Review of impacts on the requirements for Cleaning and Disinfection

The Proposed Changes to Annex 1 draft February 2020

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Introduction

It is worth taking a moment to review the road that led to the long-awaited update of Annex 1 of EudraLex Volume 4-Good Manufacturing Practice (GMP) guidelines.

In 1989 the first edition of the guide 'EudraLex The Rules Governing Medicinal Products in the European Union' which amongst its volumes included Volume 4 'EU Guidelines to Good Manufacturing Practice Medicinal Products for Human and Veterinary Use' was published, and included an annex on the manufacture of sterile medicinal products.

A second edition was published in 1992, and further updating and re-structuring of the guide followed. Annex 1 was also revised during the 2000s, but no complete review of the annex has been carried out since the last revision issue in 2008 – over 10 years ago. A complete rewrite has therefore been long overdue.

Relevance of Annex 1 beyond the EU

As stated in the EU Guidelines to Good Manufacturing Practice Medicinal Products for Human and Veterinary Use – Introduction: "The pharmaceutical industry of the European Union maintains high standards of Quality Management in the development, manufacture and control

Review of impacts on the requirements for Cleaning and Disinfection

of medicinal products…Manufacturing authorisations are required by all pharmaceutical manufacturers in the European Union whether the products are sold within or outside of the Union."

Pharmaceutical manufacturers within the EU, or manufacturers supplying products to the EU are therefore required to conform to EU GMPs.

EudraLex Vol.4 Annex 1 is common to the member states of the EU, but also the participating authorities of (PIC/S). As of June 2018, 48 countries have acceded as state members of PIC/S.

Updates or revisions to EudraLex Vol.4 Annex 1 therefore impacts on the GMP standards in use globally and has significant and wide-reaching consequences.

How the draft Annex evolved

An indication that a draft edition of a revised and updated version of the 2008 version of Annex 1 was imminent was given by the European commission in January 2015 via a 'Concept Paper'. This was then followed by several notices that a change would be forthcoming in due course.

On December 20th, 2017 the European Commission produced a draft of a revised Annex 1. Following the publication, there was a period of public consultation that ran from 20th December 2017 to 20th March 2018.

The draft revision had attempted to reflect many of the advances in sterile manufacturing technology that had occurred in the preceding 10 years since the Annex had been updated, particularly with regards to RABS, isolators and single use technologies. There were therefore some significant changes relating to these areas, but also updates to the guidance on operator training and qualification, qualification of disinfectants for cleanroom surfaces and their in-use expiry periods, process water systems, other facility utilities and closed manufacturing systems. There was an acceptance and alignment with ICH Q9 (Quality Risk Management) and ICH Q10 (Pharmaceutical Quality System) and the new draft implicitly encouraged using the principles of Quality Risk Management (QRM), with numerous references to QRM made throughout the document.

The impact of the Annex 1 update on cleaning and disinfection

Of the many changes the draft Annex contained, this article will look particularly at the impact the draft had on the requirements for cleaning and disinfection, and whether the latest version (Annex 1 v.12 February 2020) has changed the guidance significantly in this respect.

It is true that what is in the latest draft may change again following the consultation period. However, the direction of travel for the guidance is reasonably clear. The first draft encouraged contamination control and steps taken to minimise the risk of contamination (which includes cleaning and disinfection) to be considered holistically - now amended in v.12 to state that they should all be considered 'together' within a documented contamination control strategy (CCS).

It would be considered prudent for sterile manufacturers to compare the proposed changes in the draft to the procedures and practices at their own sites to determine if adjustments to site CCS will be needed in order to remain compliant.

Review of impacts on the requirements for Cleaning and Disinfection

Cleaning versus disinfection and the focus on disinfectant residues

Annex 1 v.12 February 2020

"4.36 The disinfection of cleanrooms is particularly important. They should be cleaned and disinfected thoroughly in accordance with a written programme. For disinfection to be effective, prior cleaning to remove surface contamination should be performed……. Cleaning programs should effectively remove disinfectant residues."

"5.4 The [equipment] cleaning process should be validated to: i. Remove any residue or debris that would detrimentally impact the effectiveness of the disinfecting agent used.

ii. Minimize chemical, microbial and particulate contamination of the product during the process and prior to disinfection."

It has been accepted for some time that the terms 'cleaning' and 'disinfection' should be considered as two distinct terms, and it can often be helpful to consider them as two distinctly different processes within cleanroom environments.

The Annex 1 previously called 'Sanitation' had already been renamed 'Disinfection' and had been expanded in the Annex draft issued in 2017, indicating that this was an area of increased focus. The separation of these two processes is now clearly stated.

The process of cleaning is to remove physical dirt, soiling or disinfectant residues from a surface which could otherwise present a risk of physical, chemical or particulate contamination to the cleanroom area or products being manufactured within it. The presence of dirt, soil or residues on a surface could also present a physical barrier impeding the contact of any disinfectants that may be applied to a surface or to any microorganisms present, potentially impacting on the disinfectant efficacy.

Cleaning of gross levels of dirt or soil are usually performed using appropriate (HEPA filtered) vacuums, or by wet wiping or mopping with water of an appropriate quality or a cleanroom specific detergent designed to wet and/or emulsify the soil to aid its dispersal and removal.

By contrast, disinfection refers to the application of a chemical with a known antimicrobial activity or effect, for a specific contact time to reduce any bioburden present to an acceptable level.

There has been concern for some time about disinfectant residues that remain on surfaces post application, and there are numerous examples of pharmaceutical companies receiving observations and citations for the presence of visible residues in the cleanroom environment.

The presence of visible residues has often been seen in the past as an indication that a cleaning and disinfection process is not fully in-control, as the activity itself is leaving a 'contaminant' on the surface. The Annex draft now goes further, raising the concern that the residues themselves can have some hidden effects.

Rotation and use of disinfection agents

Annex 1 v.12 February 2020

"4.36 The disinfection of cleanrooms is particularly important. They should be cleaned and disinfected thoroughly in accordance with a written programme... More than one type of disinfecting agent should be employed to ensure that where they have different modes of action and their combined usage is effective against all bacteria and fungi. Disinfection should include the periodic use of a sporicidal agent. Monitoring should be undertaken regularly in order to assess the effectiveness of the disinfection program and to detect changes in types of microbial flora (e.g. organisms resistant to the disinfection regime currently in use)."

"4.38 Disinfectants and detergents used in Grade A zone and Grade B areas should be sterile prior to use (disinfectants used in Grade C and D may also be required to be sterile). Where the disinfectants and detergents are made up by the sterile product manufacturer, they should be monitored for microbial contamination. Dilutions should be kept in previously cleaned containers and should only be stored for defined periods. If the disinfectants and detergents are supplied "ready-made" then results from certificates of analysis or conformance can be accepted subject to successful completion of the appropriate vendor qualification."

Disinfectants are usually divided into broad-spectrum disinfectants or sporicides (usually more aggressive, oxidising chemistries capable of penetrating and killing bacterial endospores).

Whilst the requirement to rotate a broad-spectrum disinfectant with a sporicide 'in accordance with a written programme' (i.e. not using sporicides only reactively) remains, the Annex draft v.12 issued in February 2020 has changed slightly. It now appears to imply the use of two different (possibly broad spectrum) disinfectants with different

Review of impacts on the requirements for Cleaning and Disinfection

modes of action in addition to the periodic use of a sporicidal agent, however this needs clarification.

Whilst this practice is sometimes seen, there may be little value in rotating two broad spectrum disinfectants that are exerting an effect on a similar spectrum of organisms. Having two broad spectrum disinfectants that need to be rotated can also increase complexity in terms of SOPs, and procedures, and increase the burden of validation and control of materials on site.

The Annex draft v.12, perhaps disappointingly, continues to reference organisms 'resistant' to the disinfection regime. The concept of acquired rather than innate resistance occurring at a site has been a contentious point for years, with little evidence of this phenomena forthcoming.

The requirement for disinfectants to be effective against the typical flora encountered, and the idea that the efficacy of the disinfectants used, and the types of organisms encountered should be kept under review, is sound. This is the purpose of having periodic use of a sporicide, to ensure that the disinfectant rotation used has a full spectrum of activity, including against bacterial endospores.

The requirement for disinfectants and detergents used in Grade A zone and Grade B areas to be sterile prior to use (termed Grades A and B areas in Annex 1 2008 and in the 2017 draft) and for solutions to be monitored for microbial contamination, remains in place.

Interestingly, Annex 1 daft v.12 highlights that disinfectants used in Grade C and D may also be required to be sterile. This is again an indication that QRM principles must be applied. The use of sterile products in lower grade areas should not be ruled out if a contaminant present in a disinfectant could detrimentally impact on a production area and/or the products being manufactured within that area.

In house preparation of disinfectant from concentrates

Annex 1 v.12 February 2020

"4.38 …Where the disinfectants and detergents are made up by the sterile product manufacturer, they should be monitored for microbial contamination. Dilutions should be kept in previously cleaned containers and should only be stored for defined periods. If the disinfectants and detergents are supplied "ready-made" then results from certificates of analysis or conformance can be accepted subject to successful completion of the appropriate vendor qualification."

Concentrate versions of disinfectants have long been used and are considered by many to be a practical and cost-effective means of producing large volumes of disinfectant for use. However, the Annex 1 draft issued in 2017 made it clear that there were increased considerations around filtration processes, including minimising the number of aseptic manipulations (including non-intrinsic aseptic connections), filtration process conditions, filter integrity testing, validation pre and post use, in-use filter pressures, bacterial retention and filter management that all impacted on disinfectants being prepared and filtered into sterile areas.

Initially, the Annex 1 draft 2017 required that a ‚worst case location' water sample be taken each time the system is used for manufacturing and manufacturing processes. This has now been toned down significantly in the v.12 draft.

Despite the reduced requirement for water testing in the latest draft, end users should still consider the 'total cost' of preparation of disinfectants from concentrates with the increased scrutiny of their preparation and filtration. The additional training, documentation and monitoring required for the process should also be factored in.

Validation of disinfectant efficacy and in use expiry periods

Annex 1 v.12 February 2020

"4.37 The disinfection process should be validated. Validation studies should demonstrate the suitability and effectiveness of disinfectants in the specific manner in which they are used and should support the in-use expiry periods of prepared solutions."

"4.38 Dilutions should be kept in previously cleaned containers and should only be stored for defined periods. If the disinfectants and detergents are supplied "ready-made" then results from certificates of analysis or conformance can be accepted subject to successful completion of the appropriate vendor qualification."

The Annex is clear that the effectiveness (efficacy) of disinfectants should be validated, and that the validation should be representative of the specific way they are used. This reinforces that end users of disinfectants should carefully consider the contact times, surface materials and methodology used to validate disinfectants.

It also requires that the 'in-use expiry' or hold time of a disinfectant solution is demonstrated through validation. This may involve a validation study to determine the length of time that a concentrate or a dilution prepared from a concentrate remains effective, stable and uncontaminated after opening. This may represent a further increased burden on users preparing detergent or disinfectant products from concentrate rather than using "ready-made" or ready-to-

Review of impacts on the requirements for Cleaning and Disinfection

use products. Here the Annex draft concedes that certificates of analysis or conformance from approved vendors may be sufficient, negating the need to validate.

Conclusion:

The revised version 12 of the Annex 1 draft issued February 2020 retains much of the 'direction of travel' of the 2017 draft with regards the guidance for cleaning and disinfection as an integral part of a Contamination Control Strategy (CCS).

Some of the key areas of focus in both the 2017 draft and the latest version (v.12) are now:

- The Annex raised the concern that residues can have some hidden effects.
- Implies the use of two different broad spectrum disinfectants with different modes of action in addition to the periodic use of a sporicidal agent is required / desirable.
- The requirement for disinfectants and detergents used in Grade A zone and Grade B areas to be sterile prior to use remains in place.
- The potential use of sterile disinfectants in Grade C and D cleanrooms, based on QRM.
- Disinfectant efficacy validation should be representative of the specific way disinfectants are used.
- 'In-use expiry' or hold time should also be demonstrated through validation if disinfectants are prepared in-house.

