair out. For example, when due to particle shape or size, stability or density, the material to be filled simply cannot be dosed into the designated capsule or cavity of the blister strip. For Dr. Karlheinz Seyfang, Principal Consultant at Harro Höfliger, these stubborn powders are precisely what makes his work so exciting, and ducking the issue is not an option: “Changing formulations post approval is not possible,” he explains. “We must work with them the way they are – the same applies to the target containers. This is why the product determines the process. Ultimately, we find a solution for everything.”

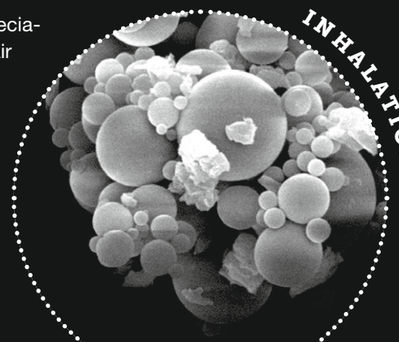
The appropriate dosing system

The search for solutions starts with the right dosing system. In most cases, specialty machines by Harro Höfliger are equipped with volumetric dosing systems. Dr. Seyfang: “We often work with very small dosing quantities which have to be filled into small target containers – some with a filling level of 100 %. This is a real challenge when it comes to powders with particle sizes smaller than 10 µm.” With these tiny particles, the interparticle adhesion forces are predominant. The material flows very poorly, clumps, and adheres to the surfaces of the machines that come into contact with the product.

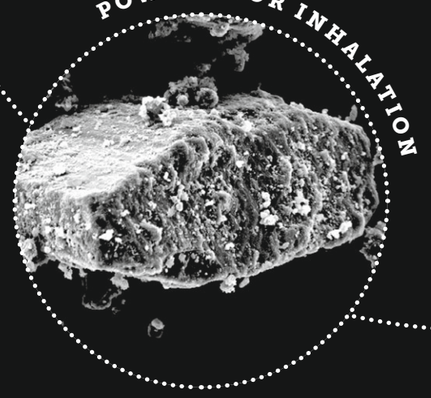
In order to find out how powders behave during processing, their properties are determined in the Harro Höfliger laboratory where, among other things, their impact on the flow behavior is examined. This is then put to the test on table-top versions of common filling systems. Here, we can already see on a small scale what can later lead to problems on a large scale. If powders flow poorly, the dosing chamber will not be filled properly. Vibrating devices, ultrasound or picking up the powder with suction under negative pressure can help. Dr. Seyfang: “Our table-top dosing systems already meet many requirements, and once a suitable system is found, we scale-up to a production machine.”

Suitable framework conditions

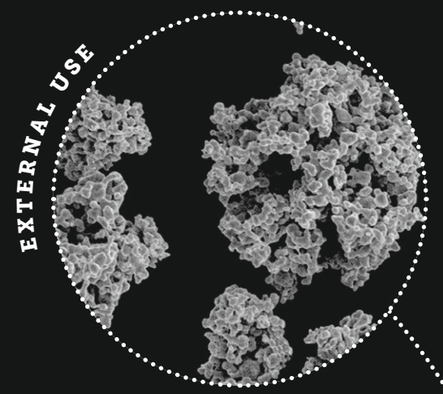
Knowing the powder properties is not just important for exact dosing. Powders and processes also have to harmonize so that later they run smoothly on the machine. More than 90 percent of the projects that Harro Höfliger is involved in, relate to medicines and medical products. Their stability must be guaranteed over the entire storage and administration period. This can only be ensured if the manufacturing conditions are right. For example, the share of biopharmaceuticals containing proteins and peptides as active ingredients is increasing. They are often used as lyophilizates or spray-dried powders which can only be processed in an environment with low relative humidity in order to prevent clumping. If the relative humidity is too low, static charges may occur: The dosing processes are then difficult to control since the powder particles repel each other or stick to the dosing system. Dr. Seyfang: “This is just one of many balancing acts that we have to master. When dealing with difficult substances, we sometimes have to develop new, individual solutions. We are a specialty machine manufacturer for that very reason – to meet those extraordinary challenges.”



