Detailing best practices to produce, purchase, store and use microbiological media

Cherwell Publishes In-Depth Guide to Prepared Culture Media

The Pharmaceutical & Cleanroom Industry's Pocket Guide to Prepared Culture Media published by Cherwell Laboratories

Cherwell Laboratories, specialist suppliers of products for environmental monitoring and process validation, has published an eBook titled, "The Pharmaceutical and Cleanroom Industry's Pocket Guide to Prepared Culture Media". Available to download from Cherwell's website, the new guide is intended for anyone involved in using and/or buying microbiological media. It aims to provide an understanding of the best practices and breadth of prepared culture media options for varying applications within the pharmaceutical and cleanroom industry.

The importance of culture media for microbiological quality control purposes in the pharmaceutical and the cleanroom industry cannot be understated. High quality culture media is essential to achieve accurate, reproducible, and ultimately repeatable microbial tests for applications, including: environmental monitoring; process and operator validation; and product sterility testing. Therefore, it is crucial that users ensure that their prepared culture media is not substandard.

The comprehensive guide equips the reader with all the information they need to consider in order to produce; purchase; store and use prepared media effectively. Focusing on the key topics covered in the guide will help readers to ensure their culture media is of a consistently high quality to deliver reliable results that they can be confident of, every time.

Topics within the guide include: an overview of the various applications of prepared media; best practice guidelines for handling and storing prepared media; the logistics of in-house prepared media manufacture; the argument for pre-prepared media versus in-house manufacturing and guidelines on how to choose a prepared media supplier.

Andrew Ramage, Cherwell Laboratories' Microbiology Product Specialist comments: "I hope this booklet will educate and inform the reader of the many considerations needed to manufacture high quality micro-

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biological growth media. A flexible and reliable manufacturer of prepared media will be able to guarantee the customer receives exactly the product they require, to a consistently high standard. Once the reader has finished reading this booklet they should also have a clearer understanding of the pros and cons of buying in prepared media versus manufacturing in-house."

With over thirty five years' experience in manufacturing Redipor® prepared media, Cherwell has in-depth insight and expertise that ensures it continually delivers prepared media of the highest calibre to its clients. Cherwell also maintains the personal touch that accompanies an ability to accommodate customers' unique needs with bespoke solutions.

Cherwell Laboratories Ltd
OX26 4XB BICESTER Vereinigtes Königreich

Complete Patient-Ready Device for Cancer Detection

Phillips-Medisize Announces Expansion of Significant Medical Customer for Molex Little Rock Facility

Phillips-Medisize, a Molex company, announces the expansion of a significant medical customer for the Molex Little Rock facility. The long-time customer is a leader in consumable diagnostics cancer testing, with its take-home diagnostic kit for cancer detection.

This is an exciting expansion for both the customer and Phillips-Medisize as it will double production, as the device is currently being produced in the Phillips-Medisize New Richmond facility. A second set of molding and dedicated automation machines to package and assemble the device will now be needed for the expanded production footprint in Little Rock.

Phillips-Medisize will mold, assemble with high speed automation, package and label the patient-ready device in the newly registered FDA facility, with production expected to begin in Q2 2018. This product will also include reagent handling and require unique device identification (UDI). Phillips-Medisize will utilize the number of the highly trained and qualified staff that already exists in the Little Rock operation.

The Little Rock facility establishes a new manufacturing site for Phillips-Medisize's medical business with capabilities for filling, drug handling, electronics and connected devices. This investment aims to combine the innovative solutions and knowledge of Molex's existing high volume automated electronics production operations with Phillips-Medisize's proven platform of drug delivery and medical device expertise.

Matt Jennings, CEO and President of Phillips-Medisize comments, "We are looking forward to expanding production with our customer and partnering with the Molex Little Rock team on this program. The team provides decades of experience in molding and assembly operations, cutting edge automation and quality control technology, as well as instant access to a team of highly talented and knowledgeable employees. We believe that Little Rock is the right location for our customer and will support both of our ambitious growth plans."

Phillips-Medisize Corporation
CH 8309 Nürensdorf

Dear subscribers,

this month our newsletter reaches you a bit earlier and there is a good reason for it: We wanted to prepare you for your trip to LOUNGES in Karlsruhe with some timely information on the subject. In Karlsruhe LOUNGES started its success story a few years ago and has now come back to its roots. Cleanroom online has always been a partner and exhibitor. So you will find us on our booth at LOUNGES this year, too.I am already looking forward to see you there.

Should you not be able to join this major event, you can find a lot of relevant information and recent news on the following pages.

If all went well you received our printed magazine Cleanroom Yearbook 2017/18 these days by mail - 209 pages packed with the most important information out of one year in the cleanroom industry. And of course we are curious to hear what you think about it and are looking forward to your comments and even your encouragement.

Yours sincerely,

Reinhold Schuster

Often referred to as Industry 4.0, digitalization and networking continue to spread throughout every sector of the economy. Convergence of the physical and virtual worlds is progressing faster in some industries than others. In general, laboratories have not kept pace with current developments. Much work remains to be done on strategies, infrastructure, equipment and technology, to say nothing of IT environments and process automation. Labs now find themselves in catch-up mode across the board.

Intelligent, network-integrated laboratory of the future - Lab 4.0

Author: Dr. Kathrin Rübberdt

11th - 15th June 2018: ACHEMA 2018, Frankfurt am Main (D)

In the lab of the future, systems and technologies will communicate autonomously, and process flows will be automated. Safety cabinets, for example, will detect overflow in collection tanks and communicate with other fixtures and equipment. Cameras will be able to control lab equipment and process sequences. Intelligent modules will switch equipment on and off. To an ever increasing extent, control of process flows will be based on peer-to-peer communication between lab equipment. This is the vision behind Lab 4.0.