The final version of the Annex will invariably still contain some text that may be open to interpretation and will of course never be able to be a perfect guide for all readers. Further public consultation is underway, with a select number of relevant industry groups and organisations poised to provide further comments, suggest clarifications and amendments to the rapporteur.

It is hoped that this shorter consultation period, with a more focused range of groups and organisations could deliver a final version of Annex 1 in 2020.

ECOLAB

More ...

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Dear subscribers,

Corona is not over yet, even though the overall situation is gradually is approaching a „normal state". Many companies have geared themselves to the long-term situation: be it through more flexible working hours, changes in the production process or process and additions to the product portfolio.
Some companies, which now offer e.g. respiratory masks and disinfection systems manufactured or distributed, we present on the following pages.

The calendar of events in the german newsletter is also available in this issue limited to the webinars. All events around the cleanroom you will find still on www.cleanroom-online.com

Furthermore, there are some interesting articles in the newsletter:

> Review of impacts on the requirements for Cleaning and Disinfection
> An impulse generator for the digital production era
> STERIS provides efficient, effective bio-decontamination with accurate vaporized H_2O_2 sensors
> OHB placing the largest clean room in operation
. . .

Yours sincerely

Reinhold Schuster

An impulse generator for the digital production era

Autonomous, smart, clean: from mobile and self-learning robots to state-of-the-art cleanroom technologies, methods for explaining machine learning, software tools for production, and the Stuttgart Exo-Jacket – in December 2020, Fraunhofer IPA will showcase a wide range of applications and services for automated production processes at Automatica. However, the Virtual IPA Preview will offer the first glimpses as early as June 18, 2020.

»New ideas for the automation of tomorrow« is what Automatica, the leading trade fair for smart automation and robotics, promises. Stuttgart-based Fraunhofer IPA has also taken up this concept and will demonstrate several exhibits at its trade fair stand and at further contact points on site. In an area covering 240 square meters visitors can see what is already possible today and where the journey on the shop floor of the future is heading.

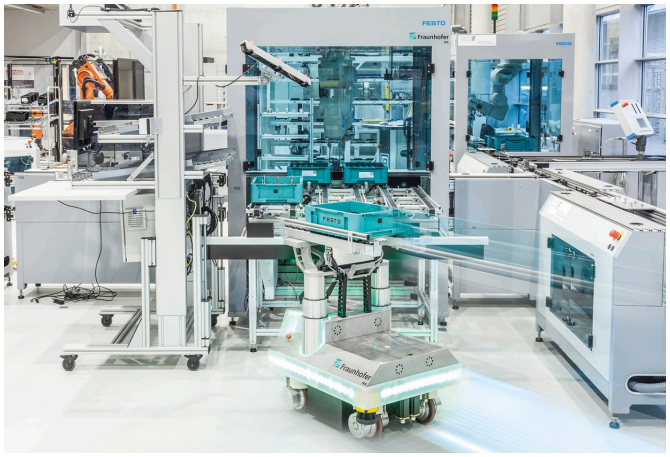
Cooperative and connected navigation solutions

Compact mobile »rob@work« robots move across an elevated exhibition space. They navigate autonomously, are connected with each other and present a miniaturized logistics scenario. Thanks to a continuous SLAM algorithm, the robots reliably locate themselves even in changing environments without the need for additional infrastructure. Moreover, they exchange data with their own sensors or sensors installed in theoperational environment. This means that each robot has a permanently up-to-date map at its disposal, which it can use to adapt its route and localize itself. This avoids unnecessary paths, bottlenecks and downtimes.

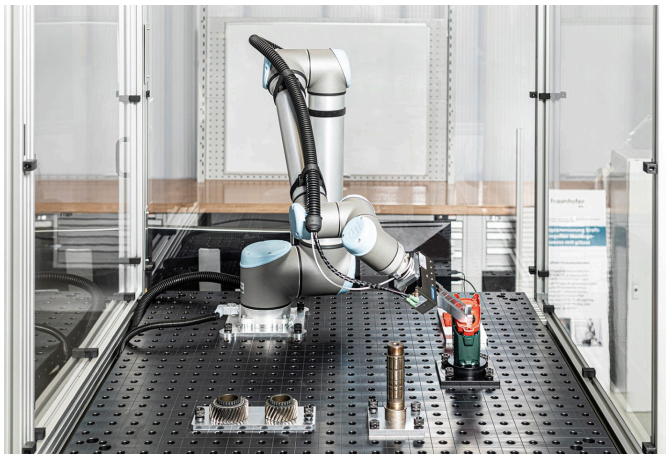
»With this cooperative navigation solution, we are demonstrating how driverless transport systems could enable for example a matrix production«, explains Kai Pfeiffer, Leader of the Industrial and Commercial Service Robots group at Fraunhofer IPA. »We can also expand the exhibit to include virtual robots and use augmented reality to visualize travel paths and other information«, he adds. This simplifies and accelerates the commissioning, maintenance and expansion of the fleet. The software has already successfully demonstrated the required agility of modern logistics processes in industrial applications on several occasions.

Automated assembly and improved autonomous grasping

Many companies are focusing on the question of the extent to which they can automate their assembly tasks. For many years, Fraunhofer IPA has been offering an Automation Potential Analysis (APA) for this issue. Until now, APA has been dependent on the knowledge and input of an automation expert. A new app now makes this knowledge more easily accessible. It instructs users on how to analyze their own assembly processes, evaluates their answers and provides information on automation potential. »With our app, anyone can become an expert in the evaluation of assembly processes«, says Alexander Neb, a research scientist at Fraunhofer IPA who co-developed the app. It can be obtained via a simple license agreement for test use.



Autonomously navigating mobile robots are a key element for flexible production and logistics applications. (© Fraunhofer IPA/University of Stuttgart IFF Image: R. Bez)



With the pitasc software, assembly applications such as snap-on mounting or insertion can be automated in an economically viable manner. (© Fraunhofer IPA/Image: R. Bez)

The recently patented 2ndSCIN® protective cover ensures the cleanroom compatibility of any moving automation component. (© Fraunhofer IPA/Image: Rainer Bez)

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NeuroCAD is another software tool for assembly automation. It uses machine learning methods to analyze component properties and uses this information to determine the extent to which a work piece is suitable for assembly automation. Users can upload their STEP files free of charge to www.neurocad.de and receive feedback within seconds how easy or difficult it is to singularize a work piece with a robot, e.g. bin picking. The tool also evaluates the gripping surfaces and alignment potential of the component. In addition, the neural network ensures a high probability that the results are correct.

Finally, the pitasc modular system for programming force-controlled assembly processes shows how manually executed processes can be automated in an economically viable way. »Until now, it has largely been necessary to re-program a robot system for each application. With our software, tasks that have been modeled once, can be quickly transferred to new product variants, products and even to robots from other manufacturers«, says Frank Nägele, Head of the Robot Programming and Control group at Fraunhofer IPA. The software is structured as a modular system: it contains many ready-to-use and reusable program modules that can be individually configured when setting up a robot process. The pitasc system is ready for use in pilot applications that the scientists would like to implement working together with companies.

CAPE® is a tent-like cleanroom system that provides a costeffective, fast and flexible cleanroom environment. (© Fraunhofer IPA/Image: Rainer Bez)

Not only assembly, but also »bin picking« applications can present automation with a challenge. Fraunhofer IPA's »AI Picking« exhibit shows how machine learning methods and simulations significantly improve the autonomy and performance of the application.

The scientists demonstrate this using the example of a robot that separates objects from an undefined position out of a bin. An object localization based on artificial intelligence (AI) provides sound and accurate object positions within a few milliseconds. »New objects can be teached in quickly and easily on the basis of a CAD model«, explains project manager Felix Spenrath. »The software can also avoid any obstacles and detect and release entanglements as well as handle packaging material in a robust manner«. The robot has already been extensively trained in simulation and this knowledge subsequently been transferred to the real application. Grasping points are automatically generated and evaluated based on this knowledge.

Contamination-free production with protective cover and cleanroom tent

The demand for more autonomous as well as ultraclean production is increasing. »Clean production environments are facilitating a high-tech future«, explains Udo Gommel, Head of the Ultraclean Technology and Micromanufacturing department at Fraunhofer IPA. »Tomorrow's key technologies will only be advanced using ultraclean technology. It is crucial: from battery production right through to biotechnology.«

2ndSCIN® protective technical skin: Recently patented, 2ndSCIN® makes dynamic automation components such as robots ready for use within ultraclean environments. The cover consists of a permeable, flexible and multi-layered textile, which is similar in its functionality to human skin. Depending on the application area, two or more layers can be superposed. The layers are each separated with spacers. Air, for example, can be absorbed or discharged in each interspace. In this way, particles from the environment or automation components are removed. A gas feed into the system's interstices enables it to be sterilized. In addition, the protective technical skin can be changed in about one hour and be reused after decontamination. The textile layers are also equipped with sensors that continuously measure parameters such as particle quantities, pressure and humidity. In the future, this sensor data will be evaluated using AI algorithms and will, for example, enable predictive maintenance. »2ndSCIN® is extremely variable in design, so we can implement individual requirements. In this way, we address many of the requirements for protective technical skins for cleanroom components that products seen up until now have been unable to meet«, explains Gommel.

CAPE® mobile cleanroom: Scientists from Fraunhofer IPA have also

With the help of sensor data and subsequent analysis, inefficiencies or losses in production lines can be automatically detected. (© Fraunhofer IPA/Image: Rainer Bez)

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developed a mobile, tent-like cleanroom system that can be set up in less than an hour both indoors and in weather-protected outdoor areas. This »Cleanroom on Demand« provides manufacturers with a mobile, contamination-free production environment that enables air purity of ISO classes 1 to 9. This is particularly attractive for manufacturers who need contamination-free manufacturing surroundings but do not require a permanently available sterile and clean environment. CAPE® is suitable for use in chip production, medical technology, the food industry and satellite assembly, for example. The automotive industry also benefits from the cleanroom tent, for example in battery cell or fuel cell production. »CAPE® can even be used in crisis areas to provide a clean and sterile environment, for instance if there is no operating theatre on site«, says Gommel.

Fraunhofer Tested Device®: For many years now, Fraunhofer IPA has also been offering methods for particle emission measurement and awards audited objects the »Tested Device®« certification. During Automatica, this method is demonstrated by means of an optical particle counter and a test object within the CAPE® mentioned above. Product and customer-specific test reports provide companies with confirmation as to the cleanliness and cleanroom suitability of their systems, devices and consumables.

Explaining machine learning and communicating data

In robotics as well as in numerous other application areas related to production and services, the use of machine learning methods and artificial neural networks is on the increase. Depending on the application, it becomes more and more important to know exactly how these work and why they achieve a certain result: In essence, they have to be explainable. Due to their complexity, in many cases, this is not yet possible. »The more powerful a neural network is, the more difficult it is to understand«, explains Prof. Marco Huber, who heads the Center for Cyber Cognitive Intelligence (CCI) and the Image and Signal Processing department at Fraunhofer IPA.