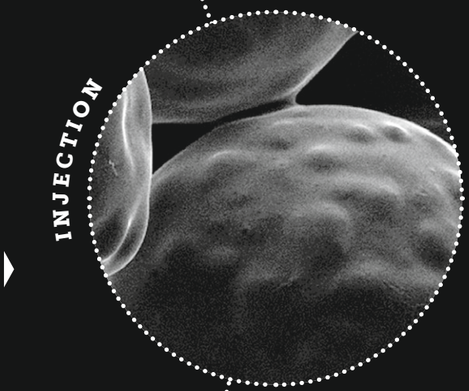
Hollow microspheres have an extremely low density (< 0.03 g/ml). For comparison: The density of sugar is 20 times higher. Despite their spherical shape, the particles only have a moderate flow rate and are sensitive to high relative humidity.



Such formulations consist of active substances in the form of small “crumbs” which are attached to carrier crystals of lactose monohydrate. In a powder inhaler, the active ingredient particles must detach from the carrier. Unfortunately, this can already happen during the dosing process which bears the risk of de-mixing.



Silver oxide for coating wound dressings is an accumulation of extremely fine particles. The interparticle adhesion forces cause the material to flow poorly, as it tends to clump together and stick to machine parts during processing.



Polymer beads with an embedded active ingredient must not be damaged, as that would change the release rate. This formulation is injected, so filling must be aseptic. Due to the high material value of the product, it has to be possible to completely empty the machine’s dosing system.

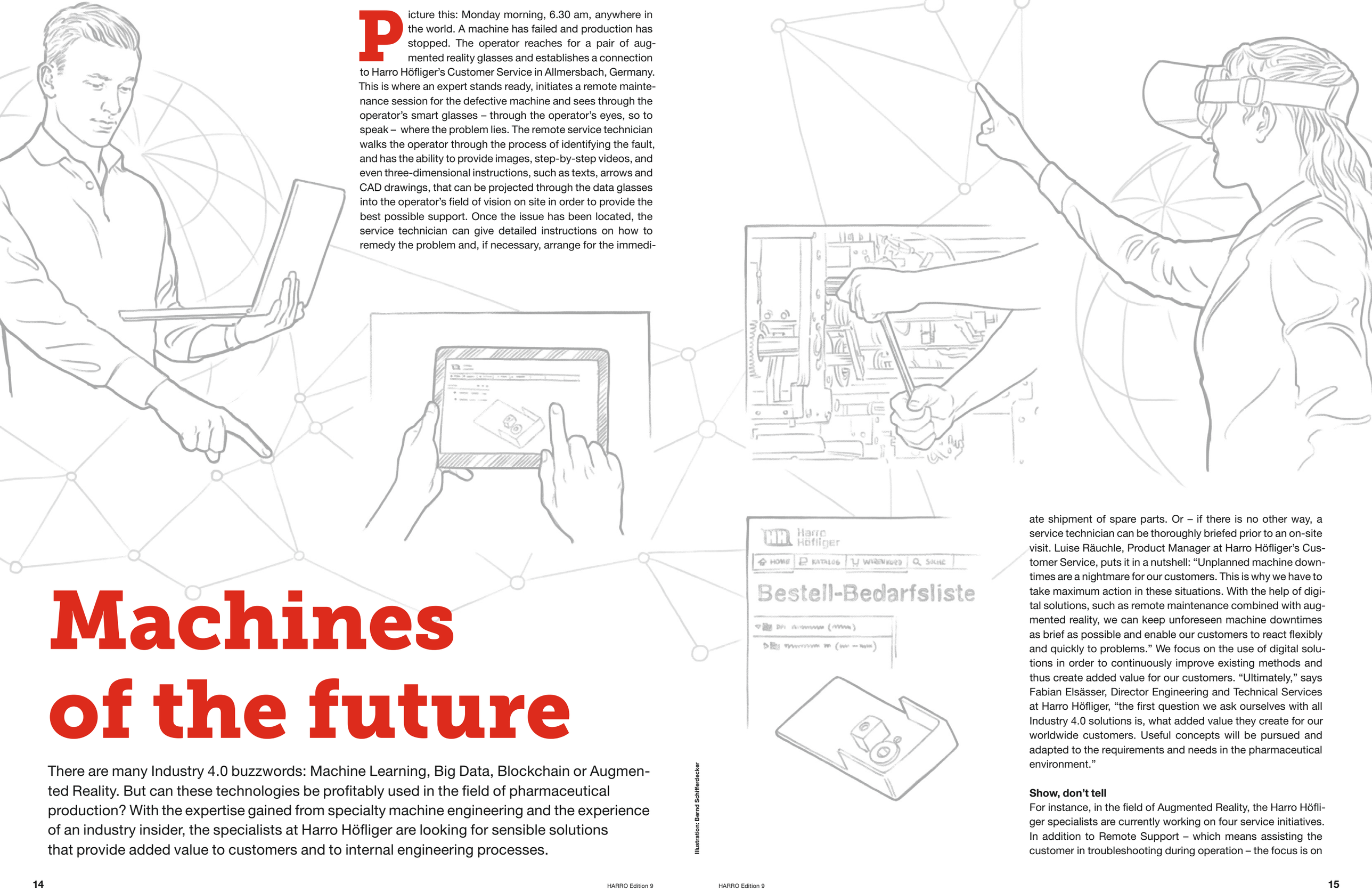
Lyophilized formulations clump together when relative humidity is too high. In addition, the flow properties of the powder are negatively affected by the unfavorable particle shape: The flakes can mechanically interlock.

