

The innovative EcoCvelox combines deburring with individual part cleaning in one system. (Source of photo: Ecoclean GmbH)

Meeting highest cleanliness standards in a flexible and cost efficient manner

Innovation and more for use in deburring, cleaning and service

At this year's parts2clean in Stuttgart, Ecoclean will be presenting its all-new EcoCvelox plant concept. This highly flexible and innovative system combines high-pressure water jet deburring with various low-pressure techniques to clean parts in one single process. In addition, solutions for wet-chemical part cleaning, the digitalization of cleaning processes, and forward-looking service concepts will be exhibited.

Demands on the particulate cleanliness of parts for mechatronic assemblies such as, e.g., hydraulic or pneumatic systems, as well as pump housings and motor housings are becoming ever more stringent. Specifications calling for zero particles larger than 400 µm or even less are now commonplace. Reliable deburring is a basic prerequisite for meeting such requirements.

At this year's parts2clean (hall 7, booth B31) in Stuttgart, Ecoclean will present its innovative EcoCvelox system – a world first that combines 5-axis highpressure deburring with various part cleaning and drying processes

in an efficient and space-saving machine design. The system can be configured and expanded to meet specific process needs and allows parts measuring up to 200 x 200 x 200 mm to be deburred within a 15-second cycle per pallet. For rapid and easy programming of the high-pressure deburring step, whether performed with a single spindle or using a high-pressure turret carrying up to five tools, a CAD/CAM interface has been integrated. This feature, along with the highly dynamic part handling system, allows process workflows for new workpieces to be implemented in a minimum of time. For cleaning and

Meeting highest cleanliness standards in a flexible and cost efficient manner



Forward-looking service solutions such as, e.g., the use of augmented reality for maintenance and repair purposes will likewise be presented. (Source of photo: Ecoclean GmbH)

drying, respectively, the parts can be subjected to injection flood washing, spraying, selective rinsing and ultrasonic processes plus high-speed air blowing and vacuum drying. Depending on the task at hand, the EcoCvelox can be combined and interlinked with other products from this manufacturer's range such as, e.g., a solvent-based system for precleaning oily parts. Fine-cleaning can afterwards be performed using, for instance, the water-based EcoCwave cleaning system that will likewise be on exhibit at this trade fair.

Where very exacting cleanliness requirements need to be fulfilled reliably and efficiently in processing parts for the optical, medical equipment, toolmaking and high-tech or high-purity industries, the multi-stage ultrasonic cleaning systems supplied by UCM AG – an SBS Ecoclean Group company – are the right solution. Thanks to diverse equipment and engineering details and optimum design and process development, these systems set new standards in fine cleaning and ultra-fine final cleaning technology.

The digitalization of cleaning processes is another field for which Ecoclean will be presenting effective solutions at parts2clean. This capability can provide enhanced production planning and hence, increased productivity, in addition to full end-to-end documentation, whether lot- or part-specific, of plant and process conditions and much more.

Forward-looking service solutions, including the use of augmented reality for maintenance and repair work, round out the offering at Ecoclean's trade fair booth. In addition, experienced customer service personnel staffing the „service island“ will provide information on subjects such as predictive maintenance, tailor-made service concepts, customer staff training, and equipment modernization and adaptation.

Ecoclean GmbH
D 70794 Filderstadt



November 2019

Dear subscribers,
there's a lot going on in the next few days. There are many events for cleanroom people:

19./20.11.2019: Cleanzone

19./20.11.2019: Reinraumtechnik und Reinraumpraxis

21.11.2019: Qualitätsforum Medizintechnik

26.11.2019: Reinheit von Medizinprodukten im Herstellungsprozess

Details can be found in the German newsletter - as well as the calendar of events.

In the current issue of the cleanroom online newsletter you will find among others on the following topics:

Meeting highest cleanliness standards in a flexible and cost efficient manner

Cleanroom gloves: Why length matters

Cleanroom technology should focus on product requirements – not on the length, width and height of a facility

...

Yours sincerely

A handwritten signature in black ink, appearing to read 'Reinhold Schuster'.

Reinhold Schuster

Vector kinematics

A new dimension of dynamic cleaning

MAFAC cleaning machines set global standards in terms of cleaning quality, efficiency and application diversity. The patented process technology of counter- or co-rotating movements of spraying system and basket receptacle system is a crucial component of this corporate success. MAFAC has further developed this kinematic system approach and presents the patented MAFAC vector kinematics, an extended cleaning process that provides even more movement and thus faster cleaning and drying.

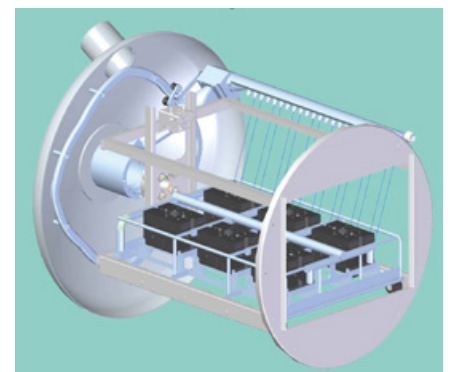
MAFAC vector kinematics - more movement and greater effectiveness

In contrast to the process in a rigid nozzle system, the workpieces are not hit at one specific but from many different angles. The nozzle tube performs both a rotating and a rocking movement. The rocking movement is performed around its own axis by 35° to either side – the basket receptacle system rotates synchronously at an optimally adapted speed. The Maviatic controller of the machines calculates the movement of the basket rotation beforehand, whereby co- and counter-rotation are both possible. Real impact tests showed that this coordinated interaction of nozzle tube and basket movement achieves a considerably more effective impact on the part to be cleaned. Compared to rigid systems, the particle quantity is reduced by up to 70 % while the cycle time remains the same. This means that, in relation to Sinner's circle, vector kinematics leads to a better cleaning result in the same time or to

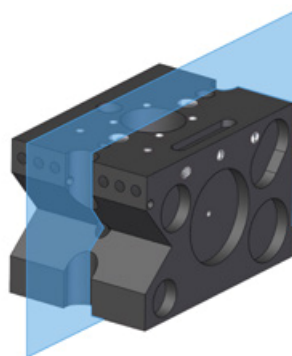
the same result in a shorter time due to the larger mechanical part.

Innovative technology for more flexibility

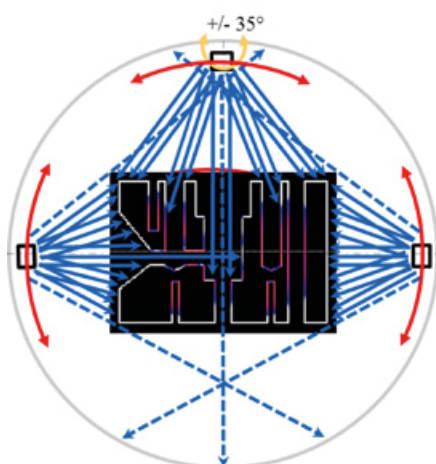
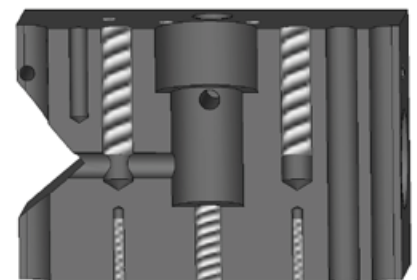
In particular, manufacturers of complex workpieces with geometries and surfaces that can be reached in different ways benefit from this innovative process. The various angles of impact lead to significantly less spray shadows, so that excessive cleaning of easily accessible component regions with valuable resources is avoided. The entire cleaning pro-



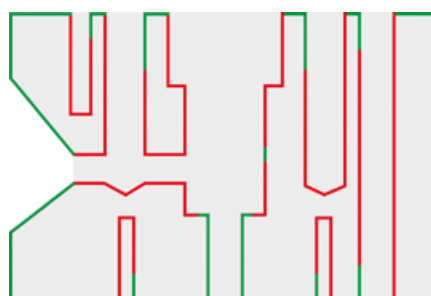
The new MAFAC vector kinematics permits a wide range of different angles for the application onto the component surfaces.



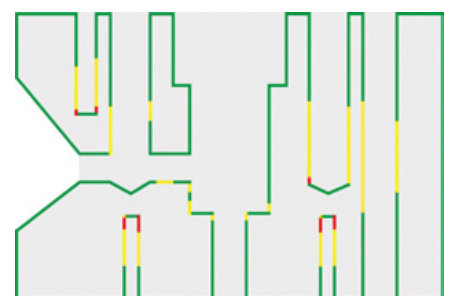
Workpieces with complex geometries such as drilled holes and undercuts, in particular, benefit from the targeted turbulences of MAFAC vector kinematics.



The new process is based on a rocking AND rotating nozzle tube.