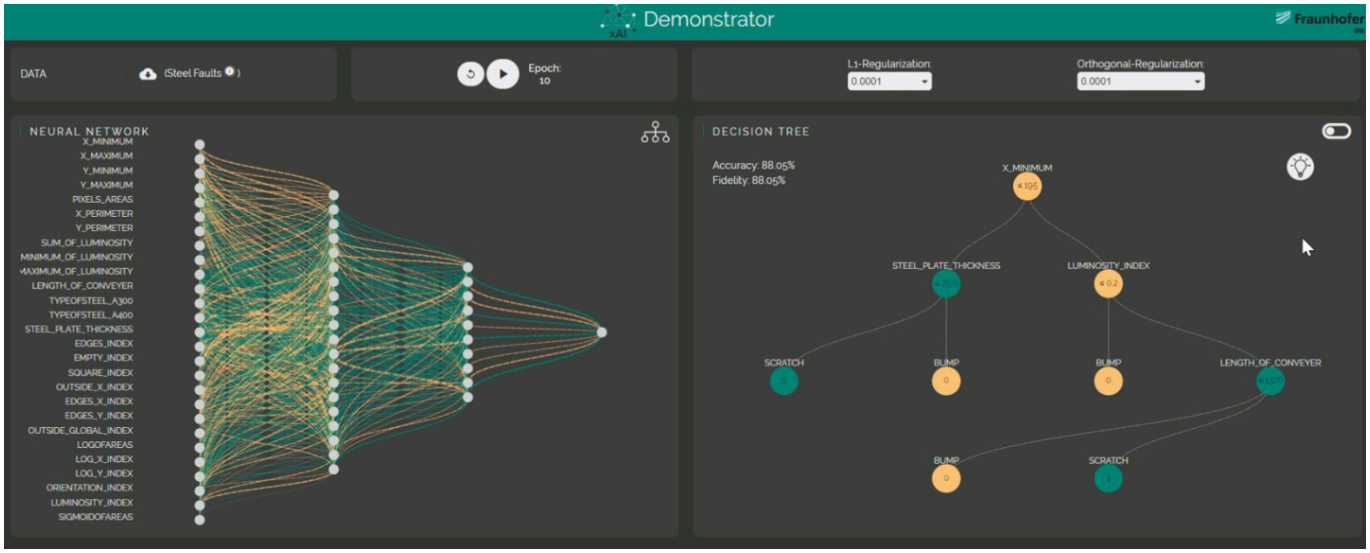
For this reason, at Automatica, Fraunhofer IPA will be presenting processes under the slogan »Explainable AI« (xAI) that visualize decisions made by neural networks and make them transparent and comprehensible to the user. »This traceability strengthens acceptance of AI, creates trust, improves the correct functioning and provides legal certainty«, explains Huber.

Data accumulates in every production process, but due to different formats and interfaces, it is often not possible to use and evaluate it. This is exactly where the »Station- Connector« software comes in to play, offering a uniform interface across every facility. It allows data to be transferred easily and in an application-specific manner between industrial protocols, control systems and any IT systems. »With our software, users can quickly generate and implement data-based business models«, says Marcus Defranceski, who leads the group Clean Automation Technology within the department Ultraclean Technologies and Micromanufacturing at Fraunhofer IPA. The exhibit on display at the stand shows how easy and flexible the software is to use and how it can be implemented for a wide range of applications, such as AI processes or monitoring.

Increasing the efficiency of production processes and easing employee workloads

A demonstrator for autonomous production optimization shows how losses in production can be detected automatically and their causes determined. It depicts an automated model of a production line. This is monitored both by the control system and external sensors, such as light barriers and cameras. All observation sources are used to create a behavioral model of the line. This allows the line to be continuously analyzed online and, in this way, its normal behavior can be recorded and production losses identified. »In this way, we are aiming to increase the efficiency of the entire production line and make central process parameters transparent«, explains Julian Maier, scientist at Fraunhofer IPA and co-developer of the demonstrator.

The flexible manpower engaged in production is still irreplaceable in many places, despite numerous automation possibilities, and it is important to retain this as far as possible. Exoskeletons, i.e. robot systems that are worn directly on the body, provide strength and support for demanding physical activities and relieve the strain on humans. Fraunhofer IPA has developed the Stuttgart Exo-Jacket (SEJ), an exoskeleton for research and development purposes. The SEJ actively supports the upper extremities during lifting and overhead activities. The current system on show at the IPA stand, the Stuttgart Exo-Jacket 2, is mainly aimed at applications in logistics, where workers use both



Various methods developed by Fraunhofer IPA help to explain machine learning processes, such as the neural network shown here, and to understand how they work.
(© Fraunhofer IPA)

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hands to manually handle objects such as tires, crates and suitcases between knee and shoulder height in front of the body.

»The core idea behind the system is that users can continue to move their hands to the best of their ability and in this way make optimum use of their handling skills«, comments Christophe Maufroy, Group Leader for Physical Assistance Systems and Smart Sensors at Fraunhofer IPA, describing the particular features of the SEJ. The exhibit also focuses on measurable ergonomic workplace analyses and optimization.

Discover and make use of AI initiative

Last but not least, the Fraunhofer IPA trade fair stand will also provide information on an initiative in the context of artificial intelligence. The »pitasc« and »AI Picking« exhibits are part of the »Cognitive Robotics« initiative sponsored by the state of Baden-Württemberg. It aims to further advance innovative robotic technologies and to translate skills such as perception, learning, anticipation and adaptation into applications. In this way, the cognitive robot offers solutions to confront the challenges associated with production and other processes of the future, which have been triggered by social megatrends. The involvement of industrial partners creates a network which ensures technology transfer.

Fraunhofer IPA

More ...

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The Stuttgart Exo-Jacket actively supports the upper body during manual handling tasks, in particular during lifting and overhead activities. (© Fraunhofer IPA/Image: Rainer Bez)

Within the framework of the»Cognitive Robotics« initiative, for example, technologies for machine learning are being further developed for bin picking applications. (© Fraunhofer IPA/Image: Rainer Bez)

Coronavirus protective equipment

Raumedic offers support to the District of Hof

The Raumedic AG has supported the District of Hof with the procurement of several thousand medical protective masks. A part of these was personally accepted by district administrator Dr. Oliver Bär in April. The Zentrale Diakoniestation Naila received a material donation. Medical masks and disinfectants were given to the social welfare organization and its carers who are currently tending to more than 400 patients in their homes.

District administrator Dr. Oliver Bär, Raumedic CEO Stefan Seuferling, plant director Jürgen Küspert, Karl Bayer and Matthias Korn from the social welfare center (from left to right) at the handover at the Raumedic headquarters in Helmbrechts.

"As is currently the case for many other organizations, we are having trouble getting enough protective equipment," explains Matthias Korn, head of the social welfare work center. Karl Bayer, chairman of the Diakoniewerk Martinsberg, continues to express his thanks to the medical technology company for putting so much effort into procurement and donating a share to the social welfare organization.

"With our excellent network of suppliers and the commitment of our purchasing department and plant management, we hope to have made a small contribution to managing the current situation in the region," says Raumedic CEO Stefan Seuferling. He continued to stress the importance of solidarity in times of the coronavirus, be it within the company or outside of one's own organization.

Raumedic AG D 95233 Helmbrechts

STERIS provides efficient, effective bio-decontamination with accurate vaporized H2O2 sensors

STERIS provides a wide range of vaporized hydrogen peroxide (VHP®) bio-decontamination systems and services, utilizing Vaprox® Sterilant for broad spectrum efficacy against viruses, bacteria, yeasts, and bacterial spores. Vaporized hydrogen peroxide bio-decontamination is crucial, not only for pharmaceutical and biotechnology production, but also for agricultural industries and healthcare facilities. The STERIS bio-decontamination systems use a "dry process" hydrogen peroxide vapor distribution, which eliminates the risk of condensation on surfaces. The advantages of decontamination with vaporized H_2O_2 include:

- Easy to use
- Effective against biological contaminants
- Ideal for low-temperature processes
- Processes can be validated
- Compatible with a wide variety of materials
- Environmentally friendly and safe for operators
- Leaves no toxic residue, only water vapor and oxygen

A trusted partner

For several years, STERIS has used a trusted sensing technology from Vaisala. In 2018, STERIS became interested in a new solution from Vaisala: the HPP270-series hydrogen peroxide vapor probe. The probes feature PEROXCAP® sensing technology. The sensors provide accurate measurements for hydrogen peroxide concentration or ppm (parts per million) and several other parameters, most importantly: relative humidity, temperature, and a new parameter: relative saturation — which indicates when condensation will occur.

Validating bio-decontamination

In DSVA (surface disinfection by airways) the aim is to prove that bacteria and microorganisms have been eradicated and the results must demonstrate maximum effectiveness throughout the bio-decontaminated area. To validate a cleanroom bio-decontamination, it is essential that STERIS use a highly accurate sensor that can provide stable, repeatable data on the concentration of hydrogen peroxide vapor ppm. Vaisala's unique technology met STERIS's requirements for measurement reliability and repeatability. Thanks to Vaisala, STERIS has been able to prove maximum effectiveness of bio-decontamination in clean rooms.

"Today, Vaisala is the best technology on the market to measure the concentration of H_2O_2 reliably, accurately, and repeatably over time," says Philippe Muylaert, Room Decontamination Service Specialist with STERIS SAS. "The Vaisala model HPP272 is the most effective sensor for bio-decontamination with hydrogen peroxide. Thus, we have confidence in the data, and we can prove to our customers the effectiveness of bio-decontamination cycles."

Muylaert appreciates that the HPP270 probes provide H_2O_2 concentration measurement curves throughout the bio-decontamination process in addition to real-time monitoring data. In-line data throughout a process is valuable for cycle development, especially to help determine pressure binary mixture, water concentration, temperature, etc.

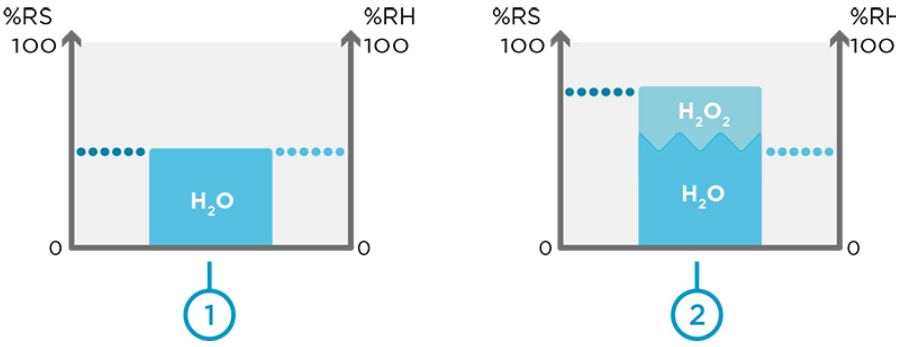
In-line measurement of vaporized H_2O_2

To remain in a gaseous state, hydrogen peroxide vapor requires controlled parameters, including temperature, relative humidity, pressure and volume. Any departure from ideal conditions can cause hydrogen peroxide vapor to condense, essentially returning the H_2O_2 to its natural state: liquid.

For STERIS's dry method, it is necessary to avoid condensation that can lead to equipment deterioration. In the absence of hydrogen peroxide vapor, the relative humidity of the air is equal to the relative saturation (1). When vaporized H_2O_2 is introduced, the relative saturation is greater than the relative humidity (2).

During H_2O_2 vapor bio-decontamination processes, there is always water vapor in addition to hydrogen peroxide vapor. To control condensation, you need to know

STERIS provides efficient, effective bio-decontamination



both the humidity of the air caused by water vapor and by hydrogen peroxide vapor. Relative saturation, which indicates the concentration of vaporized hydrogen peroxide and water vapor in the air, is the only value that represents both vapors. Monitoring the relative saturation value during a process is therefore crucial, because it indicates saturation point of the combined vapors: water and hydrogen peroxide.

Reliable measurements mean reliable processes

STERIS systems required a probe capable of providing accurate measurements for hydrogen peroxide ppm, temperature, relative humidity and relative saturation. Using the unique Vaisala PEROXCAP® hydrogen peroxide sensor technology, the HPP272 probe can also measure two other parameters: dew point and vapor pressure, which can also be useful parameters in bio-decontamination.