Dr. Karlheinz Seyfang, Principal Consultant at Harro Höfliger

“Once a suitable system has been found, we scale up to a production machine.”

Janine Kyofsky

STRATEGY



Machines of the future

There are many Industry 4.0 buzzwords: Machine Learning, Big Data, Blockchain or Augmented Reality. But can these technologies be profitably used in the field of pharmaceutical production? With the expertise gained from specialty machine engineering and the experience of an industry insider, the specialists at Harro Höfliger are looking for sensible solutions that provide added value to customers and to internal engineering processes.

Illustration: Bernd Schifferdecker

Picture this: Monday morning, 6.30 am, anywhere in the world. A machine has failed and production has stopped. The operator reaches for a pair of augmented reality glasses and establishes a connection to Harro Höfliger's Customer Service in Allmersbach, Germany. This is where an expert stands ready, initiates a remote maintenance session for the defective machine and sees through the operator's smart glasses – through the operator's eyes, so to speak – where the problem lies. The remote service technician walks the operator through the process of identifying the fault, and has the ability to provide images, step-by-step videos, and even three-dimensional instructions, such as texts, arrows and CAD drawings, that can be projected through the data glasses into the operator's field of vision on site in order to provide the best possible support. Once the issue has been located, the service technician can give detailed instructions on how to remedy the problem and, if necessary, arrange for the immediate shipment of spare parts. Or – if there is no other way, a service technician can be thoroughly briefed prior to an on-site visit. Luise Räuchle, Product Manager at Harro Höfliger's Customer Service, puts it in a nutshell: "Unplanned machine downtimes are a nightmare for our customers. This is why we have to take maximum action in these situations. With the help of digital solutions, such as remote maintenance combined with augmented reality, we can keep unforeseen machine downtimes as brief as possible and enable our customers to react flexibly and quickly to problems." We focus on the use of digital solutions in order to continuously improve existing methods and thus create added value for our customers. "Ultimately," says Fabian Elsässer, Director Engineering and Technical Services at Harro Höfliger, "the first question we ask ourselves with all Industry 4.0 solutions is, what added value they create for our worldwide customers. Useful concepts will be pursued and adapted to the requirements and needs in the pharmaceutical environment."

Show, don't tell

For instance, in the field of Augmented Reality, the Harro Höfliger specialists are currently working on four service initiatives. In addition to Remote Support – which means assisting the customer in troubleshooting during operation – the focus is on