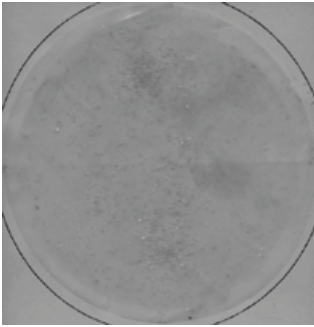


In cleaning processes with a rigid nozzle system, the partial regions which are not exposed (red) outweigh those which are optimally exposed (green).

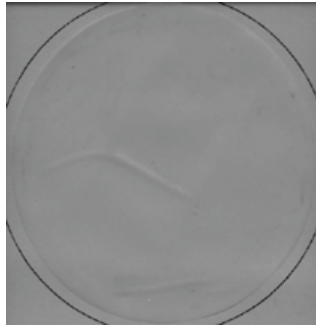


Thanks to angular variance, the MAFAC vector kinematics leads to a significantly better exposure of the components. Optimally (green) and partially (yellow) exposed regions clearly outweigh unreachable locations (red).

Vector kinematics



Residual dirt of a component that was treated with a cleaning method using a rigid nozzle system.



Almost free from particles: The surface of a component cleaned with MAFAC vector kinematics: The weight of particulate contamination is 30 % lower than with a stationary spray tube.

cess is more efficient and more economical as undercuts and blind holes are already reached during spray-cleaning. Previously, this was only possible in the flooding process. In the future, users will also be able to react with significantly greater flexibility to a wide range of parts or to changes in the part program: Thanks to the high angle variance, a large variety of significantly different workpiece batches can be processed - from standard operation to sophisticated and varied angular application. The new MAFAC vector kinematics permits an effective execution of many cleaning tasks.

The new process can be integrated as an option in the MAFAC JAVA and MAFAC PALMA machine types, without any further adjustments.

MAFAC – E. Schwarz GmbH & Co. KG
D 72275 Alpirsbach



Cleanroom gloves: Why length matters

Extra Length = Extra Protection

Cleanroom gloves are designed to protect either products from contamination or the wearer from exposure to chemicals. Once the main reason for wearing the gloves is established, there are many other glove characteristics to be considered – the required tactility, dexterity, antistatic materials etc. In addition, glove length is a factor that is becoming increasingly important.

The popularity of longer length cleanroom gloves is a result of increased awareness and need for extra personal or product protection, along with a drive to cut costs and reduce environmental impact.

The traditional length of a glove used in a cleanroom is 300mm/12". However, when handling hazardous chemicals, such as chemotherapy drugs, the wearer should have the increased protection and reassurance from a glove that is 400mm/16" in length, ensuring the entire forearm up to the elbow is covered and protected from the risk of exposure to harmful chemicals.

A glove which measures 600mm/24" in length provides extensive arm coverage when handling chemicals such as disinfectants. Wearing a 600mm/24" glove during cleaning within an aseptic environment will reduce the risk of garments becoming saturated with cleaning chemicals due to them flowing down the glove onto the garment, especially whilst cleaning equipment at height or at an angle.

Product protection is also of the utmost importance; coverage up to the elbow, with a beaded cuff for a more secure fit on the arm, means longer length gloves eliminate the risk of contamination from exposed skin between the gloves and the cleanroom garment.

Using cleanroom gloves that are longer than the industry stan-

dard removes the need for additional protective items such as sleeve-covers or the use of cuff tape, thereby saving costs and reducing waste, resulting in a positive impact on the environment.

The BioClean Promise

The BioClean range of 400mm/16" and 600mm/24" cleanroom gloves all meet either 1.5 or 0.65 AQL (Acceptable Quality Level) and are suitable for use within the pharmaceutical, life sciences and microelectronics industries, complying with the requirements of the glove standard EN 420, EN ISO 374:2016.

Available in latex and nitrile, sterile and non-sterile, the range offers extra protection while maintaining stringent product protection protocol.

Written product specifications, test reports, advice and samples for BioClean 400mm/16" and 600mm/24" cleanroom gloves are available on request.

Ansell GmbH
D 81829 München

Perfect technology with a minimal footprint for KSM

The BvL Twister rotary indexing system ensures optimum component cleanliness in robot cells

The Hildesheim-based company KSM Castings Group – a renowned manufacturer of cast components – is solving its cleaning requirements within the scope of a new order to produce throttle valves using a new Twister rotary indexing system.

As a specialist supplier in the automotive industry, the KSM Castings Group manufactures components and systems made from aluminium and magnesium using modern casting and manufacturing processes. Within the scope of an order to manufacture throttle valves for a car manufacturer, the company now needs a new cleaning system for their site in Hradek nad Nisou in the Czech Republic to clean cutting oils and swarf from aluminium components. The fully automated production process has been designed so that the new cleaning system is used within a robot-supplied production island between mechanical machining and leak testing. The cleaning system – including the planned drying phase – requires very little space. Short cycle times and the highest cleanliness requirements mean that utmost precision and reliability are required in the process workflow.

When it comes to cleaning systems, KSM has worked for many years with the Emsland-based manufacturer BvL Oberflächentechnik GmbH. As with previous projects, in-depth preliminary talks were held again. It was determined that a BvL Twister rotary indexing system is most suitable for the application specified since the system requires little space yet offers maximum efficiency and speed.

The robots on the production island position the components accurately and securely on the specially manufactured workpiece holders. These have been designed so that three throttle valves can be treated simultaneously in a chamber. Once the first workpiece holder

has been fully loaded, the stainless-steel doors between the treatment chambers open and the Twister system platform rotates 90°. In the first chamber, components are cleaned using a powered rotary nozzle system with flat spray nozzles that has been adapted to the component geometry. A powerful circulation pump ensures the spraying device is supplied, resulting in correspondingly intensive cleaning.

After automatic pre-cycling, the components are rinsed in the next treatment zone using a separate spraying system from the rinsing tank. Similarly to the washing zone, the nozzle system rotates around the components inserted at an angle.

In the next zone, components are dried using a rotating nozzle system similar to the ones in the wet treatment zones, and which is fed by a powerful side channel compressor. Even tappet bores are reliably dried in this way. After being automatically rotated by a further 90°, the components are removed by the robot and forwarded for subsequent leak testing. Thanks to simultaneous cleaning, rinsing, drying, loading and unloading, production downtimes are significantly shortened and the necessarily short cycle time can be maintained.

BvL Oberflächentechnik GmbH
D 48488 Emsbüren



The Twister rotary indexing system from BvL achieves high cycle times and reliable cleanliness while requiring little space within the automated production line.



Three throttle valves that need to be cleaned are placed by robots on specially manufactured workpiece holders and rotated through the treatment chambers as part of the automatic cycle mode.

Cleanroom technology should focus on product requirements – not on the length, width and height of a facility.



Cleanroom technology is applied interdisciplinary technology at a very high level. Even so, costs can still be kept within reason – if the right preliminary measures are taken. On 19 and 20 November 2019 in Frankfurt am Main, the Cleanzone trade fair offers companies a chance to get the information they need.

19th - 20th November 2019: CLEANZONE 2019, Frankfurt am Main (D)

The following example offers a good illustration of what is most important when evaluating costs for cleanroom production. Joachim Ludwig from Colandis GmbH in Kahla: "An automotive supplier submitted a request for an ISO class 7 cleanroom that was hundreds of square metres in size. Initial cost estimates resulted in an offer amounting to some 450,000 euros. After visiting this potential client, however, the sales representative determined that the production systems that were to be used in this cleanroom would be better suited to a mini-environment solution; in fact, all that was missing were the corresponding filter-fan modules for the combined intake, filtration and supply of air. As a result, instead of pouring funds into a new cleanroom, the automotive supplier invested in intelligently upgrading their production systems. The project volume: 35,000 euros!"

This example offers a valuable lesson – a change of perspective is well worthwhile. Deliberations should not start with the cleanroom itself (length x width x height plus various specifications in accordance with the ISO 14644 standard), but rather with the product and the desired level of quality.

Cost-effective laboratory for manufacturing cytostatics

Changing perspective in this way often leads to mini-environments. Here is an example from the field of pharmaceuticals. Egon Buchta from Ingenieurbüro & Reinraumservice Egon Buchta GmbH in Wannweil: "In the field of pharmaceutical manufacturing and production at hospitals and public pharmacies, health authority pharmacies and regional councils are imposing increasingly strict requirements. For example, even though the Pharmacy Practice Order permits three different production variants for cytostatics and for substances that are carci-

nogenic, mutagenic or toxic to reproduction, governmental authorities are increasingly demanding that the most elaborate of these variants be chosen: manufacture in cleanroom class A with a surrounding area of cleanroom class B. This means greater volumetric flows, more rooms and airlocks, higher textile costs, longer periods required for the entry of employees and materials into cleanrooms, and extended measurement times – in short: increased costs in every aspect of the process."

