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INTERVIEW WITH CHRISTIAN CLASSEN, SANNER'S NEW CHIEF SALES OFFICER



Returning from CPhI Worldwide, we speak with Christian Classen, Sanner's new Chief Sales Officer, that presents its development plans for the market leader in desiccant closures and effervescent tablet packaging.

By Marion Baschet Vernet, Deputy Chief Editor.



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You are Sanner's new Chief Sales Officer. Let us get to know you a little bit better. Could you introduce yourself and explain what is your mission today?

Christian Classen: I have joined Sanner in October this year as the new Chief Sales Officer, leading our sales, marketing and product management activities within the Sanner Group. Before joining Sanner, the last 15 years I have been in various leadership roles at known CDMO players like Phillips-Medisize, Nolato Medical and Flex with key focus on strategic business development within the market segments Medtech, Diagnostics and Pharma Drug Delivery. The CDMO activities in the field of medical devices has the biggest growth potential for our organization and forms the core of the strategy for growth in the coming years. It will be one of my main responsibilities as CSO.



Sanner BioBase

How does Sanner's product portfolio look today? What are the strengths and positioning on the market?

C.C.: Sanner is a globally leading supplier of active packaging solutions and components for medtech, diagnostics, pharma, and healthcare. A market leader for desiccant

closures and effervescent tablet packaging Sanner is a sought-after provider of customized solutions in the areas of medical devices and diagnostics, pharmaceuticals, and consumer healthcare. Our company offers standard and customized packaging solutions. Sanner has a long tradition of providing the highest level of drug protection in the pharma segment, based on the innovation of desiccant closure for medical packaging. In OTC, Sanner provides the world's broadest portfolio of packaging solutions for effervescent tablets, nutritional supplements, and probiotics. In addition to this well-established business, in the last years, Sanner has positioned itself as CDMO in medical technology and diagnostics offering a broad portfolio of solutions for in-vitro diagnostics, point-of-care-testing, and transfer device, inhalation solutions and test strip packaging.

What are the needs of pharmaceutical and biotech companies that use your products and services? How have they evolved?

C.C.: Our pharmaceutical and biotech customers value and trust our long-term experience in the development and manufacture of innovative product solutions to protect their active ingredients. With the additional range of services as CDMO, today we can offer our customers complete solutions that include drug protection and drug delivery devices from one hand.

What are the current areas of development for Sanner?

C.C.: On one hand, we are pursuing the strategy of continuing our successful business segment desiccant packaging with further development of the standard product portfolio, among other ideas, considering sustainability aspects. You will see new

product solutions to come in the next year. Within the business segment CDMO, we intend to expand our services and broaden the value chain for our customers, by acquiring a Design & Development company in Europe. To prepare for the future growth we are currently in the process of expanding our existing manufacturing footprint in China with a second plant which will open in summer 2023.

Furthermore, we have decided to invest in a new state-of-art manufacturing plant in Germany at Headquarters in Bensheim, where we already acquired the land and intend to break ground early next year. This strategically important investment in sufficient capacity for the coming years is key for our growth plan. Finally, to be able to serve our global customers with manufacturing of product solutions in the region where they need them, we are also seeking for a manufacturing company to acquire in the USA.



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BERRY HEALTHCARE AT DDL 2022

This year's Drug Delivery to the Lungs (DDL) conference in Edinburg from 7-9 December 2022 was an important event for Berry Healthcare. Muriel Combeau, Vice President of Global Product Marketing and Strategy, Berry Healthcare, and Valeria Sesana, Manager Sales & Business Development Inhalation, Berry Global, explain us why !



Muriel Combeau, Vice President of Global Product Marketing and Strategy at Berry Global



Valeria Sesana, Manager Sales & Business Development Inhalation at Berry Global

What innovative products did you put forward at this event?