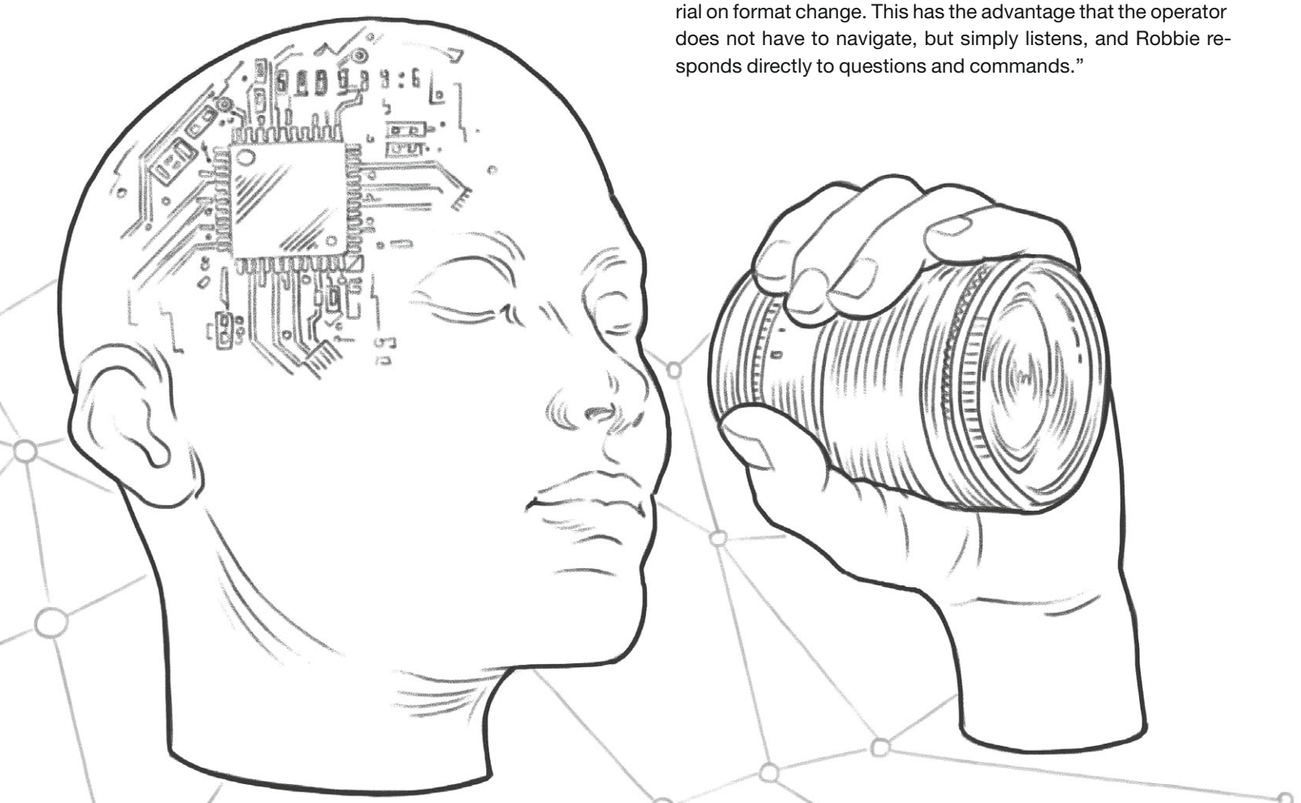
"With the help of smart devices, we are able to show operators how to do a format change instead of explaining it at length. This keeps training costs low."

Luise Räuchle, Product Manager at Customer Service

Augmented Maintenance, Augmented HMI and Augmented Changeover. All aspects are brought together in a knowledge database. Räuchle adds: "With the help of smart devices, we are able to show operators how to do a format change instead of explaining it at length. This keeps training costs low when there are staff changes and helps to effectively overcome language barriers." The same is true for maintenance manuals, she continues: "We are currently preparing maintenance schedules for our customers. In the future, it may be more efficient to provide videos showing step-by-step maintenance procedures. 3D animated maintenance instructions could also be an option." Augmented Maintenance also aims to support customers in the upkeep of their systems with the help of innovative technologies and mechanical engineering know-how. And with Augmented HMI, machine operators will always have all relevant information at their fingertips for a smooth production process.

Exploring new topics

The IoT Solutions Department at Harro Höfliger was created in 2018, and a whole Scrum team works on the application of digital solutions in the pharmaceutical sector. They also complement their research into new subject areas by utilizing degree theses written by students from a wide range of disciplines. Elsässer: "For years we have been working intensively with universities and have received valuable ideas and suggestions as a result of their efforts." For example, one thesis dealt with the use of virtual assistants, such as voice-controlled chatbots, to support the operator's tasks on a machine. Räuchle: "The augmented Avatar Robbie acts as an audio guide for a video tutorial on format change. This has the advantage that the operator does not have to navigate, but simply listens, and Robbie responds directly to questions and commands."