However, it is still possible to find more cost-effective solutions. A new cytostatics laboratory, for instance, can also be planned with the variant 'cleanroom class A with a surrounding area of cleanroom class D'. This requires that work be done within mini-environments (class A glove box) using relatively thick gloves (similar to neoprene). This reduces the size of the cleanroom required, and it means that a lower volumetric air flow is sufficient.

Optimising ventilation technology offers tremendous potential

From the field of pharmaceuticals to microchip production, explains Josef Ortner from Ortner Reinraumtechnik GmbH in Villach, two trends are currently having a major impact: "There is a general move towards the reduction of air volumes, and multitasking components are frequently being used to reduce energy consumption – such as combined filter / fire alarm / ceiling lighting components."

There are countless approaches aimed at reducing air volumes. If air diffusers are installed on ventilation grilles, for example, this can lead to unwelcome turbulence, hindering or even preventing laminar flow. Sometimes, replacing a grille with lateral skirting is sufficient – this also reduces the volume of air circulated. Those who are able to reduce their air exchange rates also lower their energy



(Messe Frankfurt/Sandra Gätke)

Cleanroom technology ...

consumption, increase the service life of their filters and reduce noise levels during operation. However, it is then necessary to account for an automatic increase in recovery times, i.e. the periods during which particulate contamination declines from a predefined level to one percent.

Should further optimisation be necessary, it is worthwhile to visualise the flow conditions in the cleanroom using new 3D video technology and VR glasses. Similarly, when it comes to energy costs, it is almost always a good idea to determine the airtightness of the building shell or the individual cleanroom (e.g. using the blower door test).

In future it will even be possible to adapt air exchange volumes to the number of employees thanks to intelligent access control systems. No longer will it be necessary for cleanroom operators to provide for safety margins for particle concentrations that are multiples of what is actually required – something that is not at all uncommon. Josef Ortner remembers: "For one customer, we analysed all of their processing facilities, and by the time we were finished, we had been able to reduce the required volume of process air by 40,000 cubic metres a year thanks to various fine-tuning measures."

It's time to start the dialogue – at Cleanzone, the international trade fair for contamination control and cleanroom technology, on 19 and 20 November in Frankfurt am Main. As to which specific items of cleanroom technology should be deployed, ISO 14644 is a fundamental standard that serves as a good starting point, as does the VDI 2083 guideline series from the VDI Association of German Engineers.

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Messe Frankfurt and Wiley present the Cleanzone Award



(Messe Frankfurt/Sandra Gätke)

The industry's prestigious Cleanroom Award has a new name: the Cleanzone Award. Frank Duvernell, a close and long-standing partner of Cleanzone and founder of the Cleanroom Award, has handed over the award to Messe Frankfurt, which will be continuing it under a new name: the Cleanzone Award. The new partner is Wiley-Verlag, publisher of the trade journal ReinRaumTechnik. A total of eight finalists for the award will be presenting their latest innovations at Cleanzone on 19 and 20 November in Frankfurt.

Since 2012, the Cleanroom Award has been presented at the international trade fair for contamination control and cleanroom technology, and it has become a highly respected honour within the industry. Kerstin Horaczek, Group Show Director for Technology at Messe Frankfurt: "I would really like to thank Frank Duvernell for making the award what it is today. We are delighted that we can continue with this award, and that we have been able to gain the publishing house Wiley-Verlag as our new partner. With their invaluable expertise and excellent network in the cleanroom community, we will make this award even more important as an innovation driver in the industry in future."

The Cleanzone Award honours outstanding innovations that set new standards for efficiency in the field of contamination control and offer key concepts for the future of cleanroom technology. The award promotes innovation in a field whose role at the forefront of dynamic high-tech industry makes providing new solutions a regular necessity.

The companies and their innovations:

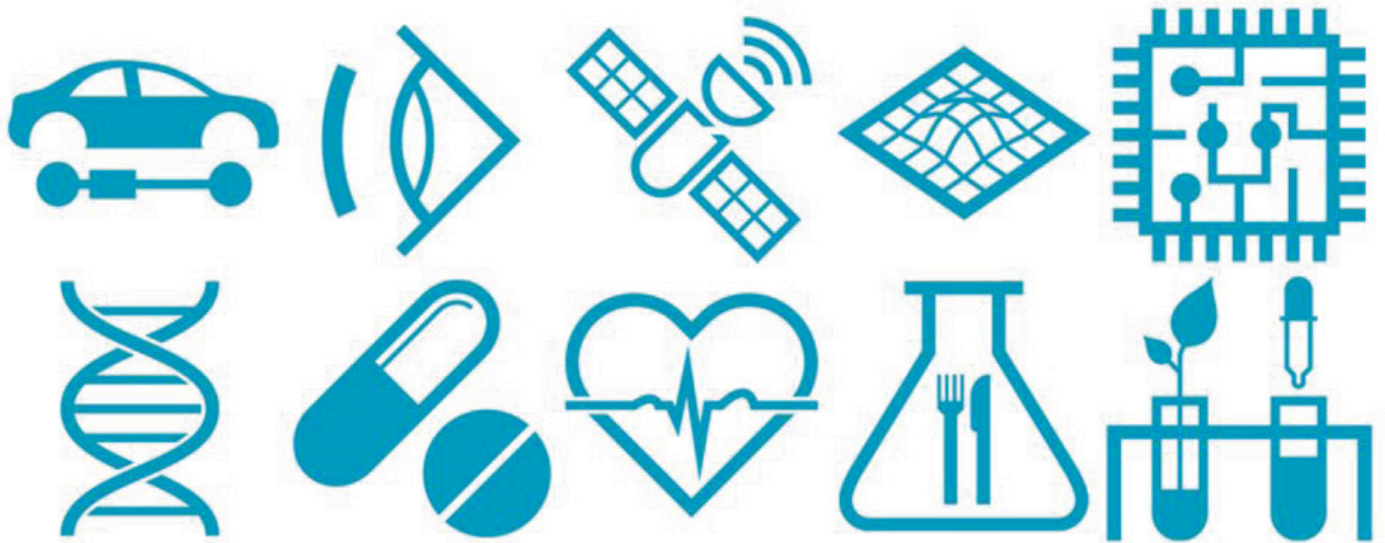
- **Cleanroom.de:** myCleanroomShopAR – Game-changer in cleanroom e-commerce
- **Commend:** Commend Emergency and Danger Response System for Clean Rooms ENSURING LOW RISK FOR HIGH TECH
- **Friedrich Sailer:** Hygienic Design Magnet – Magnetic Mounting Solution for Cleanrooms
- **Elis:** Reusable autoclave bags
- **Ergo/Physion:** Tension Terminator: The device that eliminates tension
- **ISO One:** Cleanroom Lighting
- **RAL:** The new standard colour RAL 9012
- **VWR:** ViVi® - designed for high performance

All eight finalists for the Cleanzone Award 2019 worth 3,000 euros will be presenting their projects in the Cleanzone Conference area on 19 November from 1:00 to 2:00 p.m. International trade fair guests will also be able to find out more about these innovations at a special exhibition at the trade fair. From these eight nominees, visitors to the trade fair will choose the winner, who will be presented with the award at the Cleanzone Conference on 20 November from 1:00 to 2:00 p.m.

Symbols for user industries show visitors the way



Cleanroom technology is an interdisciplinary technology that is relevant for a wide range of high-tech industries that control contamination in their production processes. To guide visitors to the right exhibitors, Messe Frankfurt has developed symbols for different user industries for Cleanzone 2019. Now manufacturers of cleanroom technology can use these symbols to identify the industries for which they supply solutions.



(Source: Messe Frankfurt)

A total of ten symbols will be guiding visitors at Cleanzone 2019, the international trade fair for contamination control and cleanroom technology, on 19 and 20 November in Frankfurt am Main:

- Automotive industry
- Optics and laser technology
- Aerospace technology
- Surface technology and plastics technology
- Microelectronics / microsystems technology
- Biotechnology
- Pharmaceutical industry
- Healthcare
- Food technology
- Chemical industry / analysis / cosmetics

Kerstin Horaczek, Group Show Director for Technology at Messe Frankfurt, explains the advantages: "Contamination control is required in ever more industries today, yet the requirements and standards often differ significantly. To help visitors make sense of what is on offer, we have introduced symbols for their applications. Now, visitors can immediately see which exhibitors offer solutions for their industry." The advantages for exhibitors are plain to see: by using these symbols, they can address visitors for whom their innovations will be of interest.

"Naturally we hope to create greater clarity with these symbols for industries and users, and with its interdisciplinary approach, Cleanzone offers the ideal venue for this," adds Horaczek. Companies can

also employ these symbols in their own publications for Cleanzone to indicate their areas of application.