Muriel Combeau and Valeria Sesana: We had several innovations on show this year. Firstly, RS01X Digital Inhaler is the latest innovation for our best-in-class RS01 inhaler, offering connectivity with smartphones and other devices through the Respiro app and platform. This allows users to keep track of their doses, help set reminders and offers insights and advice. We also showcased RS01 Inhaler now in a Size 2 capsule. We feel that this is particularly interesting because we are increasing the scope that a universal standard product can now cater to, increasing the amount of people who can take advantage of our best-in-class inhaler technology. We were also demonstrating our RS01-R Advanced Recycled Material which is part of our Circular Solutions offering. It is a variant of our RS01 inhaler manufactured using recycled biocompatible and medical grade resins.

We also have to mention our intuitive, reliable and affordable Inspira DPI for emerging pharma markets - which is now available in new variants with high or low airflow resistance, ABS or PP resin types, and can also be supplied with ISCC+ Advanced Recycled resin based on the mass balance approach.

For this broad range of innovations, how does Berry make the difference comparing to what already exists on the market? What is distinctive?

M.C. & V.S.: We have over 50 years' experience producing inhalers, using best in class technology, ability to manufacture more lightweight products than competitive devices, whilst maintaining and improving the highest levels of performance. Partnering with leading digital health amiko, our products are the best in class, and we continue to increase their capability and scope. We use our own proprietary technology to produce new products and collaborate with universities, laboratories to test our products.

How do you see evolving the needs and demands on the inhalation market from drug companies and biotech companies?

M.C. & V.S.: What's important for our customers and it's where we are focusing our energy : better adherence to treatment, improved patient inhalation technique, ease of use, delivery to the drug directly to the lungs and lowering carbon footprint - to name a few. To quote a previous article on this: "Devices that help deliver the right dose will be key to ensuring patient compliance in the future".

What are the areas of development at Berry Healthcare?

M.C. & V.S.: We have several development plans, at the global level, and we will continue ensuring proper dosing, capitalising on the opportunities presented by digital health technologies, and maximising our sustainability offering as much as possible.

What will be key for you in the future?

M.C. & V.S.: We are investing heavily in our Indian manufacturing with a new site in



BERRY inspira dpi and BERRY RS01-R

Bangalore and Global Centre of Excellence to tackle the needs of a growing healthcare market. The Sira facility will consolidate Berry's leading position in the design, development and production of patient-centered healthcare solutions, including ophthalmic, nasal pumps, inhalation, and injectable administrations. Building work is now in progress with the clean room expected to be operational by the end of this year and full completion of the factory by Spring 2023. We will also continue to invest in digital health technology and our pMDI and DPI inhaler offerings will also be a focus for us.



BERRY RS01 - X

LATEST PHARMA NEWS

TEKNIPLEX CONSUMER PRODUCTS LAUNCHES DISPENSING LINERS AND

Peel n Pour™ controls product flow while preventing leaks; in addition to liquids, solution can be used for powders, spices, and other solid products.

TekniPlex Consumer Products has introduced a range of dispensing liners whose convenient peel-tab design provides simplified dosing for a wide variety of liquid, powder, and solid products. An attractive alternative to conventional plastic press-in orifice reducers, TekniPlex Consumer Products' new line of Peel n Pour™ solutions offer strong induction seals to prevent product leaks, with custom orifice sizes to reduce product flow by as much or as little as a brand owner specifies. The fully customizable peel-tabs allow for easy removal while maintaining tamper-evidence and product spoilage.

New Peel n Pour™ solutions are ideal for a broad array of products in which product flow control is useful – everything from baby oils and personal care products to



TekniPlex Healthcare - Coated Barrier Solutions from TekniPlex Healthcare

"How consumers use a product is a crucial aspect of its overall success, and Peel n Pour's dual benefits of dosing and leak prevention can tangibly heighten consumer experiences."