Private, Janine Kyofsky, Illustration: Bernd Schifferdecker

Training for networks

Another important focus topic from which customers will benefit in the future is image processing optimized with Deep Learning aided methods. Hartwig Sauer, Department Leader Vision Systems at Harro Höfliger, explains: "About 70 percent of our machines are equipped with camera systems for quality assurance. They use traditional rule-based image processing." In this process, one or more objects in the image are contrasted and isolated using edge finders or threshold methods to check for quality. With rule-based image processing, very accurate measurements can be achieved and it is also possible to read and decode 2D codes. Sauer adds: "With this method, however, it is often difficult to reliably detect fluctuations or deviations in complex surface structures. This is where Deep Learning comes in." With these methods, the neuronal network learns to reliably detect anomalies by means of example images. The system can also be taught to accept certain tolerances. Cosmetic defects such as scratches, stains and dirt are typical applications for such an image processing system. In addition, Sauer and his team are working on applications that actively intervene in the machine control system when an irregularity is detected so that certain values can be adjusted. Sauer: "Deep Learning does not replace but complements rule-based image processing."

More reliability in engineering

Harro Höfliger has also incorporated Industry 4.0 solutions in their own engineering processes. Elsässer: "In our Model Based Engineering group, we work on the virtual start-up of our machines." This is not about the virtual start-up of an entire system, but focusing on specific mechatronic units where we know in advance that special challenges have to be mastered. Elsässer: "With the help of a digital twin for these 'critical' units, we can ensure at a very early stage in development that the unit works. This saves time and money and minimizes the risk of unpleasant surprises at the end of a complex development process."

The challenge of specialty machine engineering

The experts at Harro Höfliger are faced with a major challenge in all their solution concepts: In specialty machine engineering, concepts that have been developed for one machine cannot simply be transferred to another. Due to the large number of individual components, the effort for maintaining and keeping digital solutions up to date cannot be carried out by developers alone. At Harro Höfliger we therefore rely on collaborative solutions for knowledge management. Developers are not the only ones to make their knowledge available. In addition, every single operator records activities once they have been performed, and enters them into the knowledge database. This grants colleagues access to relevant information at all times and thus expands their capabilities.

For Fabian Elsässer and his colleagues, the direction that Harro Höfliger will take in matters of Industry 4.0 is clear: "The time of buzzwording is over. There are ideas and solutions that offer us and our customers great advantages now and in the future. It is our intention to identify and further develop these technologies. Our combination of machine know-how and expertise in the pharmaceutical sector helps us to evaluate new digital concepts to further improve existing methods and processes."

"Deep Learning does not replace but complements rule-based image processing."

Hartwig Sauer, Department Leader Vision Systems

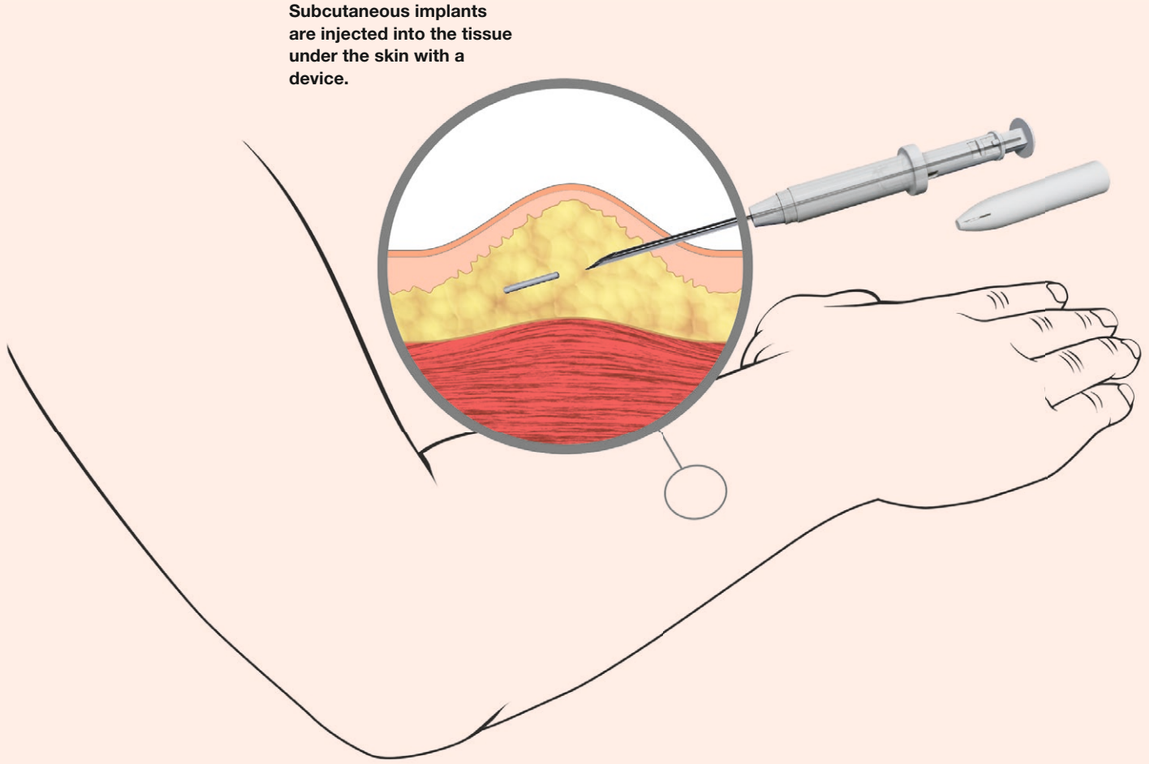
"The time of buzzwording is over. There are ideas and solutions that offer us and our customers great advantages now and in the future."