Goal: development and standardization of innovative lab technologies

The German national smartLAB innovation network intends to make the vision of the intelligent, network-integrated Lab 4.0 a reality. Funding is being provided by the German Ministry of Economic Affairs and Energy (BMWi) under the national SME innovation program (ZIM). Approximately 20 companies and institutions have joined forces in the network: Eppendorf AG, Fraunhofer-Institut für Produktionstechnik und Automatisierung (IPA), Herr M, iTiZ-ZiMO, Köttermann, labfolder, Lorenscheit, LUPYLED, PreSens Precision Sensing, Sartorius, Schmidt + Haensch, Zühlke Engineering and Deutsche Messe AG. The project is being managed by the Institute of Technical Chemistry at Leibniz University Hannover. “smartLAB gives us the opportunity to work with others to make the vision of tomorrow’s laboratory a reality. Information sharing between companies and with customers on site generates valuable stimulus for future projects,“ said Dr. Tanja Musiol, Portfolio Management Marketing Project Manager at Eppendorf AG.

The goal of the network is to drive development and standardization of innovative lab technology along with the associated applications and solutions. The intended outcomes include simplified process flows, better quality, higher efficiency and enhanced process reliability. A lab environment which meets all of these needs will require components and functionalities which work together, and robotic systems will perform many of the manual tasks. “The future, including the future of the lab, lies in the interactive combination of dynamic, digital networking, automation, robotics, intelligent surfaces and state-of-the-art designs and strategies,” claimed Dr. Simon Bungers, CEO of labfolder and spokesperson for the smartLAB Group.

The intelligent lab of the future in Hannover

A Lab 4.0 prototype is on display in Hannover. It is called smartLAB, and it was unveiled as a visionary model lab in 2015 at the LABVOLUTION laboratory technology show.

smartLAB breaks new ground visually and in what goes on behind the scenes. The fact that smartLAB does not have tables and lab benches immediately catches the eye. Instead it is made up of individual hexagonal honeycomb modules, each 90 centimeters high. This saves space and adds significant flexibility for the lab layout. The list of innovative features includes network-enabled devices, automation, robotics, surfaces with weighing and measuring functionality, 3D printers and data-enabled goggles which can issue instructions and raise an alarm if necessary. The real breakthrough technology in smartLAB is the interaction between the different devices and equipment and the specially-developed software. Lab 4.0 is completely network-integrated, something which has been the exception in real-world lab environments. „The smartLAB project serves as a model for the lab sector not just in Ger-many, but in the rest of the world as well,“ observed Dr. Thomas Scheper, Head of TCI. “In smartLAB, the various technological components are network-connected, providing digital support for all workflows. This simplifies operations and enhances safety and reliability.”

Government officials have been impressed with the intelligent lab of the future. “smartLAB is a prime example of research excellence in Lower Saxony,” said Lower Saxony Economics Minister Olaf Lies. “smartLAB merits support above all because partners from business and the research community are creating network-integrated solutions which could well change the way labs operate in the future.“ The Lower Saxony Ministry for Science and Culture and the Labor and Transportation Ministry are providing funding for the project. smartLAB is on permanent display at the Deutsche Messe Technology Academy on the Hannover Fair Grounds and can be used for company presentations and training.

nICLAS Innovation Center for Lab Automation in Stuttgart

Fraunhofer IPA, in conjunction with partners from industry, is also developing new technologies for tomorrow‘s smart lab. The scene of the action is the nICLAS Innovation Center in Stuttgart. The list of active contributors includes industrial users and developers as well as partners who build bridges to the research and education sector. ”Given the broad scope of the task, a multidisciplinary team is needed to successfully compete on the international stage. We are pleased to have highly capable partners from industry such as Precise Auto-mation, Tecan, Liconic, Thermo Fisher Scientifc, Promega and Festo on board, who make leading-edge equipment and innovative technology available to us,” reported nICLAS Pro-ject Manager Mario Bott from Fraunhofer IPA.

The background is as follows. Automation is a priority at only a small minority of labs worldwide. This is due to strict regula-

Intelligent, network-integrated laboratory of the future

tions and multi-variant, non-standardized process flows in day-to-day operations. "The samples and products in the lab must meet extremely stringent quality criteria. Introduction of new technologies costs companies a lot of time and money," explained Mario Bott. Also, the manual nature of the work performed in the labs was long regarded as an advantage, because it was seen as being faster and more flexible.

On the road to the network-integrated data factory

A mind shift is now taking place at many companies. "To an increasing extent, labs situated at central company interfaces are being transformed into data factories, functioning as diagnostic labs or for lead discovery in new medication development, quality assurance and product release. They generate information which is extremely valuable for managing the company," stressed Mario Bott. "Not only that, increasing product and process personaliza-tion based on personalized diagnostics and therapy is creating new challenges for labs. Development of long-term, modular hardware and software solutions is essential for managing the future complexity. This is where nICLAS comes in."

Cooperative R&D delivers results

nICLAS FutureLab is already providing some initial impetus and food for thought. Intelligent tracking is one example.

A tracking system was developed at Fraunhofer IPA which automatically documents and analyzes hand movements using 3D image analysis. A 3D camera mounted above a sterile bench records employee hand movements and transmits the data live to an information system. The information is then analyzed with the aid of motion recognition algorithms, classified and recorded in a log. The system accurately captures and logs every single process step without missing anything. This saves time, reduces employee workloads and delivers better results. This approach also has another advantage. The tracking system runs on simple hardware and software, making it suitable for small labs.