The probe guarantees reliable and precise hydrogen peroxide measurements throughout the bio-decontamination cycle, even in high humidity. The reliable and reproducible measurements of Vaisala's vaporized hydrogen peroxide probes allow STERIS to achieve a high degree of confidence in their bio-decontamination procedures, success during annual audits, and a high level of product quality.

VAISALA

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C2C Appoints Joan Benson as Regulatory Governance & Assurance Manager

Integrated cleanroom services provider Connect 2 Cleanrooms (C2C) has appointed Joan Benson as its Regulatory Governance & Assurance Manager for the UK and Europe.

Joan brings 20 years' experience in the design and support of GMP systems for Investigational Medicine Products (IMPs) and Specials MHRA licences, both as a consultant and a process owner in the pharmaceutical industry, contract research and cell/gene therapy and regenerative medicine fields. Joan also has extensive experience in Human Tissue Authority (HTA) and Human Fertilisation and Embryology (HFEA) regulated environments.

Joan's calibre and experience will complement C2C's technical and regulatory competency enabling comprehensive support for organisations in the life science and pharmaceutical sectors. The company has experienced recent growth in these areas with a number of large and complex projects.

"I am very excited to be joining C2C in the new role of Regulatory Governance and Assurance Manager and to have the opportunity to add to the company's existing regulatory competence. I feel privileged to take on this role in C2C, an industry leader with outstanding culture, vision and values," says Joan.

Joan's appointment comes as C2C completes two major life science and healthcare cleanroom projects.

The first being a 250m² purpose-built laboratory facility including two cleanrooms for diagnostics testing, and the second a 400m² ESD cleanroom that forms a crucial part of a seven-year expansion plan for a global leader in advanced wound care.

Cleanrooms

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... to the officially completed ISO-8 cleanroom after only 14 months of construction. With a floor area of around 1,400 square meters it is is the OHB Group's largest cleanroom facility. © OHB

OHB placing the largest clean room in operation

1,400 square meters cleanroom-

and 1,900 square meters office space

After only 14 months of construction, the PLATO hall has now been officially completed at space company OHB's headquarters in Bremen. With a floor area of around 1,400 square meters, the ISO 8 cleanroom*, which is almost eleven meters high, is the OHB Group's largest cleanroom facility. About 2,000 cubic meters of concrete and 440 tons of steel were needed for the construction of the integration hall. Office space with a floor area of a further 1,900 square meters has been built directly adjacent to the cleanroom facility. The construction project has a budget of around EUR 15 million.

Since the building permit was granted in March 2019, more than 200 operatives have been working on the construction project. Craftsmen and women as well as architecture and planning offices faced a tight schedule to ensure that satellite projects can now be implemented in the ISO 8 cleanroom. "I am very proud of the craftsmen and planners involved in the construction. It was quite a challenge to complete this hall in such a short period of time. My thanks also go to all the OHB employees who supervised the construction project," says OHB Chief Executive Officer Marco Fuchs.

From the draft ... © OHB, Kaars/Schlichtmann

The team working on the MTG (Meteosat Third Generation) weather satellite project will be the first to move into the five-storey building complex. Looking forward, four of the MTG flight models will be integrated in the PLATO hall. Work will also be continued on the Heinrich Hertz communication satellite project there.

The planning team attached great importance to sustainable design in the construction project. Thus, all the heating supplies for the building are provided by the local waste heat and power plant. Similarly, refrigeration is handled via a modern refrigeration center, which uses an environmentally friendly coolant.

The new building complex is called PLATO, a symbolic act that marks the commissioning of OHB System AG by the European Space Agency ESA as the main industrial contractor for its next major scientific mission PLATO.

OHB System AG D 82234 Oberpfaffenhofen

* The ISO 8 purity class stipulates that one cubic meter of air may contain only a maximum of 30,000 particles that are larger than 5 micrometers in size. One micrometer corresponds to one millionth of a meter; by contrast, a single human hair is 50 micrometers thick.

Fraunhofer EMFT scientist in Cleanroom (© Fraunhofer EMFT/Bernd Müller)

Research despite and because of Corona

Fraunhofer EMFT researches and develops sensor systems and actuators for people and the environment at its locations in Munich, Oberpfaffenhofen and Regensburg. The competences of the approx. 130 employees include manufacturing-oriented microtechnologies, innovative sensor solutions, microdosing and secure electronics.

It is not an easy balancing act that researchers currently have to perform: The corona pandemic can only be contained by shutting down personal contacts - this also applies to everyday working life. On the other hand, some research activities are especially important now to support doctors, nurses and authorities in their work. Fraunhofer EMFT is facing this challenge for example in the development of thermopile sensors by Heimann GmbH. Important process steps are performed in the clean room of the Munich institute.

It is true that sensor technologies are not the first research area that comes to mind in the context of infection control. But the little electronic helpers can also be found in medical devices urgently needed right now, such as lung ventilators.

For this reason, the Fraunhofer EMFT clean room is not empty - even though the already high hygiene and safety standards have been tightened further. Dr. Lars Nebrich and his team support Heimann Sensor GmbH, a longtime customer, in the development and optimization of so-called thermopile infrared detectors. „These high-tech sensors are used for instance in non-contact IR clinical thermometers: they can reliably determine the body temperature of people even at a distance of 0.5 to 2 m (depending on the sensor type). Contactless temperature measurement can be used for access to buildings, for example: If the sensor detects an increased body temperature in a person, the system reacts with an optical and acoustic signal. In manual clinical thermometers, the sensors enable reliable fever control without medical staff coming into contact with patients.

However, almost even more relevant in the current situation is the fact that the sensors are also required for lung ventilators," explains the researcher. In lung ventilators, thermopile sensors are used in optical CO_2 sensors to control the exhaled air.

Heimann is one of the world's leading manufacturers of these thermopile infrared detectors, and the demand is accordingly high. „If the supply of detectors were to come to a standstill, even more urgently needed medical equipment would be lacking in the current crisis areas," says Nebrich. The cooperation partners have therefore jointly decided to continue the work in the clean room. Nevertheless, it does not feel like „business as usual" for the team at the moment. „The health protection of our colleagues has top priority, there is no question about that", Nebrich emphasizes. Based on the instructions of the Bavarian state government and the Fraunhofer crisis management, only a greatly reduced core team is currently working in the clean room, so that the obligatory distance can be preserved at all times. Apart from this, even in „normal" times, work in the clean room is characterized by the strictest cleanliness requirements: the researchers generally work in special clean room clothing and the air is usually already low in germs, thanks to the specific air treatment with ultra-fine filter technology - similar to an operation room.

Developing thermopile sensors is a complex process that requires not only specific clean room infrastructure but also a lot of know-how and routine in building and processing so-called MEMS (micro-electro-mechanical systems). To optimize the manufacturing technology, Fraunhofer EMFT scientists are also working together with Heimann Sensor GmbH on the next generation of high-resolution infrared sensors. This could further increase the spatial and thermal resolution of such sensors while keeping production costs low.

Fraunhofer-Einrichtung für Mikrosysteme und Festkörper-Technologien EMFT
D 80686 München

Gentle and effective ultrasonic cleaning for sensitive substrates

Weber Ultrasonics: **New SonoPower 3S megasound system**

Sensitive components such as monocrystalline wafers from the photovoltaic and semiconductor industries as well as optical lenses and prisms and super-finely structured substrates place tough demands on component cleaning: The tiniest of contamination must be reliably removed without compromising the surface. For these demanding cleaning tasks, Weber Ultrasonics has developed the intelligent SonoPower 3S megasound system with frequencies from 500 to 1,000 kHz.

In numerous industrial sectors like the photovoltaic and semiconductor industries, micro and medical technology, and optics, parts and components are becoming ever smaller and finer – and with it, more sensitive to soiling. Component cleaning, which is usually performed with ultrasound, poses particular challenges to this method. On one hand, even the tiniest particulate soiling and minimal film contamination must be reliably removed to ensure perfect functioning of the sensitive parts and components. On the other hand, damage to or impairment of the surface caused by cleaning must be avoided at all costs. They must not be subjected to either excessive movement in the medium or to excessively high levels of cavitation energy.

Gentle on the surface, effective against soiling

With the new SonoPower 3S megasound system with frequencies of 500 and 1,000 kHz, Weber Ultrasonics has developed an efficient solution for cleaning these sensitive components. It ensures especially gentle and yet effective handling of the components with high levels of cleanliness. The system consists of the intelligent SonoPower 3S Megasonic Boost and the matching SonoPlate HF high-frequency transducers.

In operation, the generator, which is available in the power classes 250 and 500 watt, employs various innovative features to ensure that cleaning is gentle on the surface while soiling is removed reliably. These include the combined frequency and amplitude modulation, which guarantee homogeneous sound fields and thus prevent standing waves. The SonoScan automatically determines and sets the optimum operating frequency and monitors and adjusts it during the process. This guarantees that the ideal power output is always applied, even in the face of changing operating conditions such as temperature fluctuations or when cleaning and rinsing media are changed. The adjustments are made during running operation, which ensures uninterrupted operation. Another special feature of the SonoPower 3S Megasonic Boost is the mains voltage management. As it automatically compensates for voltage fluctuations, maximum process stability and operational reliability are guaranteed. The power output can be continually adjusted from 10 to 100 percent, which allows it to be ideally adapted to the respective component.

The optional Profinet interface integrated in the generator not only enables remote operation, whereby the ultrasound-specific process parameters are precisely controlled and documented during cleaning; the SonoPower 3S Megasonic Boost is also Industry 4.0-compatible. Another advantage is the compact design, which enables it to be easily integrated into 19" control cabinets.

Optimally adapted to the generator, the new SonoPlate HF high-frequency transducers enable an effective cavitation current and thereby efficient further processing of the clean components. The transducers are tailored to the standard dimensions of the wafer industry as standard and can also be produced in other sizes upon request.

Weber Ultrasonics AG
D 76307 Karlsbad-Ittersbach

The SonoPower 3S Megasonic Boost generator available in the frequencies 500 and 1,000 kHz and in the power classes 250 and 500 watt enables gentle yet effective and efficient cleaning of sensitive parts and components. (Image source: Weber Ultrasonics AG)

Optimally adapted to the innovative features of the generator, the new SonoPlate HF high-frequency transducers ensure optimum ultrasonic output and thereby cavitation current. (Image source: Weber Ultrasonics AG)

Clean Blue Air with DMSterile

Germ-free and virus-free mould dehumidification with DMSterile
- Programme expansion for aseptic production

For food and pharmaceutical manufacturers, sterilising the production areas is a common practice. When producing packaging for the same manufacturers, there is additional demand for sterile and low-particle plastic production. Blue Air Systems has developed a new product for this sector: the proven DMS (Dry Mould System) dehumidifiers are now available in the germ and virus-free version, DMSterile.

DMSterile directly generates a germ and virus-free atmosphere during mould dehumidification. The end products, such as pharmaceutical containers, PET preforms or sealing caps, come into contact exclusively with sterile air during production within the partitioning.

Advantages of germ and virus-free production

Micro-organisms thrive where moisture and heat are present. Both conditions are often found in production halls. In addition, outdated or irregularly maintained filters of air conditioning systems, ventilation systems and even production machines facilitate the multiplication of germs and viruses. Aseptic production with DMSterile ensures an optimum environment for manufacturing plastic products and avoids costly after-care.

Aseptic dehumidification with Clean Blue Air

Aseptic dehumidification with the Clean Blue Air system provides sterile air quality without any micro-organisms in the production process. Together with the existing dehumidification technology, DMSterile improves the quality of the end product. With DMS dehumidification, the energy requirement of the production process is reduced by up to 80% due to the known energy savings, while increasing the quality level and output.