Fabian Elsässer, Director Engineering and Technical Services

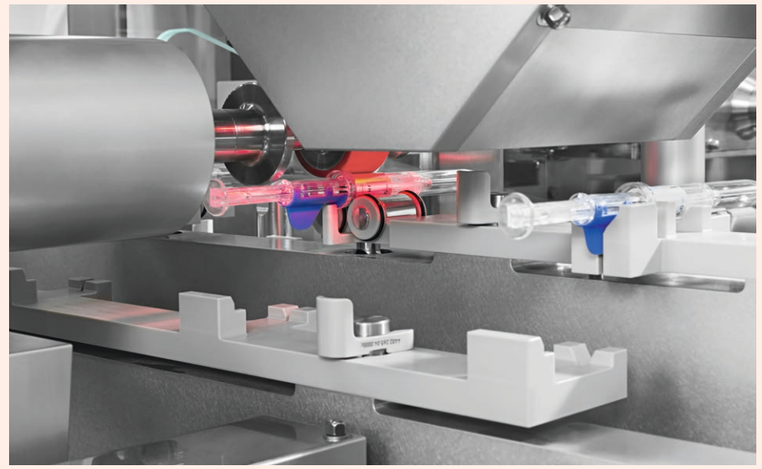
Placed right under the skin

They are only a few millimeters long, thinner than a match and could revolutionize the administration of drugs: Subcutaneous implants cover a wide range of applications.

Subcutaneous implants are injected into the tissue under the skin with a device.



Helmar Lünig, Illustration: Thomas Heller



Precise positioning of a laser-printed label on the device.

It has become one of the largest health issues in the world: According to a WHO report, about half of all patients with chronic diseases do not take their medication as prescribed. This lack of therapeutic adherence or "compliance" not only negatively affects patients. It is estimated that in the US alone the subsequent cost amounts to at least 100 billion dollars a year – a heavy burden on the healthcare system.

Tiny rods with great potential

Subcutaneous implants promise to potentially improve this situation. These are active substance-containing rods of polymer compounds that are placed under the patient's skin with a device. Depending on the field of application, they release their active ingredient evenly over a period of up to several months. This can replace the daily intake of tablets or recurrent injections. Moreover, in many cases the implants are biodegradable, i. e. they dissolve completely in the body. The range of applications is broad: Currently, the rods are already used in oncology, in the treatment of opiate dependence, or as contraceptives.

Everything from a single source

As with all implants, it is imperative that the rods containing the active ingredient are sterile in order to avoid risks for patients. Cooperating with specialized technology partners enables Harro Höfliger to offer customers a comprehensive solution and supply implants, device components and machines for aseptic assembly from a single source. The company provides support from the initial product idea. "We consider all components and make sure that aseptic processing is feasible. For conducting sterilization tests we can establish contacts with specialized partner companies," says Ulrich Stahl, Director New Technologies at Harro Höfliger.