TeachIT, another solution developed by the researchers at IPA, also saves time in day-to-day lab operations. Lab robots can be set up very quickly using automatic teach-in. To support that, barcodes are applied to multi-well plates on the work surface. A 3D camera on the robotic arm detects the markings and shows the robot where to grip.

SiLA uniform standards initiative

The equipment in many biotechnology, pharmaceutical and diagnostic labs is highly specialized and heterogeneous. The underlying IT infrastructure has usually evolved over time, making coordination between the various devices difficult or impossible. This creates the need for device drivers and platforms which comply with uniform standards. Because they can communicate with products from any other manufacturer, they support integration of heterogeneous components.

To provide a uniform basis for development of IT lab automation solutions for the labs of tomorrow, system manufacturers, software service providers, system integrators, pharmaceutical producers and biotechnology companies are working together in the SiLA Initiative (Standardization in Lab Automation) on a set of definitive standards. The goal of the initiative is seamless integration of lab equipment and IT systems sourced from different suppliers. Standardized communication interfaces, device drivers and lab consumables will be needed to accomplish that. Highly specialized experts from members of the non-profit consortium are organized into technical working groups where they are jointly developing definitive standards. According to Fraunhofer IPA which is also a member of the SiLA consortium, new equipment and components will require SiLA conformity certification. The institute offers up-front consultancy as well as automated conformity testing and certification.

DECHEMA Ausstellungs-GmbH
D 60486 Frankfurt am Main

7th World's Leading Trade Fair for Industrial Coating Technology from 17 to 20 April 2018 in Karlsruhe (Germany)

Solutions for Trends in Industrial Coating Technology

Improving material and energy efficiency, optimizing quality, increasing flexibility, reducing unit costs and digitalising manufacturing processes – these are a few of the significant trends which are occupying companies with in-house coating operations. PaintExpo exhibitors will present new products and further developments for the implementation of these trends, which also contribute to a sharper competitive edge. The world's leading trade fair for industrial coating technology will take place at the Karlsruhe Exhibition Centre from the 17th through 20th of April, 2018.

Whether liquid painting, powder coating or coil coating is involved – running processes more efficiently and sustainably, improving coating quality and enhancing productivity are being targeted on the one hand. Changing requirements with regard to product individualisation and digitalisation of manufacturing processes are being tackled on the other hand. Exhibitors at the upcoming PaintExpo, being held at the Karlsruhe Exhibition Centre from 17 to 20 April 2018, will offer a broad range of innovations and further developed products and services for the fulfilment of these tasks. The list of participating companies includes practically all of the sector's market and technology leaders. "This makes it possible for job-shop coaters and visitors from companies with in-house coating operations to gather comprehensive information about the most up-to-date developments and trends in the field of industrial coating technology. At the same time, corresponding investment decisions can be prepared and implemented which contribute to the firming up and expansion of one's competitive position within the global market", reports Jürgen Haußmann, managing director of event promoters FairFair GmbH.

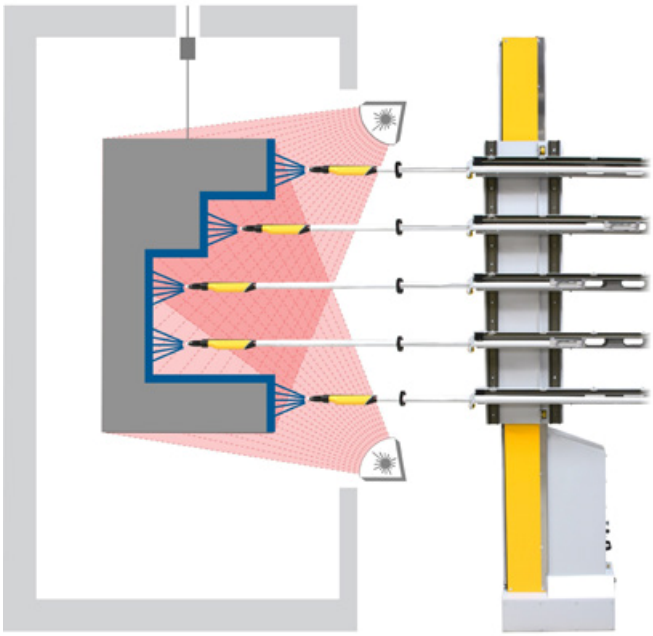
Improving Material Efficiency

Increasing material efficiency is an issue for which the exhibitors present innovative solutions. Attention is focused on application systems both with and without electrostatic charging, which per se per-

Solutions for Trends in Industrial Coating Technology

mit higher levels of material efficiency. For example, spray guns with electrostatic charging for manual and automatic application of liquid paints will be presented, by means of which significant material savings can be realised. In the case of large automated painting lines, high-speed rotary atomisers – with adjustable spray-jet width as well – permit efficient material usage. And layer thickness can be ideally matched to the object to be painted with devices for contactless, online layer thickness measurement. In addition to material savings, this results in improved coating quality and minimal scrap rates. Optimal alignment of the application system to the object to be painted also has a significant influence on material efficiency. Laser scanning systems are available to this end for liquid painting as well as powder coating, which precisely detect the contour of the object to be coated and automatically compile the object's shape in combination with the controller using 3D software, correspondingly position the spray gun's axes and adjust the coating parameters.

A further approach to improving material efficiency involves pigment feeding. Savings are made possible in this regard through the use of systems for, amongst other things, intelligent control of colour changeovers and/or rinsing processes, as well as improved pigment dosing. Generally speaking, electronic monitoring of parameters such as pressure, temperature and output increases transparency, thus making it possible to set up processes more efficiently. Corresponding control solutions will also be showcased at PaintExpo.