DeAnn Umland

Vice President & General Manager, Integrated Performance

Solutions, Americas, TekniPlex Consumer Products

cosmetics, household items, automotive, and even pharmaceutical applications. Liquids, powders, flaky goods such as spices, and oral solid dose items like pills or gummy vitamins can all benefit from both flow control and leak prevention with the added benefit of a hermetic seal.

Peel n Pour™ enjoys exemplary sealing capabilities for all bottle types and substrates – including HDPE, PP, PET, and glass constructions – and are printable for enhanced brand aesthetics. Notably, eliminating the need for separate plastic orifice reducers also allows brand owners to reduce production costs and simplify sourcing demands, an appealing “addition by subtraction” benefit. “How consumers use a product is a crucial aspect of its overall success, and Peel n Pour's dual benefits of dosing and leak prevention can tangibly heighten consumer experiences, » said DeAnn Umland, Vice President & General Manager, Integrated Performance Solutions, Americas, TekniPlex Consumer Products.

.... TekniPlex Healthcare invests in state-of-the-art production equipment for coated barrier products

New Air Knife Coater greatly increases company's capacity for coated Tyvek® and reinforced papers for various medical device, pharmaceutical & diagnostic applications.



TekniPlex Healthcare - Coated Barrier Solutions from TekniPlex Healthcare

TekniPlex Healthcare is installing a new state-of-the-art air knife coater. The new infrastructure not only will extend the quality of TekniPlex Healthcare's precision coated barrier products, but also add substantial capacity that is urgently needed in the industry. In particular, the air knife coater will allow to significantly increase its supply of coated Tyvek®, heat seal coated reinforced paper, cold seal coated paper and film for various medical device, pharmaceutical and diagnostic applications. Scheduled to complete validation in Q4 of 2023, the machinery addition is exceedingly well-timed, coming at a crucial confluence of global supply chain challenges, increased demand, and heightened requirements for higher performance barrier solutions. The investment allows TekniPlex Healthcare to stay ahead of the supply and demand curve while further improving product performance.

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EVONIK LAUNCHES PLANT-BASED SQUALENE TO BOOST VACCINE EFFICACY

Evonik has launched a non-animal-derived squalene suitable for vaccines and other pharmaceutical applications. PhytoSquene® is the first known amaranth oil-derived squalene on the market for use in adjuvants in parenteral dosage forms.

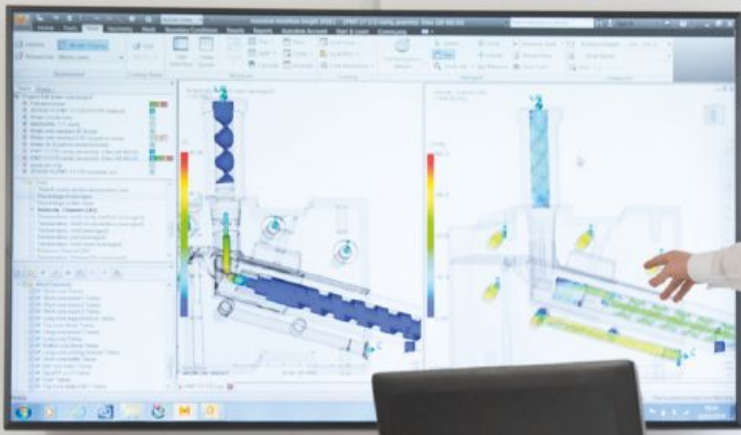
With the launch of PhytoSquene®, Evonik offers an alternative to animal-derived squalene, which for pharmaceutical applications is typically sourced from shark liver oil. Preserving biodiversity and ecosystems by reducing the need for animal-derived products is an important focus for Evonik and its life sciences division, Nutrition & Care.

Nutrition & Care has formulated a clear vision to transform more than 70 percent of its portfolio in terms of revenue to next-generation solutions by 2032. Next-generation solutions

are based on a thorough portfolio assessment and represent a superior sustainability benefit. PhytoSquene® is made from the oil of amaranth (*Amaranthus caudatus*) which is an herbaceous plant cultivated in many parts of the world. Being plant derived, PhytoSquene® ensures batch-to-batch consistency, quality and purity. It is compliant with European Pharmacopoeia (Ph. Eur.) specifications and there is no risk of pathogenic transmission.