If interested, customers can also receive support in the development of trays for feeding the individual parts during assembly: "For past projects, our specialists have provided specific advice on the design and functionality of the thermoformed workpiece carriers. Aseptic procedures have very particular requirements. And when it comes to successful process development, customers can always count on the support of our Engineering & Innovation Service

Team," explains Stahl. Even while the device is assembled and fitted with the implant, various measures ensure that a sterile environment is maintained. For example, optimized motion sequences of the gripper systems minimize the dispersion of airborne particles. In addition, laminar air flow systems with sterile filters are used. Last but not least, "mock-ups" – true-to-scale wooden models of the entire machine – offer additional safety and reliability since they can be used to simulate and optimize all insertion processes and manual operation procedures on the machine prior to design approval.

"An administration form with a future"

One of Harro Höfliger's technology partners covering the production of sterile implants is Thermo Fisher Scientific. Marc Hofrichter reports on the product's potential and the manufacturing challenges.

Mr. Hofrichter, in which areas are subcutaneous implants used?
The fields of application are almost unlimited: Whether in ophthalmology, the treatment of schizophrenia and cancer, contraception or the delivery of opiates, hormones and antibiotics – subcutaneous implants are used in all these areas. Meanwhile, even in veterinary medicine there is a strong interest in this administration form.

Are there any special challenges during production?
Not only is it important to process these highly potent and sensitive materials safely and carefully, but also to ensure high-precision length and diameter tolerances as well as excellent surface quality. Another major challenge is to guarantee the precise distribution of active ingredients with the tightest tolerance limits in a fully automated manufacturing process – which includes measuring, trimming and sorting. With the Thermo Scientific™ Pharma mini Implant Line, we are well equipped to meet these challenges.

How do you see the future of the market?
In recent years we have noticed an increasing interest in implants as drug depots and in our implant line. Therefore, I am convinced that this is an administration form with a promising future.

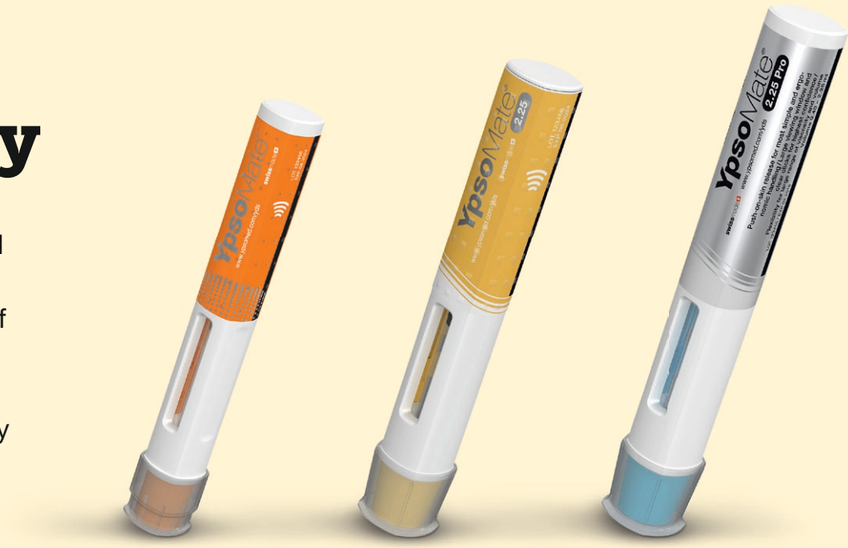
Marc Hofrichter, Project Manager Customized Projects, Thermo Fisher Scientific

About Thermo Fisher Scientific

Thermo Fisher Scientific is one of the world's leading partners in serving science, with revenues of 20 billion dollars and about 70,000 employees. It is their mission to enable their customers to make the world healthier, cleaner and safer. Through their premier brands Thermo Scientific, Applied Biosystems, Invitrogen, Fisher Scientific and Unity Lab Services, the company offers an unmatched combination of innovative technologies and comprehensive services.

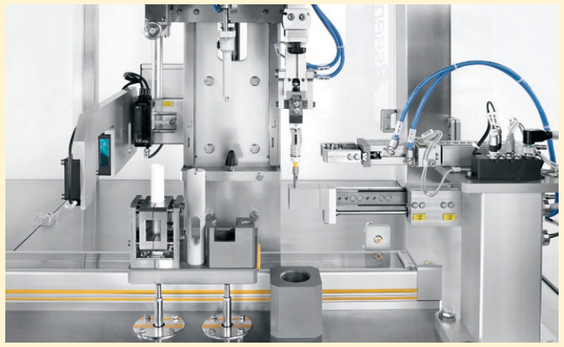
Flexible assembly

Ypsomed has developed an auto-injector product family for a wide range of applications. The final assembly can be performed with an Assembly Lab System by Harro Höfliger.