The geometry of the object to be painted, which is precisely acquired by the laser contour scanner, is automatically compiled by the controller with 3D software, after which the spray gun's axes are positioned automatically and the coating parameters are adjusted for automated powder coating. (Image source: GEMA)

As a result of the trend towards greater individualisation, demand for multicolour coatings is continuously on the rise. The goal is to be able to apply coatings without any masking at all, or with significantly reduced masking work and less overspray. An application implemented in the field of aviation demonstrates that this is feasible. It's used to add decoration to an aircraft tail fin without any overspray through the use of individual droplets. Spray film is another approach which can be applied with a very sharp edge and simply pulled back off again later.

Automation and Industry 4.0

Manual painting work will remain indispensable in the future, but there's a trend towards the automation of application processes where series painting is concerned. This is being driven by the development of small, low-cost, easy-to-program robots. They permit high levels of reproducibility and process quality, and thus contribute to improved efficiency and a sharper competitive edge for companies with in-house painting facilities.

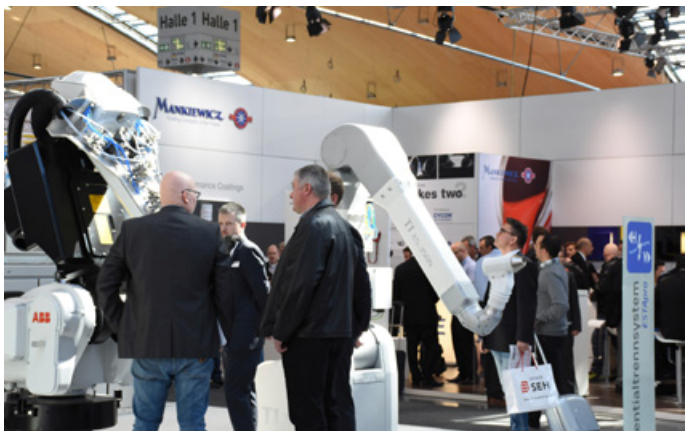
Beyond this, high-performance manufacturing execution systems (MES) will also be presented as a key component for efficient manufacturing. They network the factory throughout the entire manufacturing process (horizontally), as well as through all process levels (vertically). This permits integrated data acquisition, analysis and graphic display in real-time. If acquired data regarding the condition of the system, the processes and the products are analysed and linked to each other, the systems can also be rendered intelligent and self-regulating by means of knowledge-based algorithms.

PaintExpo's complete exhibition programme covers coating equipment for liquid, powder, UV, immersion and coil processes, paints and enamels for all processes, application systems, spray guns and atomisers, automation and conveyor technology, cleaning and pre-treatment, drying and curing, environmental technology, pneumatics, compressed air supply and exhaust purification, water treatment, recycling and disposal, accessories, masking, measuring and test technology, quality assurance, identification, paint stripping, job-shop coating, services and technical literature.

17th - 20th April 2018: PaintExpo, Karlsruhe (D)

FairFair GmbH
D 72644 Oberboihingen

Application efficiency for liquid painting can be significantly increased with the help of new electrostatic spray guns. (Image source: Wagner Group)



With its comprehensive exhibition program, PaintExpo provides solutions to the challenges presented by liquid painting, powder coating and coil coating. (Image source: PaintExpo)

Schreiner MediPharm at Pharmapack Europe in Paris, Hall 7.1, Booth J48

Reliable Counterfeiting Protection: Schreiner MediPharm Presents Digital and Analog Pharma-Security Solutions

The countdown is on: On February 9, 2019, EU Directive 2011/62/EU will come into effect. It aims to stop illegal trade in falsified medicines. From then onwards, pharmaceutical manufacturers have to provide secondary packaging of all medicines placed on the market with an individual serial number as well as an anti-tampering device to ensure the integrity of the medicinal packaging: a challenge that should not be underestimated and demands customized and efficient solutions. At Pharmapack in Paris on February 7 and 8, 2018, Schreiner MediPharm will present its extensive portfolio of innovative analog and digital security solutions for reliable counterfeiting and tampering protection in Hall 7.1, Booth J48. The highlight of the product lineup will be the BitSecure copy detection pattern which enables easy, digital authentication of pharmaceutical packaging using a smartphone app.

Digital, Innovative and Secure: BitSecure Mobile

BitSecure copy detection pattern by the Competence Center Schreiner ProSecure is a printed digital security feature based on a high-resolution, cloud-like random pattern. In an attempt to copy the BitSecure pattern, which has a size of only a few square millimeters, the printed image will suffer a loss in precision and optical details. These differences can be reliably detected by means of a smartphone app or a handheld reader.

At Pharmapack 2018, Schreiner MediPharm will present a new app for BitSecure authentication with selected smartphones as well as the latest generation of handheld readers. As a result, authentication can then be performed easier and more reliably. Improvements include user-friendliness and an enhanced app back-end: The user interface of the app is intuitive and the analysis algorithms have systematically been further developed. The back-end data management system is integrated into a powerful and future-proof development environment.

Versatile and Reliable: Multi-Level, Customized Security Systems

Reliable product and brand protection in the pharmaceutical supply chain can only be successfully achieved by combining analog and digital security features. Schreiner MediPharm will be showcasing its extensive portfolio of products for tampering and counterfeiting protection: from diverse closure seal solutions for clear, irreversible first-opening indication through to a wide range of integrated overt, covert and digital anti-counterfeiting features enabling reliable authentication by laypersons and experts.