PhytoSquene® is also a solution for patients who cannot use animal-derived products for cultural or religious reasons. It is the latest of Evonik's innovations to provide the market with sustainable, non-animal-derived solutions. Earlier this year, Evonik launched the pharma-grade, plant-derived cholesterol PhytoChol®. Squalene is a natural organic compound that is used as a component in some adjuvant systems. Adjuvants are additives that boost the body's immune response to the active ingredient in a vaccine. They reduce the amount of active ingredient needed, thus making it faster and easier to scale vaccine production and reducing the chance of any side effects in patient.





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RIEKE'S NEW CHILD RESISTANT CAPS RANGE ENSURES EFFECTIVE SECURING OF NUTRACEUTICAL PRODUCTS

The topic of child-resistant packaging is becoming increasingly important. Packaging must also meet the special needs of the aging population. Rieke®, a TriMas Packaging brand, launched a new two-piece child-resistant cap designed to meet both requirements – with sustainability in mind. With Rieke's latest innovation, Child Resistant Caps, manufacturers and distributors of Pharmaceutical and Nutraceutical products can contribute to protecting future generations from accidental access to harmful products while advancing their own sustainability goals.

Children are curious by nature and want to explore the world around them. Many products that are stored in cupboards, such as vitamins, medications or even cleaning chemicals, can easily get into the hands of minors, posing a danger with the potential of accidental access of harmful products. This is why several regulations in North America now call for the use of child-resistant closures for packaging, especially for pharmaceutical and nutraceutical products. According to a study conducted by The Insight Partners, a leading international market research company, the market for child-resistant closures is expected to grow from USD 2.41 billion in 2022 to USD 3.44 billion by 2028.

Less plastic, more sustainability

Rieke has expanded its range of child-resistant caps and closures to protect future generations while working toward achieving global sustainability targets. "Our new two-piece



push and turn Child Resistant Caps Range features our innovative patent-pending interlocking inner/outer cap design – to ensure convenience for seniors and an added level of difficulty for children to open,” explains Ron Kieras, Director of New Product Development – Closures at Rieke. Rieke has also defined ambitious sustainability goals for itself. And it was with these key factors in mind that the new Child Resistant Caps –available in 53mm and 63mm diameters– were designed with less plastic, reducing its carbon footprint without compromising on quality, durability or functional performance. The caps are also available with a post-consumer recycled (PCR) inner cap option which delivers an even more sustainable solution. “Our Child Resistant Caps are compatible with both PET and HDPE bottle materials, fitting CMA standard 53-400 and 63-400 neck finishes. This is the perfect solution for manufacturers and distributors of nutraceutical products, including nutritional supplements,” confirms Kieras. Pictorial

instructions on the cap clearly illustrate how to open and close it, making it ideal for international use.

“Our Child Resistant Caps are compatible with both PET and HDPE bottle materials, fitting CMA standard 53-400 and 63-400 neck finishes. This is the perfect solution for manufacturers and distributors of nutraceutical products, including nutritional supplements.”

Ron Kieras

Director of New Product Development Closures at Rieke

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INDUSTRY NEWS - IN DEPTH-FOCUS - TECHNICAL PAPERS - INTERVIEWS

NEMERA AND ZOLLNER PARTNERS FOR THE DEVELOPMENT OF ELECTRONIC DRUG DELIVERY DEVICES

Nemera, world leader in design, development and manufacturing of drug delivery device solutions for the pharmaceutical, biotechnology and generic industries, today announced a partnership with Zollner Elektronik AG, one of the largest electronic manufacturing service providers in the world.