The YpsoMate product family.

Auto-injectors are devices with pre-filled syringes that enable patients to inject themselves. In recent years, there has been a strong increase in demand for these products – a trend that is likely to continue. This is because these devices are not only used for the treatment of various autoimmune diseases; currently, various biologics are under development that could be used, for example, as injections for the treatment of cancer, asthma and migraine. Also, many medicines for rare diseases are generally injectable. In order to be able to meet this diversity with a high degree of flexibility, the Swiss company Ypsomed has developed the auto-injector platform YpsoMate. These devices are compatible with all common glass or polymer syringes with a filling volume of one or two milliliters. The platform approach simplifies the market launch of auto-injectors while at the same time enabling individual customization. The final assembly of smaller series of the YpsoMate product family can be performed on Harro Höfliger's semi-automatic Assembly Lab system which can also be used for pen production. Batch sizes can be determined individually – which is beneficial, for instance, when producing high-priced devices for the treatment of rare diseases. If larger batches are desired, the Assembly Lab ensures a safe development of the product. All process parameters can be reliably transferred to production machines with higher outputs.



The final assembly of smaller series can be performed on the semi-automatic Assembly Lab system.

About Ypsomed

Ypsomed AG with headquarters in Burgdorf (Switzerland) is the leading, independent developer and manufacturer of user-friendly injection systems for self-medication. With innovative Swiss-made products such as pens, auto-injectors and large-volume patch injectors, Ypsomed meets all the demands that pharmaceutical enterprises make for self-injection.

Helmar Lünig, Ypsomed, Tom Philippi

interpack 2020

From May 7 to 13, 2020, interpack, the world's largest packaging trade show, will once again take place in Düsseldorf. In line with the motto “ALL YOU NEED to turn your ideas into reality”, Harro Höfliger will make the journey from the first product idea to the laboratory to high-performance production come alive at their exhibition area. At booth B22, hall 16, visitors can obtain information about comprehensive solutions and innovations on every aspect of pharmaceutical and medical technology production – from laboratory machines to turnkey lines. In addition, the enterprise will present their service portfolio that covers the entire product life cycle.

interpack
PROCESSING & PACKAGING

MAP Manufacturing Workshop

In cooperation with PATH, Harro Höfliger has launched a new symposium series. It deals with the development of suitable processes and machines for the production of Microneedle Array Patches (MAP), an alternative to conventional vaccine administration via syringe. The series was kicked off with a three-day Manufacturing Workshop in Allmersbach im Tal from January 15 to 17, where MAP developers, technology and health experts from all over the world had the opportunity to exchange information and discuss on current developments. The main topics of the conference included coating and dosing technologies as well as drying processes and possible automation.

MAP Manufacturing Workshop PATH

Visit us:

SMi Pre-Filled Syringes & Injectables
15.01. – 16.01.2020
London, Great Britain

Arab Health
27.01. – 30.01.2020
Dubai, UAE

Pharmapack
05.02. – 06.02.2020
Paris, France

MD&M West / ATX
11.02. –13.02.2020
Anaheim, USA

ExU Symposium SEA
03.03.2020
Bangkok, Thailand

CPhI SEA
04.03. – 06.03.2020
Bangkok, Thailand

CPhI Japan
16.03. – 18.03.2020
Tokyo, Japan

Pharma-Kongress
24.03. – 25.03.2020
Düsseldorf, Germany

DDP
30.03. – 01.04.2020
Orlando, USA

PDA Annual Meeting
30.03. – 01.04.2020
Raleigh, USA

Analytica
31.03. – 03.04.2020
Munich, Germany

FCE Pharma
02.04. – 04.06.2020
Sao Paulo, Brazil

RDD
26.04. – 30.04.2020
Palm Desert, USA

Interphex
28.04. – 30.04.2020
New York, USA

Making Pharmaceuticals
28.04. – 29.04.2020
Coventry, Great Britain