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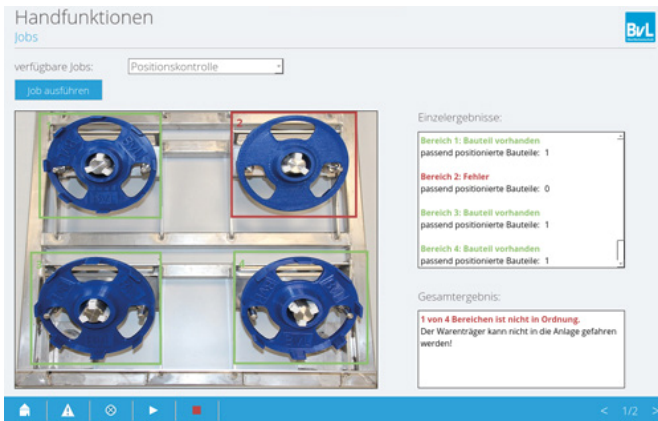
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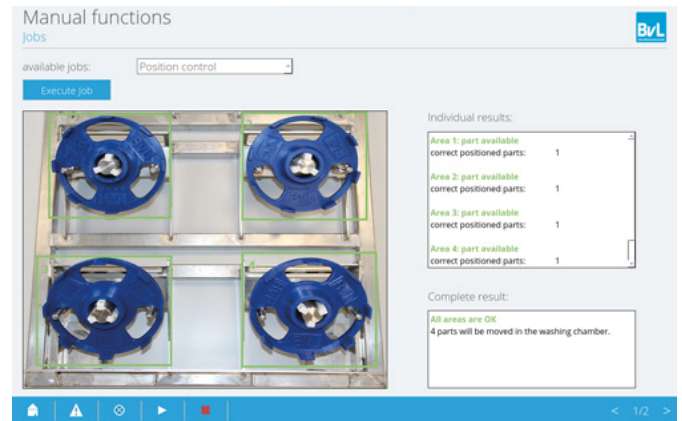
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Internet: <http://www.messefrankfurt.com>



Libelle Product Control uses the “Position Monitoring” app to detect incorrectly positioned components on the workpiece holder.



All components are positioned correctly, allowing the specially aligned nozzle system to carry out optimum cleaning.

Component check: the perfect position for top quality cleaning

Libelle Product Control from BvL detects position deviations

With a new product from the intelligent cleaning portfolio, BvL Oberflächentechnik GmbH offers new options for component control: Libelle Product Control generates photographs and stores these for various applications. Initially, the “Position Monitoring” application monitors the feeding and alignment of the components to be cleaned. The new product will be presented for the first time at Parts2Clean in October.

Reliable, thorough parts cleaning plays a crucial role in production processes across all industries. The more precisely the nozzles are directed at the component to be cleaned, the more efficient cleaning is possible. Precise loading of the workpiece holders is particularly important for components with complex geometries. Even undercuts, edges and very small holes then no longer impede thorough cleaning.

Exact component detection regarding number and position

With an addition to the sensor system product line under the name of Libelle Product Control, the cleaning system manufacturer



The NiagaraDFS basket washing system from BvL, for example, offers optimum integration options for Libelle Product Control.

BvL Oberflächentechnik provides an essential prerequisite for a perfect cleaning process. With the help of the “Position Monitoring” app, the system counts and checks the elements to be cleaned. This allows Libelle Product Control to detect the number of loaded components and their position. If a component is missing or was placed in the workpiece holder slightly offset, the sensor system signals the corresponding information to allow correction.

Detailed integration of individual requirements

Libelle Product Control can be integrated into a Yukon continuous system or Niagara basket washing system, for example. During customised manufacturing of the respective cleaning system, detailed photographs are already taken of the respective component as part of the teaching process. The ambient conditions are just as important for the function as the individual customer requirements regarding output of the results and control of the cleaning system, adapted to the existing cleaning process.

Further development options for Libelle Product Control

In addition to the currently available “Position Monitoring” application, the technical options of Libelle Product Control allow additional applications which are currently undergoing intensive further development at BvL. This is always driven by the objective of continuously increasing the quality and process reliability of parts cleaning.

60 Jahre ILMAC – a successful anniversary edition comes to an end

21.09. - 23.09.2021: ILMAC 2021, Basel (CH)

From 24 to 27 September 2019, the life sciences industry, including specialists from the pharmaceuticals, chemicals and biotechnology sectors, met up in Basel.

The quality and specialist competence of the visitors was very high. Visitor numbers were up by 2% compared with 2016, totalling 12,270. Exhibitor numbers were also slightly above the figure for the previous trade fair. For the first time, more than one trade fair was staged.

Parallel events

One new feature launched in 2019 was the MUT trade fair for environmental technology covering the sectors of environment, water and waste water.

The Forum included exciting topics like „Raw materials and energy carriers – the further processing of waste into new products“ and „Digitisation in waste management – a step towards greater sustainability and resource efficiency“.

In parallel to ILMAC and MUT, the PHARMA LOGISTICS DAY powered by Lamprecht Pharma Logistics AG was held in Hall 2.0 on 25 September 2019. This one-day event was staged at Messe Basel in order to better exploit synergies, strengthen PHARMA LOGISTICS DAY and expand ILMAC.

On PHARMA LOGISTICS DAY, exhibitors from the logistics and packaging sectors were able to provide visitors with information on their innovations. Those who came enjoyed an interesting Forum programme in an appropriate look for the logistics industry.

The highlights

The 60th anniversary edition of ILMAC included various highlights for visitors and exhibitors in the customary manner. New features included the Experience Zone (providing a somewhat different visitor experience), the Job Fair and a Hologram Show. InnO², the Forum and the Networking Zone had all been redesigned. The Forum was organised with the Swiss Chemical Society, which staged the „Women in Chemistry Inauguration Gala Night“ for the first time on 25 September 2019. The Swiss Army with the ABC Defence Corps Spiez impressed visitors with its vehicles and equipment, giving insight into the work of the Swiss Army.

Networking Event and ILMAC Drug Party

On the second day of the fair, the Networking Event was held. Here, the 450 or so exhibitors gave visitors the opportunity to get to know ILMAC and the parallel fairs from a different angle, up until 18:30. The exhibitors provided visitors with music, cocktails and a great deal more for their socialising and networking. The evening ended with the popular and very well attended ILMAC Drug Party.

Facts

Visitor numbers were gratifyingly 2% higher than for 2016. The number of exhibitors also rose, totalling 440.

ILMAC 2021

ILMAC is being held every two years in future, for three days, alternating with ILMAC LAUSANNE. The sector will be meeting up again in Basel on 21-23 September 2021.

Feedback on ILMAC

„ILMAC is our in-house fair: we attained our target yesterday already. The quality is also spot on – the right visitors came to our stand.“
Michel La Torre from Connectors Verbindungstechnik AG

„We have a regular high number of visitors. The trade fair has succeeded in mobilising the corresponding professionals. We will be coming again.“

Paride Bonini from VEGA

„Although we had fewer visitors to our stand, the contacts we were able to forge were far superior to last time.“
Stefan Hiltbrand from ebro Electronic GmbH

07.10. - 08.10.2020:
ILMAC LAUSANNE 2020, Lausanne (CH)

ILMAC

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COMPAMED 2019 showcases the entire spectrum of supplier expertise for the medical technology industry



From microtechnology and high-performance synthetics to bacteria-resistant implants

Author: Klaus Jopp, freier Wissenschaftsjournalist (Hamburg)

In the middle of November (from 18 to 21 November 2019), COMPAMED, the international leading industry platform, will showcase the entire spectrum of supplier expertise for the medical technology industry in Düsseldorf once again. From catheters to pressure sensors, from hip implants to packaging machines, from labs-on-a-chip to new materials for devices or hygiene-critical surfaces, the astounding innovation shown by our almost 800 exhibitors from 41 countries is on stage in trade fair halls 8a and 8b. As always, COMPAMED takes place alongside its tried-and-trusted partner MEDICA, the world's biggest medical trade fair (5,300 exhibitors from 69 countries).

18th - 21st November 2019: COMPAMED 2019, Duesseldorf (D)

Plastics are becoming more sought-after as innovative materials in medical technology because they are not only lightweight but also often have other properties that are indispensable for this range of applications. These qualities include mechanical durability, biocompatibility and the fact that they can be sterilised and also be used in creating clean rooms in order to meet the stringent hygiene requirements for implants and blood-conducting systems.

Recently, Evonik Venture Capital invested in Meditool, a Chinese 3D printing start-up company that manufactures implants for neurosurgery and spine surgery. This technology enables faster healing and fewer post-operative check-ups for the patient and a lower level of risk for doctors during operations. Meditool develops its own hardware and software systems that can read the imagery from current MRI (Magnetic Resonance Imaging) and CT (Computed Tomography) scans directly and process it. The software generates a printable 3D model from this data and sends it to a printer. The printer creates the implant as a 3D printout with the high-performance polymer poly-

ether ether ketone (PEEK) supplied by Evonik (Hall 8b, Stand E24). "The technology from Meditool fits in perfectly with our strategy to expand our business in high-tech applications for our 3D printing materials", says Thomas Grosse-Puppenthal, head of the additive manufacturing innovative growth field, and adds: "Medical applications are of particular interest to us here. Our high-performance polymers have already proved themselves as reliable implant materials in the dental sector, among others."