The manufacturer Blue Air Systems provides further information and the opportunity to make a configuration query based on the desired process air volumes at clean@blue-air.at.

Blue Air Systems GmbH
A 6250 Kundl/Tyrol

Endress+Hauser receives top rating for sustainability

Group achieves Gold Recognition Level in global EcoVadis audit for the fourth time in a row

Endress+Hauser has been placed in the top ranking of companies in the EcoVadis sustainability audit for the fourth time in a row. The Group again improved its overall result: with 72 points, Endress+Hauser is now among the leading two percent of all suppliers in the comparison group.

"The challenges of the future demand that we and our customers manage our businesses sustainably," emphasized Matthias Altendorf, CEO of the Endress+Hauser Group.

Since 2013 Endress+Hauser has been evaluated annually by EcoVadis with regards to sustainability; since 2016 the Group has regularly achieved Gold Recognition Level ratings. The company again scored well or very well in the areas examined, namely environmental protection, fair business practices, sustainable procurement, working conditions and human rights. This makes Endress+Hauser one of the best rated companies in the comparison group.

Valuable contribution to sustainable development

"The challenges of the future demand that we and our customers manage our businesses sustainably," emphasized Matthias Altendorf, CEO of the Endress+Hauser Group. "We help our customers to increase their resource efficiency, reduce CO_2 emissions, avoid waste and improve the circular economy through outstanding measurement technology and automation solutions."

The company also makes its own contribution to keeping its ecological footprint as small as possible. For example, Endress+Hauser increasingly supplies buildings and infrastructure with sustainably generated energy or reduces travel, for example through virtual meetings. The EcoVadis report also highlights progress at management level, especially in dealing with issues such as environmental protection, working conditions and human rights and fair business practices.

Analysis based on global comparisons

EcoVadis uses 21 environmental, social and ethical criteria to evaluate companies worldwide in terms of their sustainability. In addition to an industry comparison, companies also receive suggestions for improvement. They can also use an internet platform to assess their own suppliers accordingly. According to EcoVadis, this network now encompasses 60,000 companies worldwide.

Endress+Hauser AG
CH 4153 Reinach BL 1

Measurement technology and automation solutions from Endress+Hauser help to make industrial production climate- and environment-friendly.

Endress+Hauser lives sustainability in its own company – for example through innovative solutions such as a 'wind tree' for generating renewable energy.

Syntegon building on stable business performance and implementing new measures during the coronavirus crisis

- Stable business performance in 2019
- Increased demand during the coronavirus crisis
- Virtual trade show with intelligent and sustainable technologies
- New product design underscores brand essence

Michael Grosse, CEO of Syntegon Technology.

The process and packaging technology specialist Syntegon, formerly Bosch Packaging Technology, reported stable business performance in 2019. Sales increased to 1.33 billion euros (2018: 1.28 billion euros), and new orders also rose slightly. In the wake of the coronavirus crisis, the systems supplier to the pharmaceutical and food industries is seeing increased demand in its services business. Since interpack – the largest trade show in the industry that was originally scheduled for May – has now been postponed until next year due to the coronavirus pandemic, Syntegon is presenting its latest process and packaging technology at a virtual trade show from today until May 13. In this context, a special focus is on intelligent and sustainable technologies for the pharmaceutical and food industries. Following the introduction of the Syntegon corporate brand at the beginning of the year, the company is also unveiling its new product design for the first time at the event.

The new TPU paper-forming machine for fiber-based primary packaging.

Stable business performance in 2019

Syntegon generated annual sales of 1.33 billion euros in 2019, slightly above the previous annual figure. As a result, performance remained stable, despite a downturn in the mechanical engineering sector. Sales are divided roughly equally between the company's two product segments Pharma and Food. In North America and China in particular, Syntegon saw a significant sales growth in the pharmaceuticals sector. The company has also grown significantly in the food sector in these regions and in Europe. Overall, sales are divided roughly equally between the regions of Europe, North and South America, and Asia, with Europe being the company's largest market.

New orders in the Food segment grew strongly in 2019 and also remained at their usual high level in the Pharma segment. After the sale of Bosch to CVC Capital Partners in 2019, the company implemented the formation of a stand-alone organization and the launch of the Syntegon brand without any issues.

Syntegon seeing high demand during the coronavirus crisis

In order to respond to the increased production levels of its customers in the pharmaceutical and food industries in the wake of the coronavirus pandemic, Syntegon has expanded its customer service activities and introduced new measures. These include increased spare parts deliveries and providing customer service via digital plat-

Syntegon is presenting its latest process and packaging technology at a virtual trade show.

Syntegon building on stable business performance

forms. The specialist for process and packaging technology is conducting key meetings within the scope of customer projects, including model presentations and factory acceptance tests, virtually. Thanks to Syntegon's global presence with local employees, the company is able to carry out urgent service assignments in almost all cases, despite the current travel restrictions.

According to Michael Grosse, CEO of Syntegon: "Syntegon's mission is to provide process and packaging technology for a better life. We therefore see it as our responsibility to support the pharmaceutical and food industries with our technologies and be there for our customers as a service partner – especially when things get difficult."

Sustainable packaging

One focus of Syntegon's first virtual trade show, which the company is holding from May 7 to 13, is technologies for more sustainability. For example, the company is unveiling its new TPU paper form, fill and seal machine for fiber-based primary packaging. Manufacturers of food, hygiene products, and cosmetics, for example, can use it to produce a predominantly fiber-based packaging solution for their disposable and single-serving packs that were previously packaged in plastic. In combination with the special FibreForm paper from paper manufacturer BillerudKorsnäs, the machine forms structural shells that stand out on store shelves and can be completely fed into the paper recycling process.

Syntegon offers retrofit kits that can be used to modify existing systems for use with sustainable materials as well as comprehensive advice on environmentally friendly and efficient packaging processes. One innovation in this field is the "paper-ON-form" retrofit set for horizontal flow wrapping machines, which can be used to process cold-sealable and heat-sealable barrier papers. The set consists of a flow-wrap forming unit and sealing jaws specially designed for the packaging paper. It is already being used on global chocolate manufacturers' systems to package their products in paper.

In addition, Syntegon is collaborating with partners on other innovative approaches. For example, new kinds of materials, such as transparent paper, can expand the range of applications for fiber-based packaging – like paper bags with a window, for instance, or replacing plastic trays for cookie packaging with paper solutions.

Intelligent solutions

The new flexible filling portfolio for liquid pharmaceuticals is another highlight of Syntegon's virtual trade show. The individually configurable, modular machine concept for processing small and medium-sized batches is the intelligent answer to the growing demand for drugs for smaller patient groups. Whether syringes, vials, or cartridges – pharmaceutical manufacturers can select the individual modules they require to create a filling line tailored to their specific needs, including a built-in isolator for aseptic and highly potent active ingredients. At the same time, valuable data can be obtained which, thanks to new software solutions, can be used for tracking and to enhance product safety.

Syntegon is also unveiling its new Sepion coater series. The state-of-the-art equipment for tablet coating enables closed material handling during filling, sampling and emptying. This makes the technology suited for coating tablets with highly potent active ingredients. The optimized drum geometry with its sophisticated spraying system improves the flow of process air and reduces process times. In addition, the coaters are highly flexible, with filling capacities ranging from 10 to 100 percent, and are available in six sizes from 175 to 1,000 liters.

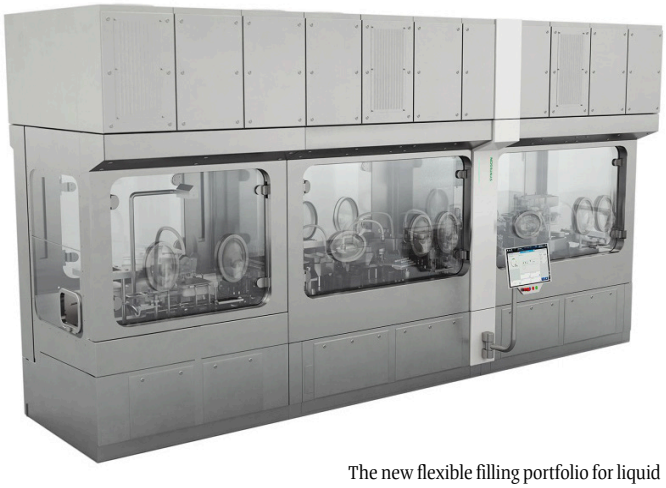
The new ACE (Advanced Carton Erector) platform is another example of Syntegon's intelligent technologies. The platform features high-speed forming capabilities and can handle a wide range of carton sizes. It forms cartons and trays without glue, instead using a special lock-style or ultrasonic technology for this purpose. The ACE

The Sepion coater for tablet coating enables closed material handling during filling, sampling and emptying.

The new ACE carton former platform was developed with a particular focus on ergonomic design, sustainability, and increased efficiency.

Syntegon building on stable business performance

platform is suitable, for example, for packaging used for baked goods, snacks, cereal bars, and frozen goods, as well as for products outside the food sector.



The new flexible filling portfolio for liquid pharmaceuticals offers modular small batch solutions.

New machine design

After leaving the Bosch Group, Syntegon has relaunched with its new corporate brand. The name Syntegon stands for synergy, technology, and a focus on the future. The new corporate color green underscores the importance of sustainability and health. These aspects are also reflected in the new machine design, which the company presented today for the first time.

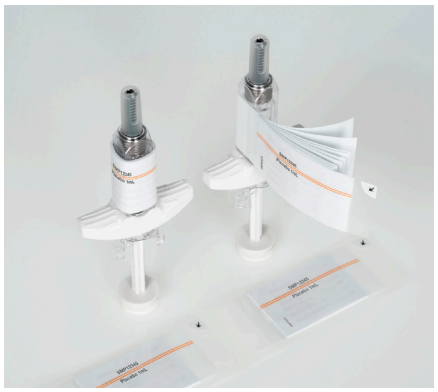
An important feature is the user-friendly interaction zone highlighted in white. It creates a clear user interface and generally makes the machine easy to operate. Components include the optimized human-machine interface (HMI) and a status display. In the future, it will be possible to integrate additional components, such as a wireless charging station for tablets that can be used to run augmented reality service programs. The new design is also easier to clean, which further improves hygiene. All of the company's new machine platforms will feature this design in the future.

Syntegon Technology
D 71332 Waiblingen

Multi-Lingual and Compact: Schreiner MediPharm Supplies Booklet-Label for Clinical Trial at Sanofi

Specialty Label for Needle Protection System

Schreiner MediPharm has developed a compact Booklet-Label for a needle protection system used in an international phase III clinical trial conducted by pharmaceutical corporation Sanofi. On more than 30 pages, the extensive yet small booklet contains all the required product information in more than 20 languages.



Schreiner MediPharm's Booklet-Label for the needle protection system used by Sanofi in a clinical trial encompasses 32 pages.

Accuracy, safety, efficiency and speed are essential to the successful performance of clinical trials. Since most studies are conducted internationally, the investigational drugs must be reliably marked and provided with a complete set of information in several languages. For this purpose, Sanofi required a multi-page label making the product information available in many different languages. In addition, the label was to firmly adhere to the plastic needle protection system without impairing the system's functionality.

The Booklet-Label developed by Schreiner MediPharm is tightly wrapped around the needle protection system. The compact booklet encompasses 32 pages with medicinal information in 22 languages. It reliably adheres to the plastic substrate of the needle protection system and, due to its flexible material construction of thin booklet paper plus film layers, can be easily wrapped around the quadrangular device. A starter tab makes it possible to easily open and re-close the label. The Booklet-Label is partially affixed to the device so that the pre-filled syringe and its content are readily visible after it has been opened. The booklet is equipped with a perforation, allowing for its removal before an injection—only a small part of the label, which may contain variable data for instance, will subsequently remain on the device. The label material is suitable for custom overprinting using TTR printers and thus efficiently and flexibly supports the processes during the clinical trial.