Zollner is specialized in advanced mechatronics for Healthcare & Life Sciences, Railway Technology, Aerospace & Defense, Automotive Technology and many other sectors. As a partner-of-choice, Zollner will support the design, development and manufacturing of electronic drug delivery systems for both, Nemera's proprietary and customer owned products. This collaboration will begin with Nemera's Symbioze®, a high-volume wearable injection device. Nemera will entrust the development of the electronics & software part of Symbioze® to Zollner.

GERRESHEIMER AG AND STEVANATO GROUP PRESENT EZ-FILL SMART™, A NEW AND INNOVATIVE READY-TO-FILL VIAL PLATFORM

Gerresheimer AG and Stevanato Group S.p.A. announced at CPhI Worldwide the official launch of a new and innovative ready-to-use (RTU) vial platform, EZ-fill Smart™, a solution designed to improve drug packaging quality, reduce total cost of ownership (TCO), and shorten lead times for customers.

The new EZ-fill Smart™ is an evolution of Stevanato Group's groundbreaking EZ-fill®

platform, and it brings new advancements that can create significant enhancements to customer product offerings amid growing demand for RTU vials.

The companies have implemented process and product changes that can offer substantial improvements for customers. The EZ-fill Smart™ platform leverages increased automation throughout the manufacturing process to increase productivity and reduce human errors. The optimized platform features no glass-to-glass and no glass-to-metal contact, which improves quality and integrity of the vials throughout the product life cycle. The companies have redesigned the secondary packaging, which can yield a significant reduction of particle risks during customers' operations, delivering improved quality.

The new EZ-fill Smart™ now offers the market a sterilization method that is more environmentally friendly compared to traditional Ethylene Oxide (EtO) sterilization, and that is an alternative sterilization method that can result in improved safety. Intended to be suited for primary packaging solutions in use with highly sensitive drugs, it also incorporates guidelines given by regulatory bodies supporting the current direction to replace EtO sterilization. Together, Stevanato Group and Gerresheimer AG have obtained positive results to date and are in the validation process with this sustainable sterilization method.

EZ-fill Smart™ is intended to improve sustainability in multiple areas, increasing the packaging efficiency, implementing a new eco-friendly sterilization method, and using biopolymers and recycled plastic.

Developed in close cooperation with major machine vendors, EZ-fill Smart™ can provide a proven seamless integration with standard fill & finish operations. The platform also accommodates both small and large batch production. The companies have implemented advancements that can help ensure the processability on filling lines with the primary aim to facilitate the complete automation of



the in-feeding process. Along with the Nest & Tub configuration, EZ-fill Smart™ will also be available in tray configuration to support and accelerate the conversion from bulk to RTU vials that is already underway in the market. Customers choosing this option can benefit from the improvements gained with the newly designed Nest & Tub configuration. EZ-fill Smart™ with Nest & Tub configuration, including process and product optimization, is expected to be available for the commercial phase during the first half of 2024. By mid-2023 the new solution is expected to be available to customers for initial validation. EZ-fill Smart™ with tray configuration for high volume, is expected to be available on the market during the first half of 2024.

STERILINE LEVERAGES ON COMPACTNESS AND VERSATILITY

At CPHI Frankfurt, Steriline showed a Vial Filling and Capping Machine (VFCM100) under double-wall isolator, a solution developed to increase the production capacity of a Contract Development Manufacturing Organization (CDMO) currently supplying COVID-19 vaccines worldwide.

"During the last period," affirms Federico Fumagalli, Chief Commercial Officer at Steriline, "we delivered a good number of machines and complete lines to produce COVID-19 vaccines both in Europe and other continents. However, the increase in the demand of these type of machines was due not only to manufacture this kind of drugs since several companies already plan to convert them for the production of something else such as biotech drugs in next few years". The VFCM100 under double-wall isolator can reach a production capacity of 6.000 pieces/hour. The machine, developed for injectable drugs, is equipped with 4 peristaltic pumps, allowing a potential infinite filling capacity, a 100% check-weighing and can handle glass vials from 2ml to 100ml. With an easy format change, the machine can also handle plastic vials.