Revolutionary implants made of plastic

For patients and doctors, 3D printed PEEK implants are revolutionary in comparison to metal implants, which is currently the usual solution on the orthopaedic implant market. 3D printing enables the implant to be tailored to the individual so that a plate can be perfectly fitted to the patient's skull shape, for example. This reduces the likelihood of further interventions which may be required to adjust the size, form or position of the implant. In addition to this, PEEK conducts less heat than metal does. For patients that are exposed to high or low temperatures, this means that the implant will not become excessively hot or cold. Furthermore, the material is biocompatible and is therefore not harmful to living tissue. CT and MRI scans can also be executed following the operation.

Wearable electronic patches are already used in many areas in medicine and also in patient monitoring and diagnostics. The market demand for these is increasing rapidly in correlation with the advancing digitalisation of the healthcare sector. The design of these patches enables a variety of applications to be used to monitor vital parameters without severely limiting the patient's mobility. Wearables must, in any case, be worn on the skin constantly for an extended period of time. This means that they must protect the skin but also adhere to it sufficiently. They should also be as painless as possible to remove. Taking all of this into consideration, Covestro proffers material solutions for improved patch design. Their array is the answer to



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growing consumer demand for more comfort when wearing these devices. This plastic company has come up with material combinations to create light, flexible and barely visible plasters that are pleasant to wear. To this end, Covestro has developed special active-breathing polyurethane films (TPU) in the Platilon range. The materials are manufactured in a roll-to-roll process which enables wearables to be produced efficiently. The electronic product can be printed on the film and embedded in thermoformable polyurethane foam. It is then coated with a second sheet of film to increase wearer comfort. The plaster is then stuck on with an adhesive that is specially formulated to be gentle on the skin, which provides firm adhesion but also enables the plaster to be removed painlessly. Covestro (hall 8b, stand H30) thus offers a fully-fledged solution for high-quality modern patches.

The French company CG.TEC Injection (hall 8a, stand G19) is also making waves in the plastics business as a leading partner in precision injection moulding of technical plastic parts. This process is indispensable for medical technology, particularly for lab-on-a-chip systems. CG.TEC will take over the manufacturing of these microfluidic parts, from design to production. The tools for this will be developed and produced in-house.

Picosecond laser systems for medical technology

Coherent (hall 8a, stand F35) is a company that specialises in industrial picosecond laser systems. At COMPAMED, Coherent presents its compact laser cutting system, the ExactCut, for processing thin and thick metals and alloys, including brittle materials such as sapphire, PCD and ceramics. The StarCut Tube SL precision laser system is particularly well-suited to cutting medical implants (such as stents) and instruments. Another product, the ExactMark, is intended for marking and black marking (unique device identification, UDI) stainless steel for medical technology.

microsensys (hall 8a, stand H29) produces miniature tags which use RFID technology for sample and instrument identification. These are sterilisation-resistant and can be used in pre-purification of surgical instruments. They can provide data for clear identification and process management, such as for sterilisation processes. The TELID311. ac temperature data logger furnishes seamless and efficient temperature monitoring during autoclave steam sterilisation under conditions reaching up to 134°C and 3 Bar. This logger can thus document the specified temperature curves in practice with certainty for periodical inspections.



IVAM Microtechnology Network

CG.Tec, Coherent and microsensys are united under the same umbrella; these innovative companies are all exhibiting on the huge IVAM Microtechnology Network joint stand in hall 8a with around 50 other companies. The main focal subjects for the IVAM Microtechnology Network are microfluidics, sensor technology, microelectronics and optical technology and their applications, such as laser procedures. Dr. Thomas R. Dietrich, CEO of the IVAM, states how significant microfluidics is for medical technology: "Mobile diagnostic and therapeutic devices cannot be created without microfluidic components that process small amounts of fluid". This topic is one of the highlights of the COMPAMED HIGH-TECH Forum, which has been a popular part of COMPAMED for many years. "This year, it will be further reaching and more international than ever before; we are holding 11 sessions with around 70 high-profile speakers from all over the world", says Mona Okroy-Hellweg, Spokeswoman for the IVAM.

The COMPAMED HIGH-TECH Forum becomes even more international

The huge amount of international interest is reflected in the special sessions in the program: Monday 18 November kicks off with a "Dutch session" which shows the innovations from the Netherlands. On the following day, Tuesday, three presentations on the medical technology market in Japan and Japanese companies' interest in the European medical technology market take the spotlight. In essence, the most popular topics from previous years are remaining in trend at the forum and will be allotted their own sessions again this year: "Printed Electronics und 3D-Printing", "Laser and Photonics Applications", "Smart Sensor Solutions" and "Microfluidics for Diagnostics and Life Sciences".

In addition, the forum will showcase two premiers this year: New topics such as the "Digitalization of Medical Equipment" session form one part of this, and the other component consists of completely new presentation formats. A session titled "Equipment Manufacturer meets Component Manufacturer" proffers a session that allows equipment and component manufacturers to get to know each other by giving company pitches will be held for the first time.

The companion to the HIGHTECH Forum in hall 8a is the COMPAMED Suppliers' Forum from DeviceMed in hall 8b. This year marks its 8th edition, and it gives a panoramic overview of all of the aspects of development, manufacturing and approval of medical products. It covers the entire value-added chain across all realms of technology and more, from electronic manufacturing to plastic and metal processing, over the four days of the trade fair. Presentations are slated to begin at 11 am from Monday to Thursday. The sessions for the most popular topics will take place at midday. This year, these include electronics, additive manufacturing and regulations and formalities. "This means that visitors receive an update on both the exhibitors' offers and current trending topics", promises Peter Reinhardt, Editor-in-Chief at DeviceMed and responsible for selecting the presentations.

Micro camera systems for neurosurgery and ophthalmology

Imaging procedures continue to play a major role in medicine and medical technology. Panasonic (hall 8b, stand H33), a big provider in this segment, has therefore consistently expanded its palette of industrial medical vision cameras. The OEM micro camera systems

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offer flexible high-performance technology solutions that have already proved themselves in neurosurgery and ophthalmology. These high-quality systems can easily be integrated into different applications, depending on the user's requirements. Comprehensive support from Panasonic reduces development times, unexpected risks and unnecessary investment. Furthermore, interfaces with multiple formats and outputs guarantee maximum compatibility and user-friendliness. This is all completed by a surgical video display system, "Industrial Medical Vision" (IMV). It was specially developed for a multitude of applications such as medical training and surgical documentation.

A double defence against bacteria on implants

The Fraunhofer Gesellschaft is represented by its many institutes across many stands at this year's COMPAMED. Four representatives (IFAM, IME, IZI and ITEM) will showcase their solution (the Synergy Boost project) for fighting infections when implants are placed on the joint stand (hall 8a, stand H23). Inserting hip or tooth implants is a routine procedure. However, these interventions are not entirely risk-free. For instance, infections can be contracted that can only be contained with difficulty, via treatment with antibiotic tablets or IVs. In these cases, the implant generally has to be replaced with a new implant.

Fraunhofer researchers are now coating the replacement implant with targeted medication to fight the causative bacteria and are also multiplying the effectiveness of the antibiotic synergistically by using silver ions. Kai Borchering, a scientist at Fraunhofer IFAM, explains: "In addition, we have researched the synergistic effects of antibiotics and silver ions and can thus increase efficacy significantly". This means that both the antibiotic and the silver ions kill bacteria, but the cumulative effect packs more of a punch than all of the individual actions it combines; these mechanisms bolster each other.

Firstly, the bacteria and the antibiotic to treat it are defined. Then the antibiotic is applied directly to the implant. "We have developed a variety of different coating methods for this", says Borchering. The result: The researchers structure the surface so that the antibiotic can be impregnated into it. The coating, which contains silver, is applied to the surface of the implant in a vacuum.

All of the aforementioned examples show that the suppliers are strong partners for the medical technology industry, which benefits from this close cooperation more than ever in a time when trade restrictions are more stringent, approval processes are tougher and margin pressure is higher.

Messe Düsseldorf GmbH D 40001 Düsseldorf

Gerresheimer opens Glass Innovation and Technology Center in the U.S.

Gerresheimer is driving innovation in pharmaceutical glass, primary packaging glass products, technologies and digitized processes. In the future, highly qualified engineers at the recently opened "Gx Glass Innovation and Technology Center" will develop innovative solutions for the pharmaceutical sector that meet today's and future demand of the pharma industry. During a customer event with more than 100 participants the CEO Dietmar Siemssen opened the new innovation center in Vineland/New Jersey/US.

