The ISO 17025 accredited calibration laboratory of MBV is transparent and openly designed so that customers can follow the workflow.

Even more safety and service with the accredited calibration laboratory

With its high-quality air samplers, MBV AG has always stood for highest precision and efficiency in the determination of microbial contamination of air. However, even the best instrument must be calibrated against international standards from time to time to ensure perfect functioning. With its own calibration laboratory, MBV is now setting another important milestone in the company's successful history and expanding its range of services for its customers.

A DA-100 NT digital anemometer for the calibration of the air flow of MAS-100 air samplers is tested in the ISO 17025 accredited calibration laboratory of MBV.

Since 1 July 2019, the MBV calibration laboratory for air flow measurements has been accredited by the Swiss Accreditation Service according to ISO 17025:2017. „We are proud to be able to offer the calibration of DA-100 (NT) digital anemometers as an in-house service with immediate effect", says Ronny Zingre, CEO of MBV AG.

But what does this mean for customers and users of air samplers? The DA-100 NT digital anemometer was specially developed for the calibration of the MAS-100® family of air samplers. It measures the volume flow with very high accuracy, displays the air volume or mass flow as well as pressure and temperature. The calibration of the air flow is crucial in order to collect the microbial contamination in the correct air volume and to prove this to auditors. „Ultimately, this increases safety not only for our customers, but for all of us," adds Ronny Zingre. „We all need

Even more safety and service with the accredited calibration laboratory

medicines from time to time, so we can be confident that they have been manufactured and tested in environments that are monitored with our equipment". With our own laboratory at our headquarters in Stäfa, customers also benefit from faster return times for their calibrated devices and the combined expertise of MBV.

A DA-100 NT digital anemometer for the calibration of the air flow of MAS-100 air samplers is tested in the ISO 17025 accredited calibration laboratory of MBV.

Air. Nothing else.

For over 30 years, MBV has been developing air samplers to determine the microbial contamination of air. The high-quality instruments are used worldwide for monitoring where microorganisms can negatively influence the quality of products - such as in the pharmaceutical, cosmetics and food industries, in scientific research or in the manufacture of medical devices. The global market leader researches, produces and maintains innovative products with ISO 9001:2015 certification. The core of its success is the MAS-100® air sampler, which was launched on the market in 1996 and has been continuously further developed ever since. The company has its headquarters in Stäfa and controls the production and assembly of all instruments via its sister company Femron in Feuerthalen.

MBV
LUFT. SONST NICHTS.

MBV AG
Microbiology and Bioanalytic
Industriestrasse 9 CH 8712 Stäfa
Telefon: +41 44 928 30 80 Telefax: +41 44 928 30 89
E-Mail: welcome@mbv.ch Internet: http://www.mbv.ch

September 2019

Dear subscribers,
in the current issue of the cleanroom online newsletter you will find among others on the following topics:

Even more safety and service with the accredited calibration laboratory

Exyte Technology celebrates location opening in Renningen

Innovative All-round Talent for Deburring and Cleaning in One-Piece Flow

If Machines Could Smell ...

Cleanzone 2019 offers more in the field of plant engineering

...

I wish you an interesting read and a cool head

Yours sincerely

Reinhold Schuster

Exyte Technology celebrates location opening in Renningen

Today, Exyte Technology, the international market leader in cleanroom technologies and custom development and production environments, officially opened its new loca-tion in the Raite Business Park in Renningen. The new site is home to both a state-of-the-art 13,000 square meter manufacturing facility and a 4-story office building. With over 200 highly skilled employees, Exyte Technology is an important employer in the region.

This Friday, the new Exyte Technology location in the Renningen business park was officially opened to an audience of employees, clients, business partners and city officials. During the opening ceremony, Exyte Technology's Managing Director, Frank Bauer, and the mayor of Renningen, Wolfgang Faißt, addressed the guests present.

Exyte Technology Managing Director Frank Bauer is pleased about the new location and thanks for the support: „I would like to thank our customers, our business partners, our construction partners, the project team, our employees, our colleagues within the Exyte Group and in particular thank the city of Renningen. Without the good cooperation, it would never have been possible to implement this state-of-the-art con-struction project in a record time of just eleven months and move our corporate headquarters without significant disruption to the business on the fly."