"During the last period, we delivered a good number of machines and complete lines to produce COVID-19 vaccines both in Europe and other continents."

Federico Fumagalli

Chief Executive Officer at Steriline



The double-wall isolator guarantees sterility throughout the whole process protecting not only personnel from the product but especially minimizing the risk of product contamination. Once vials are capped, a conveyor belt moves them into a printer where every cap is marked with the relative batch details for tracking. In addition to the versatility, the customer choice fell on Steriline's solution because of its space-saving sizes that comfortably fits in the available processing area. "Steriline's solution are very compact" states Mirko Ebeling, Managing Director at Ebetech GmbH and Steriline's agent for the Central and Northern Europe. "On the market, there is not right now a double-wall isolator with comparable sizes and compliant with the current Good Manufacturing Practices (cGMP) as the Steriline's one. This feature is very appreciated by those customers that need to optimize space without renouncing any element in terms of quality and safety".



APTAR PHARMA'S GLOBAL EXPANSION TO MEET CAPACITY NEEDS FOR INJECTABLE DRUG DELIVERY

Aptar Pharma has delivered the first phase of its previously announced expansion program of approximately \$180 million USD to meet growing customer capacity needs for injection system solutions.

The multisite, international expansion project began in 2020 and is intended to sig-

nificantly boost capacity across all product lines, ultimately enabling Aptar Pharma to produce over 10 billion injectable component units annually when completed. "Our planned expansion program proved timely and was expedited by the arrival of the COVID-19 pandemic," said Gael Touya, President, Aptar Pharma.

"The investments we're making to expand manufacturing capacity and in new, digitalized processes will benefit our customers well into the future." According to recent market research, injectables represents around 50% of the pharmaceutical drug development pipeline, with an estimated 40% market share. Between 2016 and 2021, injectables showed the largest drug sales growth of over 10% compound annual growth rate (CAGR 16-21), driven mainly by biologics and the demand for high value solutions, such as coated components like Aptar Pharma's PremiumCoat®.

Bold new capabilities

Aptar Pharma's investment encompasses the expansion and ramping up of Aptar Pharma manufacturing of PremiumCoat® ETFE film-coated components, PremiumFill® enhanced specification solutions, elastomer components and vial stoppers worldwide. The expansion program includes investments in France and the U.S., adding an additional 23,000+ m² of manufacturing footprint. The first phase of the PremiumCoat® capacity expansion is already operational in Granville, France and includes new ISO7 clean rooms and advanced robotics.

An additional factory in Granville, France will be operational as of early 2024, which leverages the latest technology. US-based manufacturing capabilities will also be operational as of 2024 to better serve the local market. Further manufacturing expansion phases in both the US and France are also included in the program.



A new, state-of-the-art manufacturing facility in Granville, France

The establishment of a second manufacturing facility in Granville, France marks a new milestone in the transformation of Aptar Pharma and paves the way for a step change in capacity and high-tech efficiency. This highly automated factory will significantly increase production capacity to meet growing demand for elastomeric components, including PremiumCoat® solutions for enhanced drug/container compatibility. Partial funding of 13 million Euros for the building and expansion of Aptar Pharma's European facilities was awarded as part of the French government's Program of Investments for the Future.

Forging closer partnerships with customers worldwide

Aptar Pharma's expansion was designed with customers in mind. By increasing the capacity and capabilities available through

its regional manufacturing centers, Aptar Pharma is positioned to bring new levels of agility and responsiveness in order to meet the most demanding injectable customer needs around the world. *"With this program, we're transforming our organization to offer pharma companies of all sizes enhanced ways to fast-track and derisk their product development,"* said Gabriel Zenker, President, Aptar Pharma Injectables. *"In doing so, we're fulfilling our commitment to making Aptar Pharma a first-choice, long-term partner for*

"The investments we're making to expand manufacturing capacity and in new, digitalized processes will benefit our customers well into the future."