"We are leading in health and well-being delivery. We are developing first-class glass solutions to meet highest quality requirements. In our new innovation center we will bundle our glass expertise and all our experts to develop new products and technologies, together with our customers in one place. Among those enhanced value propositions for our customers are Gx Elite Glass, ready-to-fill vials, strengthened glass and much more to come," said Dietmar Siemssen, CEO of

Gerresheimer AG, in his opening speech at the new Gx Glass Innovation and Technology Center.

Gerresheimer has made significant investments in its production sites in the Americas over the past few years. In the Gx Glass Innovation and Technology Center, the company will intensify glass innovations as well as optimize all its processes to enable the Gerresheimer plants worldwide to make pharmaceutical glass of the highest quality. The team will work on new products, further digitization, process capabilities, camera inspection systems and much more.

Pooled development capacity

There are clear benefits to pooling development capacity at a single site: 25 experts and engineers specialized in glass technology will work together on innovation in a setting that is conducive to collaboration thanks to an open-plan office, project and meeting rooms, allowing interactive co-working with customers onsite. The innovation center is the first of its kind for Gerresheimer Primary Packaging Glass and was recently built next to the tubular glass converting plant in Vineland. Thereby the innovation center can develop new products and processes very close to a production site, involving the operational expertise of the engineers at that plant.



CEO Dietmar Siemssen (center), CFO Dr. Bernd Metzner (right) and Gary Waller (left), President Gerresheimer Glass Inc., opening the new Gx Glass Innovation and Technology Center.

Gerresheimer AG
D 40468 Düsseldorf

Flexible packaging solutions for small to medium-sized batches



MULTIVAC at Compamed 2019 in Düsseldorf (Hall 8a, Stand H01)

At Compamed, which takes place from 18 to 21 November, MULTIVAC will be showcasing its comprehensive expertise in automation and packaging of medical products in small to medium-sized batches. These efficient solutions are ideally suited to packing a wide range of products in many different pack formats.

18th - 21st November 2019: COMPAMED 2019, Düsseldorf (D)

One of the MULTIVAC highlights at the exhibition is a packaging line for sterile medical products, which is equipped with an automatic in-feed system for loading pre-filled glass or plastic syringes. The heart of the line is a R 245 thermoforming packaging machine, which is capable of being freely configured. The infeed system, which brings the products directly into the pack cavities in a very controlled and reliable way, consists of a shaft infeed system, a separating wheel, a transport conveyor and an H 242 handling module. For printing the packs with variable production data, a high-performance digital printer from Bell-Mark is used, which features a large print area and excellent print quality on a wide range of materials. A visual inspection system from MULTIVAC provides automatic monitoring of quality and print. All the MULTIVAC components are synchronised with the thermoforming packaging machine, and they can be operated conveniently and reliably via its control terminal.

Among the other exhibits is the R 081 thermoforming packaging machine. This compact model is ideally suited to producing small batches, or as an entry-level solution for companies making the transition to automated packaging. The machine can be used for producing both vacuum packs and modified atmosphere packs with reduced residual oxy-

gen content. Flexible and rigid films as well as Tyvek® and paper-based packaging materials can be run with ease. At Compamed the R 081 will be equipped with the DP 230 direct web printer, which has a TTO 06 network-enabled thermal transfer printer. The DP 230 can print the packs in both the film running direction and across it, and it is therefore ideally suited to machines equipped with multi-row and multi-track dies.

MULTIVAC will be showing the C 300 TC chamber machine for packing sterile medical products in pre-made pouches. It enables packs to be produced either as vacuum packs or with modified atmosphere and reduced residual oxygen content. A temperature-controlled and permanently heated sealing bar ensures that this cleanroom-compatible machine achieves reproducible sealing quality, and the whole process can be calibrated and validated.

And last but not least, MULTIVAC will also be presenting a solution for the semi-automatic packing of small to medium-sized batches in trays. The compact model offers a high degree of process reliability, reproducibility and quality.

In Düsseldorf MULTIVAC will also be showcasing Snapsil®, an innovative concept, which was developed in conjunction with the Snapsil Corporation for producing packs



with different functions to simplify opening and reclosing. The Snapsil packs, which can be produced on thermoforming packaging machines and traysealers from MULTIVAC, are suitable for a wide range of medical and pharmaceutical products, such as for example syringes, tablets, plasters, injectors and catheters etc. Thanks to their integrated „snap opening“ feature, the packs are simple to open in the hectic everyday life of hospitals and nursing homes, and they can also be opened easily by elderly people or those with disabilities. If the packs are equipped with a „click-to-close“ feature, they can be easily opened and reclosed securely for multiple use. In addition to this, tamper-proof protection ensures that maximum product safety is maintained.

MULTIVAC Sepp Haggenmüller GmbH & Co. KG
D 87787 Wolfertschwenden





Link screwdriving systems simply
– with the DEPRAG Cockpit.

An important plus for new DEPRAG screwdriving system



MOTEK 2019 – highlighting trends in process optimisation - Specialist is gearing up for the digital future

05th -08th October2020: MOTEK 2020, Stuttgart (D)

All the big names in the industry are represented at the MOTEK international trade fair for automation in production and assembly at the Stuttgart Trade Fair Centre between the 7th and 10th of October 2019. Designers and operators will find cross-sector approaches, ranging from detailed solutions to turnkey system solutions. The unique industry platform showcases a wide range of cutting-edge solutions and the latest trends for optimisation in assembly processes.

At the exhibition stand in hall 5, DEPRAG SCHULZ GMBH u. CO. is presenting the new screwdriving system DEPRAG Plus – the future of screwdriving technology. „This is not reinventing the wheel, it is a

question of highly effective fine-tuning, as a result of technological advances, which have released enormous potential,” explains Daniel Guttenberger, Product Manager for DEPRAG screwdriving technology. Connectivity, user-friendliness, flexibility, efficiency and documentation capabilities: these key characteristics are decisive factors in choosing a screwdriving system. These features were all vitally significant in the development of the new generation – a platform for the digital future.

Product Manager Guttenberger continues, „Our new screwdriving system DEPRAG Plus has been designed entirely in-house, drawing on our expert knowledge of EC and EC-Servo technology and even providing improvements wherever a client requires additional features.“ The DEPRAG Plus screwdriving system is composed of the new sequence controller AST12 and an appropriate screwdriving tool. This can either be a handheld or a spindle screwdriver.

Platform for the digital future

From now on, the newly developed sequence controller AST12 will replace any forerunners. It provides a uniform, flexible concept for system communication interfaces and industry 4.0 interfaces. It can be controlled via standard input/output, Profibus or Industrial Ethernet (Profinet, EtherCAT, EtherNet/IP). The industry 4.0 interfaces OPC UA, MQTT, REST and FTP can also be used. They are a requirement for



DEPRAG sequence controller AST12.



Screwdriving system DEPRAG Plus:
sequence controller AST12 with
handheld screwdriver 321E.

An important plus for new DEPRAG screwdriving system

machine-to-machine communication and smooth data exchange – the added plus of connectivity.

The screwdriving system also scores plus points with its user-friendliness. The AST Manager provides a central management user interface, where screwdriving programs can be created easily, software can be activated and general settings can be adjusted. The web-based operator interface has a responsive design and is perfectly suited to any end device.

Furthermore, with the AST Manager, screwdriving programs can be organised and program groups can be created. This allows the customer to structure screwdriving processes according to component variant or product type. Fast product changeover and simple retrieval of screwdriving programs means a considerable time saving in assembly and a reduction of idle times.

System settings and screwdriving parameters can easily be backed up or transferred to another sequence controller. A standard WLAN client can also be used to establish wireless communication between a PC and the sequence controller, for example, in the case of inaccessible sequence controllers or if space restrictions are an issue. Using the hypertext transfer protocol https, safe transfer of information is guaranteed.

The screwdriving system DEPRAG Plus ensures the highest flexibility and can be used as a central platform for both handheld and spindle screwdrivers. The system is extremely versatile in the face of changing assembly requirements. It reduces the need for and expenses of training and the AST Manager provides intuitive operator guidance. With the DEPRAG Apps, additional software solutions and updates are available at any time. A wide variety of interfaces and screwdriving procedures can be unlocked according to requirements.

Another new option is the setting of customer-specific logic functions: various assembly sequences, such as scanning, part locking, screw position monitoring can be logically linked with one another. There are five inputs and eight outputs available.

By connecting handheld or spindle screwdrivers with the controller, the DEPRAG Plus screwdriving system now also enables supply of the same torque to manual or stationary screwdrivers. „Our wide range of EC and EC-Servo screwdrivers means that there is a solution for every screwdriving task. The price structure is also appealing: despite a significantly broader spectrum of features, the price level remains aligned with the previous system – and in some cases may even be lower,” declares Guttenberger.

The innovative screwdrivers are driven by a robust, brushless high power motor. Signal transmission is entirely digital via a single screwdriver cable and plug connector on the screwdriver. This is particularly suited to challenging industrial environments – keeping potential malfunctions to a minimum. The screwdriver logic has also been improved for modern, swift communication between the screwdriver and the sequence controller. It is the basis for optimal regulation and integration of new screwdriving procedures such as DEPRAG Clamp Force Control (CFC).