Renningen Mayor Wolfgang Faißt emphasizes the importance of the new Exyte Technology site for the region: „Exyte Technology is one of the most important employers in our city. We are particularly pleased that the company offers a highly professional and innovative work environment to qualified professionals, thus contributing to the efficiency of our business location."

Roberto Penno, Exyte AG's Chief Operating Officer and responsible Board Member, is pleased with Exyte's successful fiscal year and looks forward to further growth prospects for the division: „The new location is impressive and will contribute to the company's continued growth. With locations in the Czech Republic, Shanghai and now Renningen, Exyte Technology is very well positioned in the international market and will continue to develop, manufacture and maintain the highest quality production environments and clean room products for demanding customers around the world."

Such a formal opening of a new location always has symbolic power. Site manager Bernd Conzelmann (OPCM Germany GmbH) presented the management with an oversized opening chip for the new headquarter.

Numerous guests joined the opening ceremony.

About Exyte Technology

Exyte Technology is part of the world's leading Exyte Group, specialized in the development and design of so-called cleanrooms. Food manufacturers, the pharmaceutical industry and semiconductor companies need rooms in which the ambient air does not contain dirt particles. For processes with the highest quality requirements, such as in wafer processing, photolithography or laboratory applications, extremely stable environments must be ensured. Exyte Technology (formerly M + W Products) manufactures dedicated filtration equipment and precision air conditioning equipment.

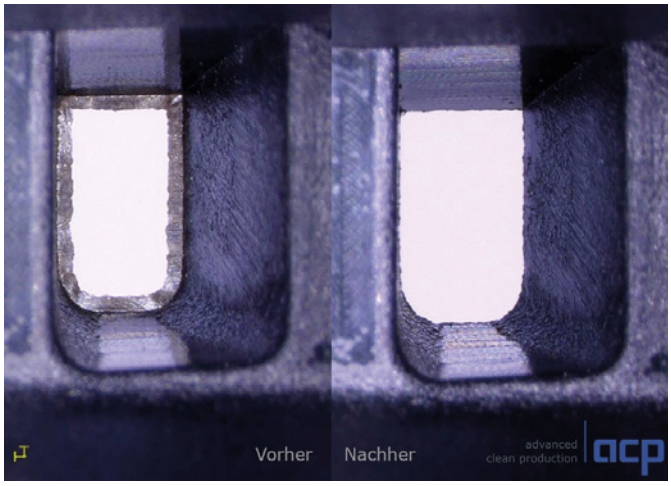
Exyte Technology GmbH
Rosine-Starz-Straße 2-4
D 71272 Renningen
Telefon: +49 711 8804 1215
E-Mail: info@exyte-technology.net
Internet: http://www.exyte-technology.net

Deburring and cleaning plastic components with CO_2 snow in a single dry process

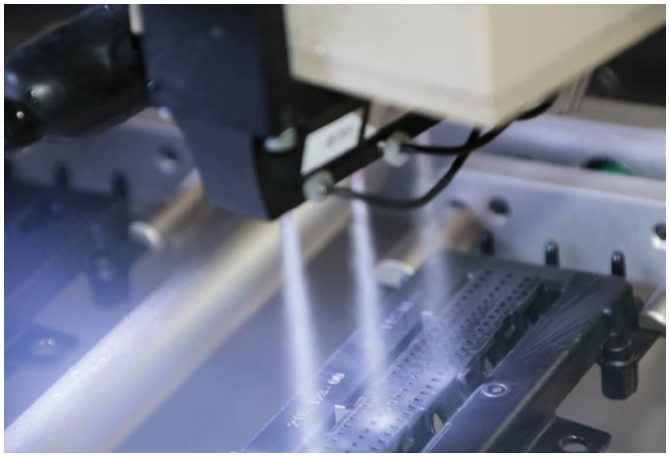
CO snow jet technology as an efficient deburring process

Plastic parts invariably have burrs after injection molding or mechanical processing. The quattroClean technology from acp systems AG has proved to be an efficient, inline-capable deburring and cleaning alternative for hard and brittle plastics such as PEEK and PPS. Deburring and cleaning are carried out in a single dry process.