Schreiner MediPharm's Clinical Trial Supplies (CTS) team is the competence and service partner for clinical trials. It has comprehensive expertise in the area of Clinical Trial Supplies and provides individual and flexible consulting support to all customers according to their needs. A process center specializing in Booklet-Labels is dedicated to creating reliable solutions that are optimally adapted to the packaging of investigational drugs.

Schreiner MediPharm
D 85764 Oberschleissheim

Masks under the brand name "Collectex" are available in the Vileda online shop. (Source: Freudenberg)

Freudenberg starts mask production

Combining forces in the crisis

Freudenberg, the global technology group, has started producing mouth-nose masks for end-consumers. The masks under the brand name "Collectex" are available in the Vileda online shop and from retail partners of the Freudenberg Home and Cleaning Solutions (FHCS) Business Group – initially only in Germany.

In the past weeks, three Freudenberg Business Groups – Freudenberg Filtration Technologies, Freudenberg Home and Cleaning Solutions and Freudenberg Performance Materials – have combined their expertise in technical nonwovens, filter media and distribution. Together, Freudenberg specialists have set up in-house mask production in a very short period of time, initially delivering the needed volumes to Freudenberg sites. "Our objective was to fulfill our responsibility to our employees and society. We acted quickly, expanded our capacity and invested in production equipment for the manufacture of mouth-nose masks," says Dr. Mohsen Sohi, CEO of the Freudenberg Group.

Experts from Freudenberg have set up their own mask production in a very short period of time. (Source: Freudenberg)

Newly acquired production lines launched in phases

In addition to mask quality, the fair and needs-based distribution of the masks is important to Freudenberg. Limiting sales on the Vileda online shop to a maximum order of two boxes per online customer will help ensure fair distribution and guarantee a wide dispersion that will benefit as many people as possible in the time of crisis. Mask production is located in Germany and has been up and running since late April. Freudenberg Home and Cleaning Solutions is selling the masks under the name "Collectex". In contrast to the now common industrial and privately sewn cotton masks, the Freudenberg masks are made from a high quality, triple-layered filter medium.

This filter medium is made from a high-tech nonwoven, which is also manufactured in Germany. The materials are processed into masks in newly acquired production lines launched in phases at Freudenberg Filtration Technologies – at first for the German market. Freudenberg is planning to expand capacity in the next few weeks to the point where roughly a million masks can be produced a day in four shifts around the clock seven days a week. The technology group will also continue to deliver media for the production of facemasks to professional converters and existing customers.

„We have succeeded in expanding our capacities for respiratory mask media in the shortest possible time and have put our own mask production facility into operation. Such a project requires a high degree of agility," says Dr. Andreas Kreuter, CEO of Freudenberg Filtration Technologies.

Freudenberg Filtration Technologies SE & Co. KG
D 69465 Weinheim

GEMÜ is expanding production capacities in Shanghai

In-house machining and coating of valve bodies and washers is expanding the manufacturing capabilities and is a further important step towards a global production concept.

The production of butterfly valves at GEMÜ Valves China is part of GEMÜ's global production concept. As part of this global production concept, GEMÜ has set the course for further expanding the capability for the production of butterfly valves in their factory in Shanghai.

To achieve this, the manufacturing capabilities have been significantly expanded in order to further increase the effect on production steps that are decisive for quality. In concrete terms, this means that GEMÜ has specifically invested in the mechanical machining and coating of the valve bodies and butterfly discs, and now carries out these production steps themselves in their own Butterfly Valve Production Center with the assistance of state-of-the-art technology.

In recent months, a new fully automated coating system was fitted and commissioned for this purpose. In addition, GEMÜ has developed a special manufacturing and clamping concept that can be used to achieve narrow shape and positional tolerances.

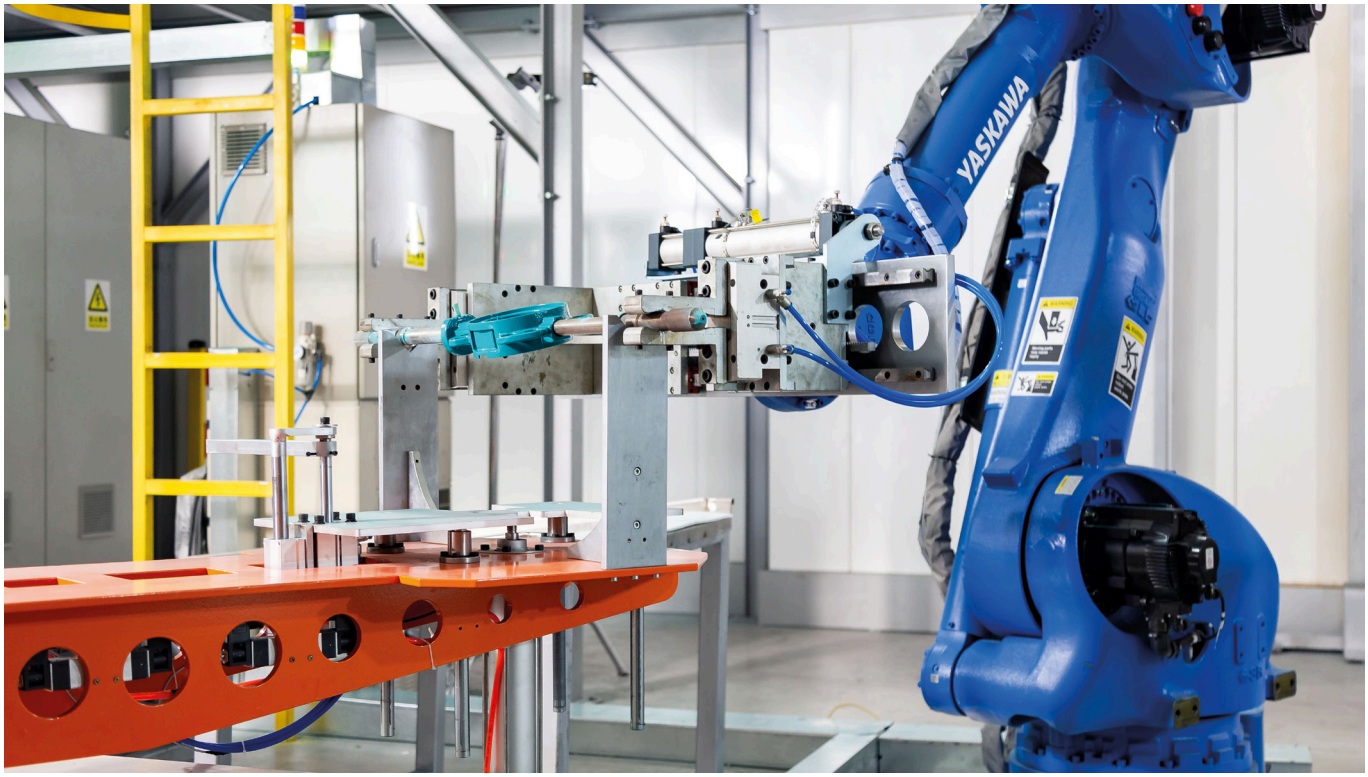
Furthermore, in recent months, an interdisciplinary project team made up of German and Chinese specialists at GEMÜ Valves China was working intensively on the fine adjustment of the individual parameters in order to optimize the production processes. Now that this work is complete, the expanded GEMÜ production centre has started up its activities.

This has laid the foundations for the latest generation of the GEMÜ R480 Victoria soft-seated, butterfly valve to be produced in accordance with the most stringent quality requirements at the new butterfly valve competence centre in Shanghai, China with immediate effect.

„The expansion of the manufacturing capabilities in our Butterfly Valve Production Center in China is a key step on the path to implementing a global production concept," says Gert Müller, Managing Partner at GEMÜ, commenting on the expansion of production capacities in China. „With the expansion of our factory in Shanghai, we are offering our customers, thanks to the significant production depth, significant improvements in safety and flexibility, and are implementing our „Made by GEMÜ" strategy at yet another location."

GEMÜ Valves China was founded back in the year 2000 and is one of the largest subsidiaries of the GEMÜ Group. Even before expanding production capacities, the company in Shanghai was one of GEMÜ's most state-of-the-art factories. Thanks to the continued investment in employees, design, production and logistics, GEMÜ Valves China is an important site in GEMÜ's global production concept.

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
D 74653 Ingelfingen



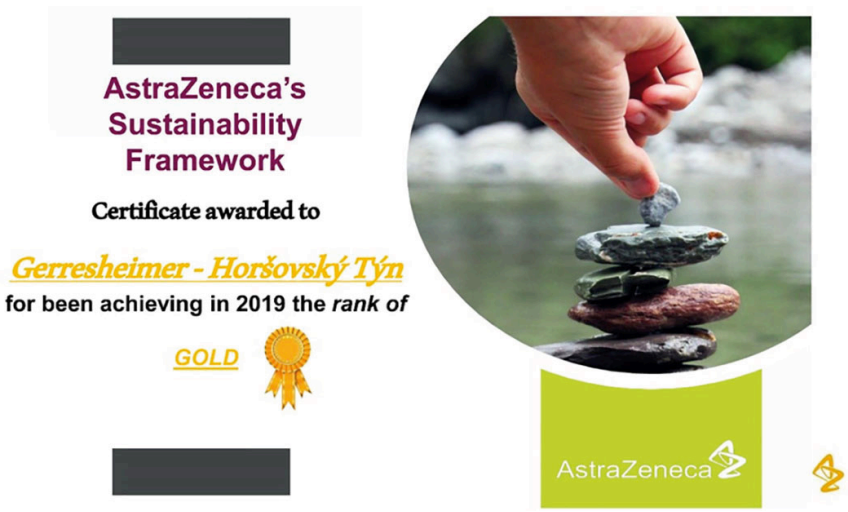
Most modern robot technology in the production process of the GEMÜ R480 butterfly valve.

Gerresheimer receives sustainability award from AstraZeneca

Gold Status for the Horšovský Týn and Pfreimd locations

The two Gerresheimer production locations of Horšovský Týn and Pfreimd have been awarded gold status for the year 2019 by the customer AstraZeneca. The worldwide sustainability program of the pharmaceutical company evaluates its suppliers in the three categories Inclusive, Resilient, and Transparent. Gerresheimer met the required standards in all 3 areas and is therefore receiving the highest distinction for its sustainability management.

Companies no longer only measure their performance with economic success and the quality of their products. Increasingly often, they assume active responsibility for the environment and the people in their area of influence as members of society. In the framework of this development, Gerresheimer sees itself as a pioneer and already established the principles of sustainability and entrepreneurial responsibility years ago in its corporate values and in a comprehensive Corporate Social Responsibility (CSR) guideline. The AstraZeneca pharmaceuticals group pursues a similar strategy and has target that at least 75% of its manufacturing partners achieve at least the bronze standard of the sustainability framework by 2025. The Gerresheimer production locations of Horšovský Týn and Pfreimd, which are active for AstraZeneca, go well beyond this basic level with their sustainability management and were therefore rewarded with gold certificates for the past year.



The prerequisite for a gold evaluation is that a company be active in all three categories of the AstraZeneca Sustainability Framework and fulfill defined minimum standards in each category. Thus, in the Inclusive category, the fields of human rights, diversity, and inclusion, as well as the health and safety of employees and the advancement of health in the local community are evaluated. The Resilient category encompasses the company's performance in the fields of energy and greenhouse gases, water, waste, and ecological balance of products, as well as environmental strains caused by drugs. In the Transparent category, the public CSR reporting, as well as participation in measures to increase transparency are evaluated. The performances are measured through assessments of recognized external institutions like EcoVadis and PSCI EcoDesk.