One software – many functions

Screwdriving system networks are greatly supported by the new DEPRAG Cockpit: the software facilitates supervision and analysis of assembly tasks and provides analysis tools for continuous process optimisation and the recognition of trends. The data from a company's various factory locations, their production lines and connected devices are collected centrally by the DEPRAG Cockpit. Data can even be collected from production locations spread throughout the world. The DEPRAG Cockpit can be configured remotely through the “Internet of Things” and current operating data can be retrieved.

This ensures early detection of potentials and swift reaction to any variations. When screwdriving processes are optimised in a timely manner less reworking is required, production time and quality improves, and products can be safeguarded or even enhanced. Whether it is used to connect screwdriving systems or smart tools – all processes can be monitored, analysed and optimised centrally.

Visitors can marvel at the latest innovations of the connected digital factory at the MOTEK trade fair. A further attraction is the live show “The future of screwdriving technology” – at 10am and 2pm daily at the DEPRAG exhibition stand (hall 5, stand 5302). It's well worth a visit!

DEPRAG SCHULZ GMBH u. CO. has 700 employees in over 50 countries and is a leading global provider of screwdriving technology, automation, air motors and air tools. The company provides full service packages for almost every branch of industry. One of their main areas of expertise is sophisticated screwdriving and application technology. DEPRAG engineers have got the optimal solution for every screw joint and fulfil individual customer requirements with their innovations and the highest process reliability.

DEPRAG SCHULZ GMBH u. CO.
D 92224 Amberg



Screwdriving system DEPRAG Plus – a platform for DEPRAG handheld or spindle screwdrivers.

New technologies and focus on medical technology

Arburg at Formnext 2019



- Outlook: freeformer 300-4X with additional axis for additive manufacturing of fibre-reinforced components
- High-temperature plastic: range of materials expanded to include PEI
- Special area for medical technology: APF process ideal for clean room applications

Arburg will be showcasing at its considerably enlarged Stand D121 in Hall 12.1 potential new applications for Arburg Plastic Freeforming (APF) at this year's Formnext trade fair from 19 to 22 November in Frankfurt, Germany. For the first time at an Arburg AM stand, the company will have a special area dedicated to medical technology. Four Freeformers with a range of technological improvements will be on display, together with an outlook on fibre reinforcement. Visitors will also be able to have a close look at a host of components made from original materials, and test a selection of these at four interactive stations.

19th - 22nd November 2019: Formnext 2019, Frankfurt am Main (D)



Lukas Pawelczyk, Head of Freeformer Sales at Arburg, sees a particularly large number of prospects for the Freeformer in medical technology. Exciting applications in this area can be seen at Formnext 2019. (Photo: Arburg)

"As the world's leading trade fair for additive manufacturing, Formnext is the ideal platform for us to present new products, applications and developments for the future of Arburg Plastic Freeforming. The Arburg stand, which has been expanded by some 30 percent, allows visitors to get their hands on our innovations and components and experience them live," comments Lukas Pawelczyk, Head of Freeformer Sales at Arburg. "The APF process creates opportunities for applications that wouldn't be possible with any other process – and this is particularly the case in medical technology. We will be showing concrete examples of this in a specially designated area of the stand."



The 200-3X and 300-3X Freeformers enable Arburg to cover a wide range of applications for the industrial additive manufacturing of functional parts from original materials. (Photo: Arburg)

Medical technology: components made from original materials

In the special area dedicated to medical technology, a Freeformer 200-3X will be processing resorbable PLLA, thereby demonstrating the benefits of the APF process for this demanding industry. The open system is ideal for medical technology, as it can also be used to economically process biocompatible, resorbable, and sterilisable FDA-approved original plastic granulates – for example for customised orthotics and implants.

With a few small adjustments, the Freeformer is also suitable for use in clean rooms, as customers have already proved. It is low in emissions and creates no dust, and the build chamber is generally made out of stainless steel. An optional robot interface enables the additive production process to be automated and the Freeformer to be integrated into production lines connected via an IT network. The process quality can be reliably documented and the components clearly traced, where necessary.

Progress in Freeformer machine technology

Together, the Freeformers 200-3X and 300-3X cover a wide range of industrial additive manufacturing applica-



In the area of its stand dedicated to medical technology at Formnext 2019, Arburg will be showcasing a freeformer 200-3X processing FDA-approved soft material and numerous sample parts. (Photo: Arburg)

New technologies and focus on medical technology

tions. While the Freeformer 200-3X is equipped with two nozzles as standard, the Freeformer 300-3X can process three components to produce complex functional components in resilient hard/soft combinations with support structures. At Formnext 2019, the large-scale machine will be used to demonstrate, taking aerospace-approved Ultem 9085 as an example, how complex components can be manufactured from high-temperature materials. In this case, the temperature inside the build chamber is approximately 180 degrees Celsius. Arburg will also be using another new exhibit to offer a technological outlook on how fibre-reinforced components can be produced as part of the APF process.

However, the company is still continuing to develop its tried and tested Freeformer 200-3X. Industry visitors to the stand will be able to scrutinize the system's technology thanks to one such exhibit. The Freeformer 200-3X is now equipped with the same single-piece nozzle system as its

big brother. A comprehensive software update is also available.

Diverse components and interactive stations

The APF experts at the Arburg Prototyping Center (APC) have succeeded in using a Freeformer 200-3X to process a soft TPU material (Desmopan) with embedded carbon amounts. Produced The additive-manufactured strain measurement strip is a flexible and at the same time electrically conductive two-component functional component. This is currently unprecedented in the world of additive manufacturing.

Industry visitors to Formnext 2019 will be able to test this and other exciting components for the medical technology, automotive, aerospace, and electronics sectors at a total of four interactive stations.

ARBURG GmbH + Co KG D 72290 Loßburg

Premiere for „arburgXworld“ in Portugal

Arburg at the Moldplas 2019



- Focus: Digitalisation of the world of plastics
- „arburgXworld“: Customer portal and digital products and services offer great added value
- „Smart“ turnkey system: Allrounder produces multiple variants flexibly and “on demand”

Digitalisation is Arburg's main topic (hall 20, stand 3 B10) at Moldplas from 6 to 9 November 2019 in Batalha. For the very first time presented at the K in Düsseldorf, Germany, „arburgXworld“ will celebrate its premiere in Portugal shortly after. The digital world of Arburg includes the customer portal with the same name as well as digital products and services. In addition, a „smart“ allrounder exhibit using the example of tension straps will demonstrate in a practical manner how digital networking can be used to produce products „on demand“ in a variety of ways and economically in series production.

06th - 09th November 2019: Moldplas 2019, Batalha (Portugal)



Martín Cayre, Managing Director of Arburg Portugal and Spain.
(Photo: Arburg)

„Our customers are becoming more and more interested in the subject of Industry 4.0 and the networking of their injection moulding machines with software. This means that production data can be recorded and analysed in real time and makes it possible to significantly increase production efficiency and transparency,“ explains Martín Cayre, Managing Director of Arburg in Portugal and Spain. „With ‚arburgXworld‘ we offer you exactly the right products and services. For example, our new customer portal makes day-to-day business much easier. Machine lists can be accessed, spare parts ordered and service support requested per mouse click. We also present an exciting turnkey application.“

„arburgXworld“ – Arburg's digital world

Arburg offers an extensive range of products and services for the digitalisation of the injection moulding world. A key component is the „arburgXworld“ customer portal with the same name, which will be available internationally in 18 languages – including Portuguese and Spanish – from the world's leading trade fair K 2019 in October.

At Moldplas 2019, trade visitors will be able to receive comprehensive information about how to make their injection moulding production even more transparent and efficient with „arburgXworld“ and how to obtain round-the-clock support on service topics. The customer portal includes, for example, the free apps „Machine Center“ for a quick overview of the machine fleet, „Service Center“ for

Premiere for „arburgXworld“ in Portugal

time-saving ordering of services and „Shop“ for quick online ordering of spare parts around the clock. From October 2019, there will also be additional paid apps and features that offer considerable added value.

Multiple variants: high-volume production according to customer requirements

Arburg will be presenting the possibilities of injection moulding production with a compact turnkey system using the vertical Allrounder 375 V. As a „smart“ exhibit, it flexibly produces elastic tension straps „on demand“ from shot to shot – while its clever product and mould design and the industry 4.0 components eliminate the need for changeover. Customer specifications are integrated into the running injection moulding process online. At Moldplas 2019, visitors will be able to choose between elastic tension straps of three different lengths in three colours and with three different end piece combinations, entering their variant of choice directly on the terminal. After the order has been transferred to the central Selogica control system, the tension strap is cut to the selected length and placed by a space-saving six-axis robot located within the machine installation area. It puts the ends of the strap in the cavities of the 4-cavity mould, where the individual chosen hook/hook, hook/eyelet or eyelet/eyelet combinations are injection-moulded in a cycle time of about 40 seconds. In industrial practice, this application is ideal for cable assembly in the automotive industry, for example.