There are practically no limits to the use of plastics today. From medical technology through automotive engineering and electronics to household and leisure products, polymer all-rounders enable innovative solutions. However, regardless of whether components are injection-molded or mechanically processed, there are residues on the surface that have to be removed for high-quality further processing or to ensure that workpieces and components function perfectly. When it comes to burrs and residues from processing media, the quattroClean technology from acp systems AG is an effective and efficient deburring and cleaning alternative for hard and brittle plastics such as polyphenylene sulfide (PPS) and polyetheretherketone (PEEK).



The burrs on parts after the injection molding process are removed reliably and reproducibly. (Photo source: acp systems AG)



With the quattroClean technology, hard and brittle plastics such as PEEK and PPS can be deburred and cleaned in a single process. (Photo source: acp systems AG)

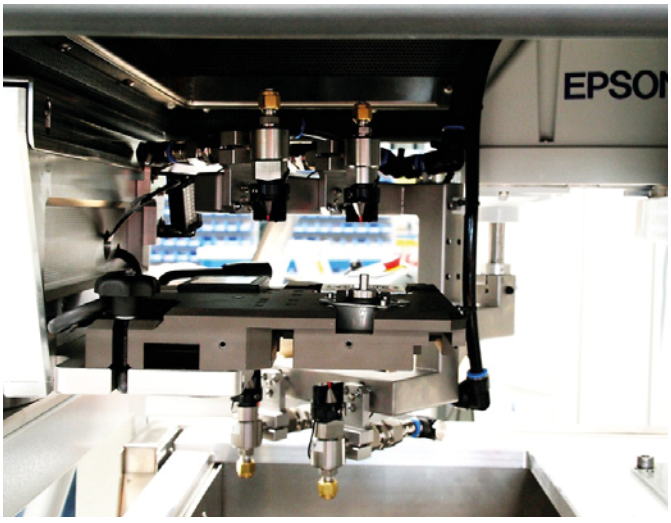
Environmentally-friendly, effective and dry processing step

The modular quattroClean system works with liquid carbon dioxide, which has a virtually unlimited shelf life and is generated as a by-product from chemical processes as well as energy generation from biomass. CO_2 is therefore an environmentally neutral, non-flammable and non-toxic gas.

For the deburring and cleaning process, the carbon dioxide is fed through the non-wearing two-component ring nozzle of the quattroClean system, expanding as it exits to form fine CO_2 snow. This is then bundled by a jacketed jet of compressed air and accelerated to supersonic speed. When the non-abrasive jet of snow and compressed air impacts at a temperature of minus 78.5°C onto the surface to be processed, a combination of thermal, mechanical, sublimation and solvent effects take place.

The thermal effect is partially responsible for the deburring action. Shock cooling causes the burrs to become brittle. In addition, the volume of the CO_2 snow increases about 600 times as it changes from a solid to a gaseous state, thus creating micro-pressure waves that spread at high speed. The resulting force is sufficient to remove the burrs from the components.

Combined, the four mechanisms of action also have an efficient and homogeneous cleaning effect. They remove particulate contaminants, e.g. burrs, dust and particles, equally reliably and consistently as filmic contaminants such as residues of separating agents and silicons. The deburring and cleaning process is so gentle on materials that it



Tailored to the specific requirements of deburring, cleanliness and cycle time specifications, customized system concepts are developed. Here the process is carried out simultaneously from above and below. (Photo source: acp systems AG)

Deburring and cleaning plastic components with CO_2snow in a single dry process

can even be used to clean delicate and finely-structured surfaces.

Detached burrs and contaminants are removed from the component surface by the aerodynamic force of the compressed air and transported away by a suction unit integrated into the processing cell. Since CO_2 sublimates instantly under atmospheric pressure, the components are dry at the end of the cleaning step and can be further processed or packaged straightaway.

Cost-effective solution - also for production integration

The scalable quattroClean process can be efficiently and space-savingly adapted to different component geometries to enable partial or full-surface processing. Through trials in the acp systems technical center, the process parameters, such as volume flows for compressed air and carbon dioxide, jet zone and time, are precisely tailored to the respective application. These also account for the material properties and the burrs and contamination to be removed. These parameters can be filed as part-specific cleaning programs in the system control.