Gerresheimer AG
D 40468 Düsseldorf

MULTIVAC receives the Axia Best Managed Companies Award 2020

Seal of approval for successful, medium-sized companies

MULTIVAC is a winner of the Axia Best Managed Companies Award 2020, a seal of approval that is awarded by Deloitte, WirtschaftsWoche, Credit Suisse and BDI to companies, which are judged to be outstandingly well managed. Christian Traumann, Group President of MULTIVAC, accepted the award yesterday in Munich.

Medium-sized companies are extremely important to the German economy. The Axia Best Managed Companies Award gives recognition to those medium-sized or family-owned companies based in Germany, which are judged to have exemplary management. The participating companies were able to qualify for the award through a multi-stage process. The evaluation was based on the four core areas of Strategy, Productivity & Innovation, Culture & Commitment, and Finances & Governance. The prize winners were then selected by a jury, consisting of well-known representatives from commerce, science and the media.

"As one of the prize winners, MULTIVAC impressed the judges with its first-class company management - thanks to its great strength of innovation, its long-term strategic aims, and its very strong governance structures. MULTIVAC is therefore not only the benchmark for outstandingly well managed medium-sized companies, it is also emblematic of the future of Germany as a major economic centre," emphasizes Lutz Meyer, Partner and Head of the Program for Medium-Sized Enterprises at Deloitte.

"We are constantly striving to further optimise our business processes, and to align our range of products and services ever closer to the current requirements of the market and our customers," said Christian Traumann, Group President of MULTIVAC. "The award is therefore very pleasing as confirmation of our company strategy and the efforts of all our staff."

Christian Traumann also stated, that a fundamental factor in the company's success was the wide product range, which is constantly being adapted to the needs of the marketplace, and which extends from individual machines for small handcraft companies to fully automated production lines. These include solutions for a wide spectrum of applications - from food processing and packaging through to medical products and industrial items. The success of MULTIVAC is also founded on the international nature of the company. Thanks to its 87 subsidiaries throughout the world, MULTIVAC is not only able to stay closer to its customers and guarantee shorter delivery times, but also compensate for economic risks in some regions with new opportunities in others. And last but not least, as Christian Traumann summarised in conclusion, the high level of in-house vertical manufacturing also makes a major contribution to the company's success.

The Axia Best Managed Companies (BMC) Program is a competition organised by Deloitte, WirtschaftsWoche, Credit Suisse and BDI in Germany, and it is a seal of approval for medium-sized companies. The vision is to build up a national and global structure of outstandingly well managed medium-sized companies. A significant and unique feature of the BMC is its international character: it was founded in the 1990's by Deloitte in Canada, and it has since been introduced successfully in more than 20 countries.

MULTIVAC Sepp Haggenmüller GmbH & Co. KG D 87787 Wolfertschwenden

parts2clean 2020: **Solutions for new and changed cleaning tasks**

18th parts2clean (27-29 October, 2020)

The extraordinary and unpredictable situation caused by the coronavirus presents unprecedented challenges to companies worldwide. Industrial cleaning technology does not seem to play a role here at first. But yet the solutions presented at this year's parts2clean will support companies from the production and remanufacturing sectors in improving their future viability and thus emerge from the crisis stronger.

27th - 29th October 2020: parts2clean 2020, Stuttgart (D)

Home office, meetings via video conference, or remote service - the corona crisis has been causing profound changes in many areas of working life worldwide - even where this was previously considered impossible. „The flexibilization, virtualization and digitalization of work processes made necessary by corona is also leading to changes in industrial parts cleaning," says Olaf Daebler, Global Director parts2clean at Deutsche Messe AG. „Many suppliers have been creative in finding solutions in order to eliminate user problems and provide support without having to be on-site".

The pandemic can become an accelerator for the use of new technologies and processes for the changes which were already emerging in many branches and markets before the crisis. Due to its huge impact on quality, functionality and manufacturing costs of products, industrial parts and surface cleaning is also an enabler for optimizing manufacturing processes and make them more efficient. Additionally, sufficient parts cleanliness is an essential prerequisite for using innovative manufacturing, joining and coating technologies as well as for implementing new products successfully. „ The cross-industry and cross-material offerings at parts2clean make it an ideal information and procurement platform for the manufacturing step component cleaning „, says Daebler. The 18th edition of the leading international trade fair for industrial parts and surface cleaning will take place at Stuttgart Exhibition Centre (Germany) from 27 to 29 October 2020.

Solutions and trends for all industries

Whether plant and process engineering, media, cleanliness control or automation and digitalization of cleaning processes – all relevant suppliers from the various segments of cleaning technology will be on-site, including the market and technology leaders. They traditionally present their new and further developments at the leading international trade fair. Be it for the versatile and demanding cleaning tasks in general industry and remanufacturing. The range of products in this area includes robust and reliable individual systems for intermediate and final cleaning as well as fully automated cleaning systems for highest demands on cleanliness and flexibility, integrable in interlinked production environments, and expandable as required. For electronic and already assembled parts, there is a notable trend towards dry clea-

parts2clean 2020

ning technologies. When it comes to fulfilling very high particulate, organic and/or inorganic or biological cleanliness requirements, visitors can expect new cleaning and drying processes for wet chemical cleaning, as well as new and optimized alternative cleaning solutions like plasma, laser and CO_2 snow-jet cleaning. Among others, the focus will be on applications from the semiconductor supply industry, medical technology, optics, precision engineering, sensor and laser technology, and the coating industry. The automotive industry is also in great demand for new cleaning solutions. Additionally, to the previously dominant particulate cleanliness requirements, film-like contaminants are increasingly coming into focus in the automotive. The reasons for this are new manufacturing and production processes, the continuing increase in lightweight construction and technical developments in drive technology such as battery-based electric drives, fuel cells, hybrid vehicles and the use of so-called E-Fuels. On the other hand, the topic of autonomous driving also plays a role. More than in other industrial sectors, cleaning technologies for the targeted cleaning of functional surfaces, such as adhesive and laser welding areas, are therefore becoming increasingly important in the automotive and supplier industry. A further aspect is the requirements resulting from interlinking and digitalization with regard to communication capability and flexibility.

Transfer of knowledge: parts2clean expert forum

„Among the highlights of the fair are the simultaneously translated lectures (German <> English) of the three-day expert forum", reports Daebler. The meeting point for knowledge, organized jointly with the Fraunhofer Cleaning Technology Alliance and the Industrial Parts Cleaning Association (FiT), enables visitors to obtain specific information about solutions, innovations and trends in industrial parts and surface cleaning.

Parallel event: SurfaceTechnology GERMANY

SurfaceTechnology GERMANY will be held concurrently to parts2clean this year. The international trade fair covers the entire spectrum of surface technology. „With parts and surface cleaning, parts2clean practically dedicates itself to an important production step upstream of coating", says Daebler. „As a result, there are good synergy effects between the two trade fairs, which are of interest to many visitors." parts2clean and SurfaceTechnology GERMANY will be located in the neighboring halls 7 and 9 at the Stuttgart Exhibition Centre.

Deutsche Messe AG D 30521 Hannover

Clean Business

Mobile hospitals, air flows protecting employees in supermarkets and automated pass through airlocks at the chemists. The cleanroom technology industry provides sophisticated technical solutions that could also be largely helpful in the current corona crisis.

„Those working at tills or stocking shelves in supermarkets these days are doing one of the most difficult jobs there are at present. Thank you for being there for your fellow citizens and literally keeping shop", Chancellor Angela Merkel told viewers on television on 18th March 2020. Social isolation, contact bans and curfews can slow down the spread of the coronavirus, but cannot protect those working in supermarkets, hospitals or on the beat. Technical solutions are needed for that. German cleanroom institute Deutsche Reinrauminstitut e.V. (DRRI), whose members include Messe Frankfurt, at the end of March published a blog article about tested cleanroom technologies, which could give a significant head start in the corona crisis.

Employees in supermarkets are now sitting behind hastily put up Perspex screens or cling foil barriers. Cleanroom specialists believe these to have only a symbolic meaning. The experts recommend the use of displacement flows or so-called laminar flows. They keep germs, which are carried in the air, away from employees at all times. For chemists, which are considered to be at especially high risk, DRRI suggests automated pass through airlocks to hand out medicines. Being contactless and ventilated they are an effective measure in the current crisis. The cleanroom industry can also provide new concepts for acute patient care. According to DRRI, Cleanzone exhibitors Dittel Engineering and Vissmann Technologies for instance have launched mobile intensive care units.

How can cleanroom and laboratory specialists help with solutions, which increase the level of hygiene in the economy and society? Research on new ideas is ongoing. Ideas, which can protect employees and the public not only now, but also in the future. At international trade show Cleanzone in Frankfurt, exhibitors will present exciting contamination control and cleanroom innovations from 18th to 19th November 2020.

cleanzone

More ...

cleanzone
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Arburg manufactures high-tech masks

- Multifunctional: Face mask for employees, doctors and nursing staff
- High-tech: Sophisticated LSR product developed and produced in-house in Lossburg
- Cooperative: Numerous partners participate with mould technology, material and automation

After Arburg started producing protective glasses on Allrounder injection moulding machines at its headquarters in Lossburg (Germany) in mid-April, the mechanical engineering company has now launched an additional project to combat the spread of the coronavirus: Since 11 May, face masks are injection moulded from LSR (liquid silicone rubber) and PP (polypropylene). About 3,500 of these multifunctional high-tech masks are expected to be produced daily under series production conditions. The product will initially be used to protect the company's own employees worldwide and will then be distributed as quickly as possible via the district of Freudenstadt to hospitals and care facilities.

„We are involved in various aid initiatives and are also push internal company projects such as this face mask. The demand is enormous. We are receiving specific requests from hospitals and nursing homes from all over the region," says Gerhard Böhm, Arburg Managing Director Sales, regarding the current situation. „We developed the high-quality and sustainable masks made of flexible LSR and PP ourselves and additively manufactured the first prototypes with our Freeformers. The LSR component and mould simulation was carried out using the Sigmasoft software from Sigma Engineering. In a record time of only around five weeks, our partners Polar-Form and Foboha built the corresponding injection moulds for the LSR and PP components. This means that we can now start series production in Lossburg." The companies Ewikon (cold runner) and Männer (hot runner) were also involved in the implementation of the mould technology. Other partners were Barth Mechanik (gripper) and Packmat (packaging technology), the raw material for several 10,000 masks was sponsored by the chemical group Wacker and Borealis.

Multifunctional face mask

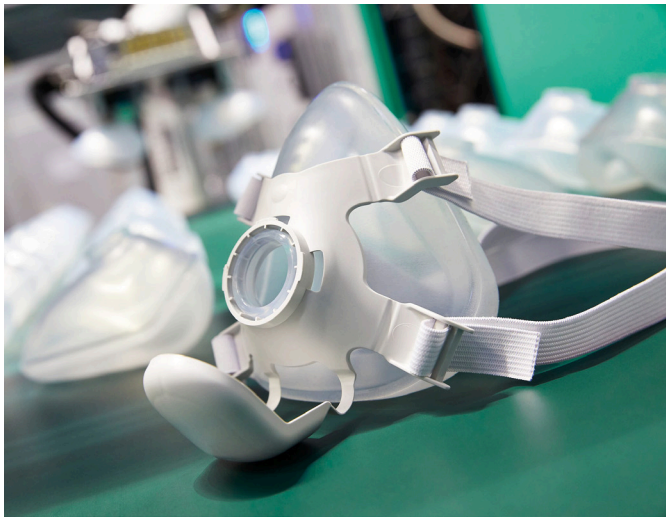
The flexible masks do much more than act as a simple fabric mouthguard: The multifunctional product consists of a soft LSR mask that is put over the nose and mouth and a firm PP shield with eyelets for attaching elastic bands. In the middle there is a standardised connection with a hole (DIN EN ISO 5356-1:2004).