Local turnkey team for Spain and Portugal

Automation is increasingly enabling complex process steps to be implemented in injection moulding, as well as simplifying material flows and logistics processes. In order to satisfy the high demand on the Iberian Peninsula, the Arburg subsidiary in Arganda del Rey (Madrid) has put together a local project team made up of turnkey experts who, together with local partners, are implementing sophisticated



Flexible high-volume manufacturing „on demand“: a turnkey system built around the vertical Allrounder 375 V and a six-axis robot in a space-saving configuration will produce different variants of elastic tension straps according to customer specs at Moldplas 2019. (Photo: Arburg)



„arburgXworld“ covers the entire spectrum of digital products and services from Arburg. This also includes the customer portal of the same name. (Photo: Arburg)

automation projects and turnkey systems in Portugal and Spain. In close cooperation with the customer, they are developing individual solutions to increase part quality, process reliability, availability, productivity and cost-effectiveness of the production processes.

Arburg is also the only injection moulding machine manufacturer with its own subsidiary in Portugal: opened in May 2019, the Arburg Technology Center (ATC) in Marinha Grande offers local training programmes and a large showroom with space for five Allrounders, which are used for machine demonstrations and mould tests. The ATC also hosts workshops and open houses on current topics in the plastics industry.

ARBURG GmbH + Co KG
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The „arburgXworld“ customer portal will also be available in Portuguese and Spanish on time for Moldplas 2019 and includes numerous new apps and functions. (Photo: Arburg)

Less Deformed Parts by an Optimized Tempering Layout

SIGMASOFT® Autonomous Optimization Reduces Part Deformation by Optimizing Tempering Channel Positions

SIGMA Engineering presents the latest release SIGMASOFT® v5.3 at MOLDPLÁS exhibition, Portugal. Another novelty is the new SIGMAinteract®, which makes the communication of simulation results within the company and with customers much easier. A showcase highlights SIGMASOFT® Autonomous Optimization, which allows the multi-criteria optimization of the injection process. The example utilizes this approach for the optimization of tempering concepts to ensure dimensional stability of the part.

As in the past years, SIGMA Engineering GmbH from Aachen, Germany, is exhibiting at MOLDPLÁS, Batalha, Portugal, between November 6th and 9th, 2019. At its booth (Pavillion 2, booth 2Bo9), SIGMA will present its latest release SIGMASOFT® Version 5.3 as well as the new SIGMAinteract®, which allows the communication of simulation results within the company and with customers.

SIGMA demonstrates with a customer example how to prevent deformation of a part by analyzing the positioning of the cooling channels. Therefore, SIGMA uses one of the key technologies from SIGMASOFT® – the Autonomous Optimization. This tool allows a multi-criteria optimization of the whole injection process in short and efficient way.

SIGMA was consulted by one of its customers to help reduce the deformation of a part out of 20% mineral PP after molding. As this part had to be assembled on a bumper, it should not have any docking defects such as gaps between the two parts. Thus, tolerances for the part were tight.

The first thing that was evaluated is the homogeneity of the cavity temperature and its effect on the part deformation. A first simulation in SIGMASOFT® over 10 cycles permitted the analysis of the deformation and its causes: a significant hot spot on the moving half of the mold was identified. Regulation of this area is difficult due to the shape and the small wall thickness of the cavity.

After consultation with the mold maker, it was decided to try to modify the position of the closest cooling channel with a new drilling

to improve the cooling of this area. The plan was to save the existing cavity with this technically simple and economically efficient solution. To optimize the cooling effect, in the next step SIGMA evaluates the exact position of the cooling channels.

In SIGMASOFT® Virtual Molding, the drilling geometry is parameterized in such a way that it can move along the Z axis of the model (Fig. 2). Afterwards, the virtual DoE functionality, which is included in SIGMASOFT® Autonomous Optimization, automatically calculated all possible positions of the drilling. The deformation of the part is described via the distance between the walls of the part, using position sensors. This makes an automatic determination of the impact of the channel position on the deformation possible. The comparison of the two simulations, initial and optimal, shows the gain on the dimensional tolerance of the produced part. The deformation is reduced by a total of 0.9mm from 1.4mm to 0.5mm (see Figure 1).

With the help of SIGMAinteract® all results from this study were directly shared with the customer and project partner. Thus, the communication was made significantly easier and a maximum gain of knowledge was guaranteed. Thanks to the conducted virtual DoE, the customer was able to start production quickly. The modification carried out was low-cost and made it possible to save the existing cavity block.

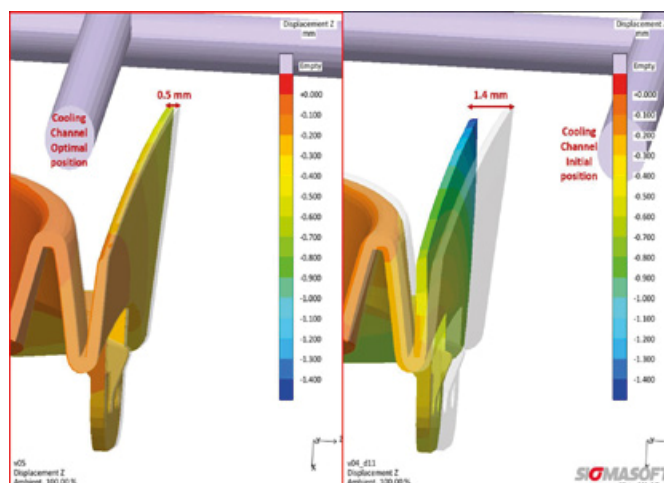


Figure 1: Comparison of the resulting part deformation for the original tempering concept (right) and for the optimized channel layout (left)

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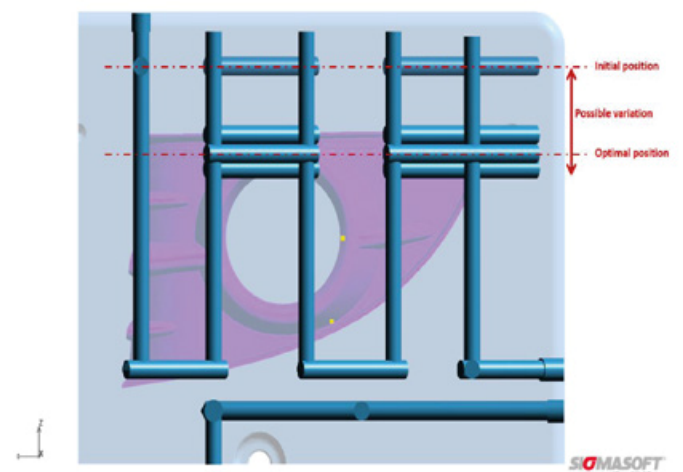


Figure 2: Geometry of the nozzle side of the mold: determining the ideal position of a new drilling for the tempering channel in z-direction via SIGMASOFT® Virtual Molding

Differential Pressure Sensor with $\pm 0.5\%$ Accuracy

The EE600 HVAC differential pressure sensor offers a high accuracy of $\pm 0.5\%$ of the full scale and features four selectable pressure measuring ranges.

The EE600 from E+E Elektronik measures the differential pressure in the range 0...1000 Pa or 0...10 000 Pa with an accuracy of $\pm 0.5\%$ of the full scale. The sensor is dedicated for HVAC applications and can be employed for air and all non-flammable and non-aggressive gases.

The EE600 is ideal for reliable differential pressure measurement in ventilation and air conditioning systems or for filter monitoring. The sensor is available in two versions for up to 1000 Pa or 10 000 Pa. Four different measuring ranges (0...250 / 500 / 750 / 1000 Pa

or 0...2500 / 5000 / 7500 / 10 000 Pa) are selectable via DIP switches. The piezo-resistive, no flow-through pressure sensing element stands for outstanding long-term stability.

Analogue Output and Display

The measured data is available as voltage and current signals at the spring loaded terminals. The large, backlit graphic display shows the reading in [Pa], [mbar], [inch WC] or [kPa].

Functional and Robust Enclosure

The robust IP65 / NEMA 4 enclosure with external mounting holes facilitates mounting the sensor with closed cover. This saves time and also protects the electronics from pollution and mechanical damage during installation. For US requirements, the enclosure features a knockout for a $\frac{1}{2}$ " conduit fitting.

Fully Configurable

The EE600 offers various adjustment and configuration options. Via DIP switches on the electronics board, the user can set the pressure measuring ranges, the output signal, the response time as well as the units and the backlight for the display. Also a zero and span point adjustment can be easily performed with push buttons.



EE600 differential pressure sensor with $\pm 0.5\%$ accuracy. (Photo: E+E Elektronik GmbH)



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