Gael Touya

President, Aptar Pharma

"In doing so, we're fulfilling our commitment to making Aptar Pharma a first-choice, long-term partner for those seeking sustainable success for their drug development pipelines as part of our mission to shape the future of injectables together with our customers."

Gabriel Zenker

President, Aptar Pharma Injectables

those seeking sustainable success for their drug development pipelines as part of our mission to shape the future of injectables together with our customers."

New collaboration with TFF Pharmaceuticals to develop Intranasal Delivery of Dry Powder Vaccines and Therapeutics

In addition, Aptar Pharma announced a collaboration with TFF Pharmaceuticals, Inc., a clinical-stage biopharmaceutical company focused on developing and commercializing innovative drug products based on its patented Thin Film Freezing technology platform. It aims at developing and testing the administration of dry powder vaccines utilizing TFF Pharmaceutical's Thin Film Freezing technology and Aptar Pharma's proprietary intranasal Unidose (UDS) Powder Nasal Spray System. TFF Pharmaceutical's Thin Film Freezing technology platform has broad applicability to convert drugs (small and large molecules) and vaccines into a dry powder formulation for local administration.

A need for alternative routes of vaccination, such as intranasal, was highlighted at the White House Summit on the Future of COVID-19 Vaccines, which took place in July 2022. The development of an effective intranasal vaccine has numerous potential advantages over conventional, subcutaneous or intramuscular-based delivery. First, the nasal passageway is very often the first

point of entry for certain pathogens; if the pathogen can be halted in the nasal passages, curtailing the spread of infection further, this could lead to an improved overall prognosis. In addition, the direct immunization of nasal mucosa may promote systemic and mucosal immunity, which may help prevent viral shedding and disease transmission. Furthermore, self-administration of a nasal powder vaccine provides for "needle free" administration to the patient avoids the need for syringe disposal, and potentially simplifies global distribution with the elimination of extreme cold from the supply chain. These aspects of nasal delivery could open up vaccine availability to larger populations in regions and countries with limited refrigeration infrastructure.

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MAPA AND PYLOTE PARTNERS FOR ANTIMICROBIAL PROTECTIVE GLOVES

MAPA, a leading player in the protective glove market, and PYLOTE, a key player in the industrial mineral chemistry, announced today the signing of a strategic and commercial partnership aimed at providing an innovative response to the issue of contamination and transmission of microbes on personal protective equipment, by combining MAPA's expertise in hand protection and PYLOTE's innovation in antimicrobial protection.

These new products will incorporate PYLOTE's mineral antimicrobial technology to help uniquely prevent the risks associated with the transmission of microbes. This technology contains no metals or nanoparticles, and its mechanism of action is non-leaching to kill microorganisms. By activating surfaces to make them "self-decontaminating", the effectiveness has been demonstrated on many micro-organisms such as gram-positive and gram-negative bacteria (>99.999% in 24h) and resistant bacteria, enveloped and non-enveloped viruses (SARS CoV-2 and its Delta variant >96% in one hour, H1-N1 influenza, gastroenteritis, herpes and conjunctivitis) as well as in real-life situations with high frequency of contact. Numerous tests conducted by independent laboratories have measured the immediate, stable and permanent microbial decontamination action, as well as the safety of this technology (ISO 10993 medical device standards: non-irritant, non-cytotoxic). In the context of the COVID-19 pandemic, this unique technology has been marketed for more than two years through various applications in the health and user protection fields, in order to reinforce the safety of people while reducing expenses and waste. At this stage of the partnership, the virucidal and antibacterial action of

PYLOTE's technology has been successfully tested and the interest of this technology on light chemical protection gloves has been validated, in line with market expectations. Initial industrial tests have been carried out with the aim of bringing activated, qualified and tested gloves to market in the first half of 2023.