07th - 08th February 2018: Pharmapack, Paris (FR)

Schreiner MediPharm
D 85764 Oberschleissheim

ENGEL at the NPE2018 with reinforced industry expertise

Intelligent system solutions for comprehensive process overview, safety and efficiency

Highest quality and highest efficiency – at NPE2018 from May 7 to 11 in Orlando, Florida, with multiple, exciting injection molding applications ENGEL will prove that this does not have to be a contradiction in terms. In order to secure a decisive advantage for its customers in the automotive, teletronics, technical molding, packaging and medical industries, the injection molding machine manufacturer and systems solution provider relies on innovative technologies, tailor-made production concepts, and intelligent controls.

From individual injection molding machines to highly integrated production cells, ENGEL delivers tailor-made solutions to the injection molding industry. Developing customer-specific solutions requires more than technological know-how. It relies on understanding and efficiently implementing the customers' individual requirements. To achieve this, ENGEL aligns its industry expertise in five business units, and this not only at its headquarters in Austria. Three years ago, ENGEL Machinery Inc., based in York, Pennsylvania, appointed dedicated business unit managers for North America, and has since then continuously reinforced its local industry know-how as well as application technical capacities. „The feedback of our customers is excellent. The most recent successes confirm that we are on exactly the right track", reports Mark Sankovitch, President of ENGEL Machinery Inc., ahead of the NPE2018. „We can respond to the requirements and requests of our customers in the various industries even faster, and provide them with more targeted support in solving their very individual challenges. As a systems provider, we are increasingly accompanying our customers throughout the entire life cycle of the machines and systems – this is the trend that we are addressing with the new structure."

From automotive to technical molding, to teletronics and on to medical and packaging: Each industry presents its specific challenges, even though the principal trends may be the same. Process integration and automation are continuing to gain importance in North America. At the same time, the producers have increased their focus on the topics of digitalization and networking. What these trends have in common is that they result in more quality, efficiency and cost-effectiveness, but also in a higher complexity of production processes." As a systems solutions provider, we ensure that even complex processes can be easily and securely controlled", states Sankovitch. „This will be clearly represented by the exhibits at our trade show booth."

Automotive: Premium interior components at low cost per unit

For the first time in North America, ENGEL will present a fully automated, integrated production cell for the DecoJect process. This technology combines injection molding and IMG (in-mold graining), opening new possibilities for the production of premium interior automotive components. As opposed to conventional in-mold decorating processes, DecoJect does not simply transfer the paint from the foil to the component, but rather the foil is punched out and remains on the component. This way, in addition to color and pattern, surface structure and haptics are also addressed. At the same time, it significantly increases the scratch-resistance of the surfaces. „Even for smaller production runs, DecoJect provides us with an extremely cost-effective possibility of optically upgrading injection molded components and coordinating surfaces in the vehicle interior", emphasizes Larry Alvey, Manager of ENGEL's Automotive Business Unit in North America.

During the NPE, ENGEL will produce interior upper door trim with various surface structures on a duo 5160/1000: From a refined leather grain, including the seam, to a modern carbon look. The DecoJect thin foils were developed by Benecke Kaliko, a member of the Continental Group based in Hannover, Germany.

To start the process, the foil is drawn from the roll into the open mold, heated by an IR-radiator mounted to the robot grip, and preformed directly in the injection mold with the help of vacuum. Immediately afterwards, the foil is back-injected with polypropylene and punched out before the robot removes the component and transfers it to the integrated laser station for precision cutting. One ready to install part leaves the production cell every 60 seconds. Since a design change requires only a few minutes for the exchange of the foil rolls, the lot size no longer affects the cost per unit. To save additional raw material, the MuCell foam injection molding by Trexel (Wilmington, USA) is used. Other partner companies involved in the project are Georg Kaufmann Formenbau (Switzerland), Galvanoform Gesellschaft für Galvanoplastik (Germany), HRSflow (Italy), ICO SYSTEM international coating (Germany) and Borealis (Austria).

With its advanced expertise in automation, ENGEL provides an essential contribution to the efficiency and flexibility of the process. Heating the foil and removing the component from the mold is handled by an ENGEL viper linear robot. In addition, in an easiCell placed directly next to the clamping unit of the injection molding machine, an ENGEL easix articulated robot is integrated with the laser station for the precision cutting of the foils. Thanks to its standardized and modular construction, the automation cell developed by ENGEL allows for the extremely space-saving integration of robots, as well as process units located up- and downstream of the injection molding. It also significantly reduces the complexity of the application. The entire process can be operated using the CC300 control unit of the injection molding machine. The uniform control logic throughout all components of the production cell makes it especially easy for the machine operator to confidently handle the integrated process without any special training.

Medical: Interdental brushes in a one-shot process

The healthcare application presented in Orlando also impresses with an extremely high degree of integration. Interdental brushes known as „scrub!" and developed by Pheneo (Germany) will be produced on a clean-room version of the all-electric e-motion 170/110 T injection molding machine. Together with the grip surface and core, up to 500 bristles can be formed in a single-component injection mold. Extremely delicate in the bristle area, the high-performance precision 8-cavity mold comes from Hack Formenbau (Germany), with Hekuma (Germany) providing the automation. A highly integrated, automated production cell will be presented, built in the modularized HEKUflex design by Hekuma. Immediately after injection molding, the parts

Intelligent system solutions

will be inspected by a vision system and packed in retail bags, 16 parts to each. A bag leaves the production cell every four seconds.