The opening is sealed with a flow gate to protect against infection in everyday life, e.g. for professional meetings or shopping at the supermarket. This diverts the breathing air downwards and thus significantly reduces the risk of infection.

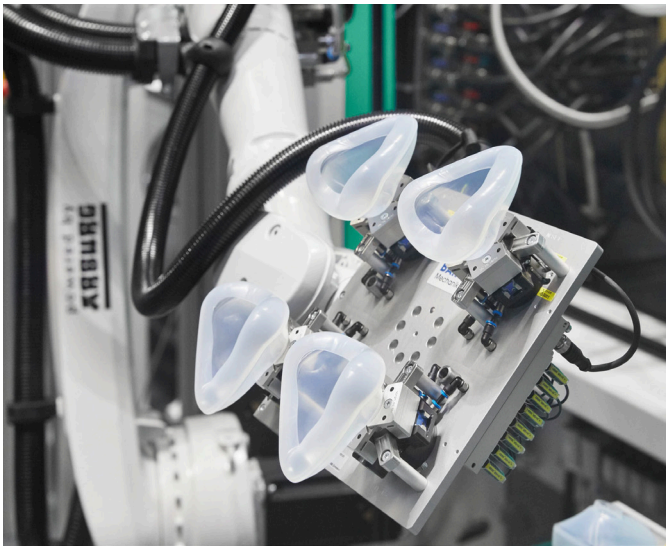
In the next expansion stage, a filter housing can be fitted on the opening. Arburg intends to manufacture this component in cooperation with partners very soon. The companies involved in this project are Weber (mould), Günther (hot runner technology), Küfner (filter), Herrmann Ultraschall (welding technology) and Packmat (packaging technology).

By using corresponding FFP2 or FFP3 filters, doctors and nurses, for example, can reliably protect themselves from viruses or bacteria when in direct contact with sick people.

The masks are designed for multiple use and can be easily sterilised. „It was also important for us to take advantage of the performance of plastic materials and to create a product that is suitable for long-term use. In this way, resources can be conserved," emphasizes Dr. Thomas Walther, Head of the Application Technology Department at Arburg. The temper-free LSR material of type Elastosil LR 5040 is suitable for food contact applications according to FDA CFR 21 §177.2600 and BfR XV. „Silicones", and has been tested for biocompatibility. In ad-



The face mask consists of a soft LSR mask and a firm PP shield with eyelets for fastening the elastic straps. For everyday use, the opening can be closed by a so-called flow gate. (Photo: Arburg)



Four LSR masks are produced per cycle and then removed by a six-axis robot. About 3,500 multifunctional high-tech masks can be produced per day. (Photo: Arburg)

Arburg manufactures high-tech masks

dition, the LSR has good sealing properties, a high tear resistance and can be easily sterilised.

At least 15,000 masks per week

„We expect to produce at least 15,000 of these masks per week in two-shift operation. If we were to work around the clock, it would even be possible to double this number," explains Manuel Frick, who as an LSR expert at Arburg designed the product. Two electric injection moulding machines are being used for this purpose. An Allrounder 570 A with a clamping force of 2,000 kN produces the LSR masks at the Arburg Training Center using a 4-cavity mould from Polar-Form, while an Allrounder 470 E Golden Electric with a clamping force of 1,000 kN and a 2-cavity mould from Foboha simultaneously produces the associated PP shields at the Customer Center. The larger injection moulding machine operates with a LSR dosing system from Elmet and a six-axis robot from Kuka, which, in a sophisticated demoulding process, removes the flexible masks from the mould and places them on a conveyor belt. In the second machine, the PP shields are handled more easily by a linear Multilift Select robotic system. Finally, the PP shield is manually placed on the silicone mask with interlocking, this is completed with the corresponding elastic bands and packed. By using a temper-free LSR, this step can be carried out without disruptive production stops caused by the time-consuming and energy-intensive tempering of the component.

Arburg is involved in the corona crisis (from left to right): Manuel Frick, LSR Sales Manager, the Managing Directors Gerhard Böhm (Sales) and Guido Frohnhaus (Technology & Engineering) and Dr. Thomas Walther, Head of the Application Technology Department, present the first high-tech masks. (Photo: Arburg)

The first contingents of face masks are being distributed to the company's own employees worldwide and to partners who have been significantly involved. In the next step, the district of Freudenstadt will take over the additional coordination and distribution to hospitals, care facilities and civil defence organisations.

ARBURG GmbH + Co KG
D 72290 Loßburg

Pfeiffer Vacuum showcases Hena 50 and Hena 70 powerful vacuum pumps for mass spectrometer systems

- Single-stage, oil-sealed rotary vane pumps
- Backing pump for mass spectrometers and similar applications
- Ideal for laboratory use, sturdy and reliable

Hena 50 and 70 are single-stage, oil-sealed rotary vane pumps which were specially developed for the demanding requirements of mass spectrometer systems. They achieve pumping speeds of between 32 and 59 m^3/h, depending on their size and speed of rotation. Their integrated oil mist separator ensures clean exhaust air. They are equipped with a frequency converter that enables them to be used worldwide with single-phase input and identical pump capacity for 50 and 60 Hz.

A constantly high flow rate in the target pressure range, adjustable pumping speeds and low final vacuum contribute to the instrument's reliable high performance. Long maintenance intervals and operating hours are ensured by the high oil volume in the pumps and their low oil temperature during operation.

Hena 50 and 70 can increase the overall availability of the instrument through their high ruggedness and reliability. At the same time, they are easy to integrate due to their low noise level and efficient oil separation. Both Hena 50 and Hena 70 are certified according to UL and IEC 61010.

Pfeiffer Vacuum GmbH D 35614 Asslar

Pfeiffer Vacuum Hena 50 rotary vane pump.

MEDICAL FAIR INDIA 2020 **offers Outlook on Digital Innovations Galore**

New smart ways of delivering healthcare: 8.700 trade visitors informed themselves about digital and mobile trends in healthcare at the Mumbai Exhibition Centre

As the most relevant innovation platform for the Indian health economy MEDICAL FAIR INDIA attracted health-tech companies, hospital owners, physicians, hospital administration executives and staff, physiotherapists, visitors with a medico-pharmaceutical education and investors as well as innovation specialists from four continents to Mumbai from 5 to 7 March 2020. Under the motto "Smart Hospital" the 26th edition focused on new digital technologies for healthcare, in particular. How can processes be optimised, also and especially at smaller and medium-sized hospitals thereby improving patient care? This was one of the core questions discussed by international experts at MFI. The Coronavirus pandemic and its global effects were also an important topic both at the exhibition and the conference programs.

On just under 5,000 square metres the leading medical trade fair for the Indian subcontinent offered a wide variety of highlights in the programme also one year after its anniversary edition. To the tune of 280 exhibitors from 20 countries showcased numerous product innovations and solutions for the Indian healthcare market. Next to Digital Health and Mobile Health further focal themes of MEDICAL FAIR INDIA 2020 included medical products and medical device technology, laboratory technology, diagnostics, furnishings as well as furniture for clinics and health centres.

"For years digital innovations have played an ever more prominent role in the medical field," explains Thomas Schlitt, Managing Director at Messe Düsseldorf India, and adds: "Which is also why we adopted this theme for our trade fair. We would like to also give smaller hospitals and medical facilities the possibility to exchange and thereby organise themselves smartly."

Tomorrow's Market India

The positive mood in the exhibition halls was reflected in the general assessment of the sector's development. "Over the past weeks we have felt that the world is increasingly perceiving India as a second source of supply for medical products next to China," rejoices Rajiv Nath, founder and coordinator of the Forum of the Association of Indian Medical Device Industry (AIMED) and partner of the MAKE IN INDIA pavilion.

As a networking platform the trade fair offers foreign companies, in particular, good opportunities for entering the Indian healthcare market, that has posted remarkable growth rates over the past two decades. "India continues to be among the most attractive growth markets worldwide. According to estimates, it is expected to rise to being the world's second biggest economy before the USA as early as in 2030," says Franziska Kindervater, Director South Asia of

Thüringen International, an association represented with a joint Thuringia stand at MEDICAL FAIR INDIA. "Alongside sales opportunities for medical device technology and Life Sciences the Indian market holds great potential for such industries as laser and optics, mechanical and plant engineering, automotive as well as aviation and aerospace."

Start-ups and innovative Solutions in Health Care: Future for Health (FTR4H)

Be it panel discussions, fireside chats or live presentations of the Startup Pavilion: as established part of MEDICAL FAIR INDIA, the international conference platform "Future for Health (FTR4H)" dealt with current digital health trends and innovations in a variety of dialogue formats. Furthermore, it joined forces with the "Center of Excellence for IoT & AI in India" initiative to present awards for start-ups that presented their innovative solutions in healthcare. By enlisting the initiative of the IT-industry association NASCCOM Messe Düsseldorf India succeeded in winning over a renowned „Digital Transformation Partner" for the FTR4H Platform.

Other highlights in the line-up of side events at MEDICAL FAIR INDIA included the 5th International Health Conference of Voice of Healthcare (VOH), where the latest technology trends as well as aspects of international cooperation between manufacturers and institutions were discussed, and CLIN LAB INDIA, a conference with exhibition on trending themes in lab medicine, organised in cooperation with Scherago (USA) and Health Care Events (India).

rehaindia, powered by REHACARE, complemented the themes of MEDICAL FAIR INDIA with ranges from the rehabilitation segment. Commenting on this Thomas Schlitt said: "With this 3-day event we have contributed our know-how acquired through REHACARE, the leading international trade fair for nursing care and rehabilitation, for the second time now since this market is increasing in importance in India."

The next MEDICAL FAIR INDIA will be held at the Pragati Maidan Exhibition Center in New Delhi from 25 to 27 February 2021.

Messe Düsseldorf GmbH D 40001 Düsseldorf

In light of the coronavirus pandemic, Centor has decided not to hold an official opening ceremony for safety reasons and plans to make up for this at a later date. This symbolic photo marks the groundbreaking. From left to right: Barry Sprang, 1st shift Warehouse Crew Leader; Bill Miller, Warehouse and Distribution Manger; Mitch Stein, Plant Manager; Mark Weaver, President, Ivan Weaver Construction; Beverly Raber, Plant Controller and Tim Carter, Maintenance Manager.

Centor expands storage capacity

On April 20, Gerresheimer Group company Centor Inc. laid the foundations for a new warehouse covering 72,000 square meters. The new storage facility is being built right next to the existing one on Centor's site in Berlin, Ohio (U.S.). This new warehouse will enable Centor to store all of its products on site, reducing the need for external storage.

"With the new warehouse, we will be able to improve the way we serve our customers and further consolidate our position on the U.S. market for prescription medicines packaging," said Mitch Stein, Centor Plant Manager, who has been working for the company for 32 years.

Centor was founded in 1968 and has its headquarters in Perrysburg, Ohio, while its plant is based in Berlin, Ohio (U.S.). It is the leading manufacturer of plastic packaging and closures for prescribed oral medication on the U.S. retail market. Centor has been part of Gerresheimer since 2015. In the U.S., a common feature on the market for prescription medicines is the "pour-and-count" system. This means that the exact quantity of the oral medicine stated in the prescription is measured into plastic containers specifically for each individual patient. Centor boasts a strong product portfolio for this area, including the Screw-Loc and 1-Clic product lines – the top two varieties of plastic packaging in the U.S. Centor supplies regional and national drugstore chains, supermarkets, and wholesalers.

In addition to Centor in Berlin and Perrysburg (Ohio), Gerresheimer's holdings in North America also include production sites for glass and plastic pharmaceutical containers and products in Chicago (Illinois), Peachtree (Georgia), and Vineland (Morganton and Forest Grove, New Jersey).

In light of the coronavirus pandemic, Centor has decided not to hold an official opening ceremony for safety reasons and plans to make up for this at a later date.

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