PREMIERE AT PDA: PREFILLED SYRINGES WITH RFID-LABELS

Pharma label expert Schreiner MediPharm and SCHOTT Pharma, the specialist in drug containment and delivery solutions for medications, have been engaged in a partnership for several years. Its objective is to develop new smart concepts that add functional value to prefilled syringes. At the PDA Universe of Pre-Filled Syringes and Injection Devices Conference in California, both companies have now for the first time presented a coordinated, newly developed solution to equip prefilled syringes with RFID. The combination of syringe and smart label opens up diverse opportunities to optimize hospital routines, among other things.

The partnership between Schreiner MediPharm and SCHOTT Pharma has previously been focused primarily on equipping COC syringes with analog functional labels. Now the two pharmaceutical packaging experts are digitizing prefilled syringes. What makes the new RFID-Labels special is the combination of marking the syringe with its unique, digital identity. This enables optimized processes in hospital inventory management and patient care and documentation as well as the identification of a medication and a medical device. In addition, digital first-opening indication to protect the integrity of the syringe is possible.

To successfully implement this innovation and to ensure impeccable RFID functionality in terms of good performance and adequate range, various characteristics of the prefilled syringe must be considered. Aside from the material such as COC, PP, or glass, which can affect range and trouble-free reading of the tag, syringe size and diameter play a decisive role: the smaller the syringe the less space for product marking and integration of the RFID chip. Plus, the smaller the tag the shorter usually its read range. In addition, the curvature may affect performance, especially in the case of small syringe diameters.

The dielectric properties of the medications contained in the syringe play a role as well. Especially water-based active ingredients have a negative impact on the radio transmission performance of a tag. This requires precise positioning of the RFID-Label and

integrated inlay according to the liquid and fill level. Additionally, special data standards for identification and tracking on unit level such as UnitVisID or GS1 must be considered, which enable all relevant stakeholders to interpret and use the data, as well as integration in the respective infrastructure. Schreiner MediPharm and SCHOTT Pharma adapt the solution to the customer's specific requirements to ensure optimal functionality from production to final use. This helps enhance product safety and avoid potential medication errors.

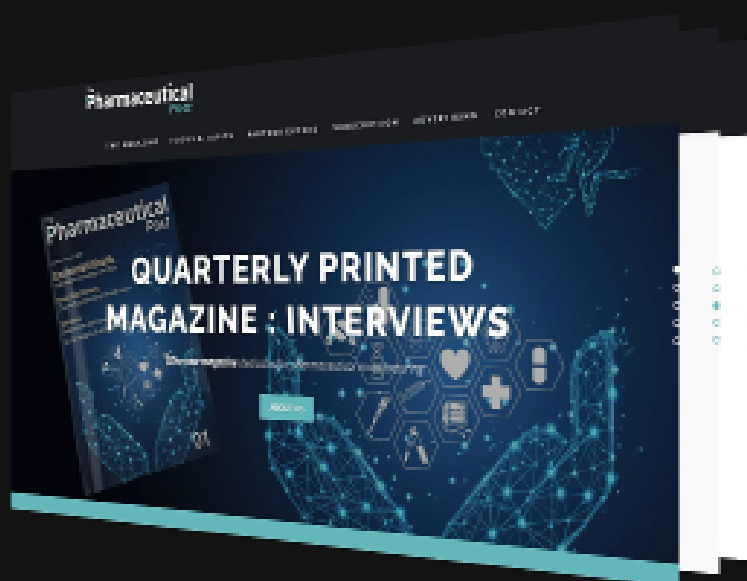
The new solution from Schreiner MediPharm and SCHOTT Pharma was presented for the first time at the "PDA Universe of Pre-filled Syringes and Injection Devices Conference" from October 18 to 19, 2022 in the United States under the motto "Making Pre-filled Syringes Smart".





MEDICAL DEVICES PACKAGING CMO/CDMO PROCESS

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