„With our highly-integrated manufacturing process and the single-component construction we exponentially surpass the efficiency of established products and processes in the market", states Jon Kelm, Manager of Medical and Packaging Business Units for ENGEL North America. „As a rule, interdental brushes consist of three components – the grip surface, a wire mesh, and the filaments – which are usually produced in independent processes. By contrast, our solution does away with entire work steps, and reduces the logistical effort.

With a total shot weight of only 1.93 grams, completely filling eight cavities with filigree structures places very high demands on the mold as well as on the precision and consistency of the injection molding machine. ENGEL has two answers for this: First, the all-electric, high-performance e-motion injection molding machine, and secondly, inject 4.0. Under the inject 4.0 umbrella, ENGEL is bundling software products for the digitalization and networking of production processes, for example the intelligent assistance systems of the iQ product family, which detect fluctuation in the environmental conditions and raw material, and automatically compensates for these before rejects occur. In the CC300 control of the e-motion, visitors can observe how iQ weight control analyzes the pressure curve over the screw position during injection and adapts the switchover-point as well as the injection speed profile and the holding pressure to the current conditions. Simultaneously, iQ clamp control determines and automatically sets the optimum clamping force for the process taking into account the level of mold breathing. As the third system on the team, iQ flow control regulates the temperature differences in the mold's individual circuits and the performance of the pumps in the temperature control devices, ensuring constant temperature conditions while reducing power consumption. „With the intelligent assistance systems, the injection molding machine is continuously self-optimizing", explains Kelm. „This allows all levels of machine operators to achieve optimal results."

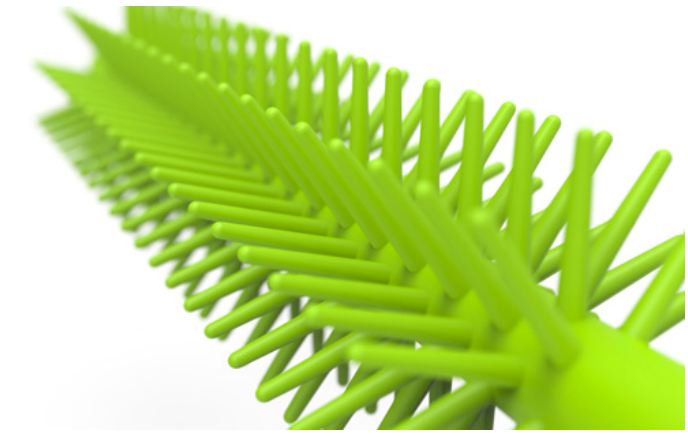
In booth W3303, ENGEL will produce single-component interdental brushes, fully automated on an all-electric e-motion 170/110 T injection molding machine. (Image: ENGEL)

Integrated into the CC300 control of the e-motion injection molding machine, the iQ assistance systems compensate for process fluctuations in real time. (Image: ENGEL)

Teletronics: Consistent process integration boosts competitive ability

In the teletronics industry, the subject of process integration often revolves around plastic/metal hybrid composite components. With the production of thermal switch housings at the NPE, ENGEL proves that it can also forge tailored solutions for this challenge. From the punching of the contacts to the inspection and labeling of ready-to-use electronic components, all work steps are fully automatic. The raw material for the brass carrier plates is fed directly from a reel and prepunched including a thread. The thread is servo-electrically tapped before the carrier plates – still on the line – are overmolded with glass-filled nylon on an ENGEL insert 60V/35 vertical injection molding machine. Quality control happens within the production process. In addition to the camera inspection, high-voltage testing is integrated into the tool, thus already guaranteeing a one hundred percent short-circuit inspection during production. In order to ensure seamless traceability, the good quality parts are labeled by laser before the sprue and carrier tabs are removed and the components are separated from the belt. Eight ready to install parts leave the production cell every 20 seconds.

This production solution, developed by ENGEL in cooperation with its partner MMS Modular Molding Systems (Austria), guarantees the lowest possible cost per unit while also achieving a high degree of flexibility. Thanks to the modular design of the MMS systems, additional processing units can be integrated, for example, for resistance testing or laser welding, riveting, assembly or cleaning of the parts. „Regardless of the number of modules, the entire process can be monitored and regulated via the CC300 control of the insert



The production technology developed by ENGEL in cooperation with Hack Formenbau and Hekuma makes it possible to fully form up to 500 bristles using a single-component process. (Image: ENGEL)

The production technology developed by ENGEL in cooperation with Hack Formenbau and Hekuma makes it possible to fully form up to 500 bristles using a single-component process. (Image: ENGEL)

Intelligent system solutions

machine", says Stefan Aberl, director automation at ENGEL North America. „This substantially reduces complexity and significantly simplifies the operation of the entire process."

Thermal switches, such as those used for monitoring electric motors in automobiles or in the domestic appliance industry, are traditionally produced in a complex, multi-stage process. As a rule, the metal components are even punched and overmolded at different locations. This not only requires considerable logistics overhead, but also ties up a large amount of material, since two independent processes need to be started up. This is a considerable cost factor, especially when non-ferrous metals are used.

Packaging: Production efficiency at its peak

Highest degree of efficiency with the best quality and shortest cycle times. This is the daily challenge that the manufacturers of beverage caps face. For the production of 26 mm caps with tamper-proof bands made from HDPE, ENGEL is presenting a state-of-the-art solution at the NPE. During the five days of the show, the production cell will run at a cycle time of two seconds, and also achieving outstanding energy efficiency and the highest degree of process consistency.

At the core of the highly-integrated solution is an all-electric e-cap 2440/420 US injection molding machine, equipped with a 96-cavity mold by Z Moulds (Austria). On the periphery, ENGEL integrates a dry-air system by Eisbär Trockentechnik (Austria), and an optical inspection system by Intravis (Germany) into the overall concept.

To combine minimal energy consumption with outstanding process consistency and precision in the production of beverage caps, ENGEL relies on the all-electric high-performance machines of the e-cap series, which, with clamping forces of 120 to 460 US tons, were developed specifically for this market segment. With their high-performance servo-drives, the e cap machines ensure the required plasticizing capacity and maximizes part production quality even when using the new high-strength HDPE materials with an MFI significantly lower than 2 or even 1 g/10 min. „Geometrically, beverage caps have reached their lightweighting minimum", clarifies packaging expert Jon Kelm, „while simultaneously placing higher demands on precision and repeatability." In spite of its impressive performance, the e cap uses very little power and cooling water, even at high speed. The increased ejection and clamping forces help to achieve very short cycle times.

Highest performance for thin-walled containers

At the NPE2018, ENGEL packaging is represented with a total of two integrated production cells. At its exhibition booth (South Hall, Booth S27009), Campetella Robotic Center from Italy is producing airline cups in thin-wall technology on an all-electric ENGEL e motion 740/240 T US injection molding machine using a mold produced by Fostag (Switzerland). The cups are removed from the mold with the help of high-speed automation, and packed immediately after injection molding.

With cycle times significantly below 3 seconds and injection speeds of more than 500 mm per second, the all-electric machines of the e-motion series are being increasingly used for the production of thin-walled containers. The closed system for toggle levers and spindles guarantees optimal, clean lubrication of all moving machine components at all times, thus complying with the strict hygiene requirements of the food industry.

Technical Molding: Sophisticated LED lenses of liquid silicone

In the technical molding exhibition area of ENGEL at the NPE2018, the focus is on the advanced processing of liquid silicone (LSR). Lenses for LED headlights will be produced on an e-victory 310/120 US injection molding machine equipped with a two-cavity mold by ACH solution (Austria). These technical parts represent a wide range of applications. From automotive to construction to street lighting, LSR is rapidly gaining in importance. This is due to its special characteristics. Highly transparent LSR has a lower yellowing index than standard lens materials, is UV-resistant, and stable across a very broad temperature range of -20 to +150 °C. In addition, even complex lens geometries can be efficiently and consistently produced with injection molding.

ENGEL has a great deal of worldwide LSR project experience in various industries, and is therefore considered a preferred partner of the lighting industry in the market introduction of the new lens material. This is the first time that ENGEL is presenting the production of LSR lenses at a trade show.

„Prerequisite for the economic production of advanced products with liquid silicone are automated processes and a high degree of precision and stability in the injection molding process", states Steve Broadbent, responsible for elastomer projects in the application technology of ENGEL in North America. „Thanks to its tie-bar-less clamping unit, the e-victory machine with its electric injection unit has shown itself to be predestined for this purpose." Free access to the mold interior simplifies setup and keeps the production cell compact. Since the mold mounting platens can be used all the way to the edge, the lens mold, which is larger in size due to the complex component structure, fits into a comparatively small 120-ton injection molding machine. In addition, the robot can access the cavity directly from the side and requires less vertical space.

The tie-bar-less injection molding machines by ENGEL impress with an outstanding parallelism of mold mounting platens. The patented force divider enables the moving mold mounting platen to follow the mold exactly while clamping force is building up and ensures that the initiated clamping force is distributed evenly across the surface. This prevents burr formation even when processing low-viscosity materials such as LSR. The components require no rework and can be used immediately after the injection molding process.

ENGEL is implementing the high-tech solution in cooperation with its partner. The mold as well as the dosage system were developed and constructed by ACH solution, and the mold is using the new electric nozzle control ServoShot.

As systems provider, when processing LSR ENGEL also integrates all components of the production cell into a common control so that the entire process, including LSR dosage and handling, can be adjusted and controlled via the CC300 operator panel of the injection molding machine.

Confidently control LSR processes with ENGEL tie-bar-less technology

The NPE2018 once again confirms the leading position of ENGEL and tie-bar-less injection molding machines in LSR processing. Altogether, four LSR applications with ENGEL injection molding machines – three of which with tie-bar-less machines – will be presented at the trade show. At Wacker Silicones (headquartered in Germany) in the South Hall, Booth S24179, coasters will be produced on a hydraulic victory 200/120 with a 4-cavity mold. An additional tie-bar-less application is being run on a victory 200/55 at the booth of the tool builder Burteck from Windsor, CT (US) in the South Hall, Booth S30045. And Shin-Etsu Silicones from Akron, Ohio, will produce eyeglass lenses on an all-electric e-mac 170/55 machine using an optical grade LSR with the mold coming from Roembke (Ossian, Indiana). The Shin-Etsu booth is in the South Hall, Booth S20125.

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What will the process industry look like in 2025? More flexible, more integrated, more biological, experts say. Three focal topics bring “Flexible Production”, “Chemical and pharma logistics” an “Biotech for Chemistry” to the forefront at ACHEMA 2018.

What will the process industry look like in 2025?

Megatrends affect whole industries from equipment to processes to business models. Consequently, they cannot be covered within one exhibition group. ACHEMA answers to this by defining three focal topics that draw attention to developments affecting all stakeholders in the process industry, from lab supplier to pump developer to plant engineer and operator. Thus, aided by markings at the stand to dedicated topical magazines, visitors can get an overview on where the process industry is headed.

ACHEMA 2018 focusses on three trends:

Digitisation has been a major driver of the process industry for some time – and it’s no end in itself: “Future chemical production has to react more flexibly – to different raw materials, to a volatile energy supply, and to customer demands for more individualized products”, said Dr. Andreas Förster, Subject Matter Expert Chemistry at DECHEMA e.V. The focal topic “Flexible Production” at ACHEMA 2018 specifically addresses these aspects:

- Modular plants that can be assembled from „plug and play“-components according to the requirements of different processes, production volume or locations
- Robust technologies that allow for variations of production volume depending e.g. on energy supply
-Automated process control that uses real time measurements to optimize processes.

„Numerous exhibitors offer relevant products or services”, said Dr. Marlene Etschmann, responsible for communicating on the focal topics at DECHEMA Ausstellungs-GmbH. „The focal topics provide them with a platform to showcase their offerings across the whole exhibition.“

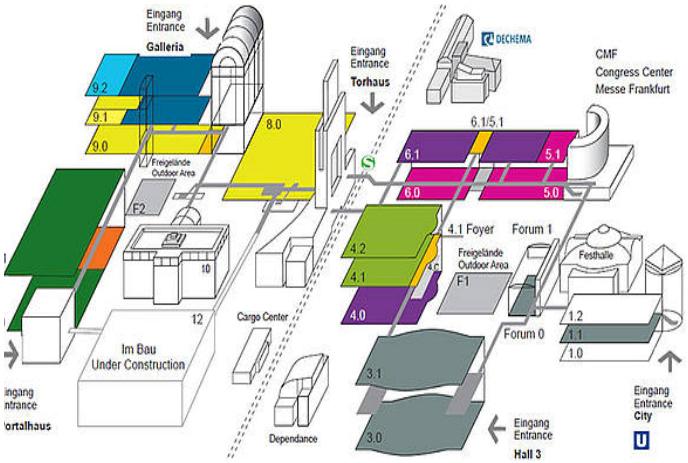
Closely related to flexible production are chemical and pharma logistics. These used to be perceived as something happening outside the factory gate, but in times of integrated supply chains they have become a significant factor in production. In some areas like personalized medicine, logistics even become part of the product: New therapies rely on samples being transported fast and reliably from the bedside to the lab. With track-and-trace-technologies the location of the sample can be determined at any time – an important feature in quality control not only in the pharmaceutical, but also in the chemical industry. ACHEMA 2018 takes this into account: New solutions are not only presented in the growing exhibition group pharma, packaging and storage technologies. In addition, the logistics hotspot in hall 1 offers a lot of opportunities for information and exchange.

The third focal topic „Biotech for Chemistry“ showcases the integration of chemical and biotechnological methods. They are no longer strictly separated; pragmatically, the method of choice is the one promising the best results. Citric acid, for example, has been produced since the 1920s by purely biotechnological means, for acetic acid, the chemical process is still more competitive. This leads to questions regarding the development of robust production strains as well as the selection of solvents at the interface between biotechnological and chemical reaction steps. “More than ever biotechnologists, chemists and engineers have to cooperate closely in these processes. Backward reasoning becomes even more important than it is already the case in the chemical industry”, explained Dr Kathrin Rübberdt, Head of the biotechnology department at DECHEMA e.V.. ACHEMA as the forum that covers the whole development and value chain offers stakeholders the chance to explore exactly this type of cooperation.

Extensive information is provided for each of the focal topics in the run-up to ACHEMA and on site: Exhibitors offering corresponding technologies and solutions are easy to find following dedicated marks in the halls. The ACHEMA App and a dedicated magazine for each individual focal topic give a comprehensive overview and provide orientation.

11th - 15th June 2018: ACHEMA 2018, Frankfurt am Main (D)

DECHEMA Ausstellungs-GmbH
D 60486 Frankfurt am Main



With a special filter cap, the EE871 CO2 probe can now be employed in applications with periodical cleaning and sterilization with hydrogen peroxide (H2O2).

CO2 Probe Resistant to Hydrogen Peroxide

The digital EE871 probe from E+E Elektronik measures CO2 concentrations up to 50,000 ppm (5 % CO2). The compact probe is now available with a special filter cap which ensures high accuracy and long-term stability in H2O2 contaminated environment. This opens up new applications for the EE871, particularly in the pharmaceutical and biotech industries, where hydrogen peroxide is used for cleaning and sterilization purposes.

The EE871 is a high accuracy CO2 probe for demanding applications. The IP65 enclosure and replaceable filter caps make it suitable for use in harsh environments. With the new filter cap, the measuring electronics are optimally protected against hydrogen peroxide.

The CO2 infrared measuring principle (NDIR dual-wavelength technology) of the EE871 is inherently insensitive to contamination. The auto-calibration compensates for ageing effects and provides excellent long-term stability. Thanks to the multi-point CO2 and temperature adjustment, the EE871 offers a high measuring accuracy over the entire temperature range from -40 °C to 60 °C (-40...140 °F).

The measured values are optionally available on the Modbus RTU interface (up to 10,000 ppm) or the E2 interface (up to 50,000 ppm). The compact design, the electrical connection via M12 plug and the optional mounting flange facilitate quick installation and replacement of the EE871. With a radiation shield, the probe can be also installed outdoors.

The CO2 probe is additionally available as a set with a conversion board and a connection cable up to 10 m long. The conversion board features an analog output (current/voltage) as well as a Modbus RTU interface and allows easy integration into the application.

Configuration and adjustment of the probe can be performed comfortably with the optional adapter kit.

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Image 1: The EE871 CO2 sensor is highly resistant to hydrogen peroxide. (Photo: E+E Elektronik GmbH)

Image 2: EE871 CO2 probe with conversion board. (Photo: E+E Elektronik GmbH)

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