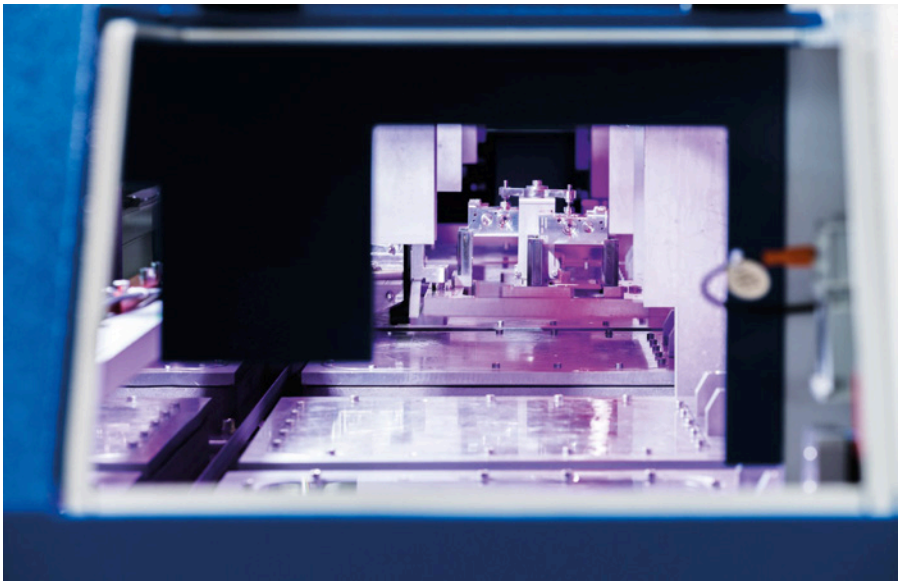
Tailored to the respective deburring, cleanliness and cycle time specifications, acp systems develops customized plant concepts based on standard modules, which can be operated as stand-alone solutions, or integrated into the production line or networked production environment. The latter is made possible by the quattroClean system's industry 4.0 capability. The system can be easily integrated into and controlled by higher-level master computers via standardized interfaces. To ensure full documentation and traceability, all process parameters are automatically recorded and transferred to the host computer.

acp systems AG
D 71254 Ditzingen

Innovative All-round Talent for Deburring and Cleaning in One-Piece Flow

EcoCvelox – high-pressure waterjet deburring combined with low-pressure processes for cleaning

Process-reliably and reproducibly deburred and cleaned parts are crucial for the quality of subsequent processes such as bonding, sealing and assembly as well as for perfect product function. With the completely new system concept EcoCvelox, Ecoclean introduces a highly flexible, modular solution for cost-efficient high-pressure waterjet deburring and cleaning in a single procedure. The process-dependent configurable and expandable machine with integrated linear transport system enables processing of parts with dimensions up to 200 x 200 x 200 mm cycle times of only 15 seconds per palette in the so-called one-piece flow. An integrated CAD / CAM interface allows for quick and easy programming of the high-pressure deburring process – either with a single spindle or a high-pressure turret with up to five tools. In combination with an innovative system for parts handling, it ensures that process operations for new workpieces can be implemented in the shortest possible time. Component cleaning and drying can be carried out by means of injection flood washing, spraying, controlled rinsing and ultrasound, as well as high-speed blowing and vacuum drying. The system can be loaded automatically with a robot or portal system as well as manually.



(Image source: Ecoclean GmbH)

Ecoclean GmbH
D 70794 Filderstadt

Sale of Bosch Packaging Technology

CVC Capital Partners and Bosch reach an agreement

- CVC Capital Partners selected for its growth strategy for Packaging Technology and for its broad industrial expertise
- Packaging Technology and its Pharma and Food units to remain intact
- All 6,100 associates in 15 countries will remain with the business
- Completion subject to approval by antitrust and other authorities

Bosch plans to sell its packaging machinery business, based in Waiblingen, to a newly incorporated entity managed by CVC Capital Partners (CVC). The company and its Pharma and Food units will remain intact. Based in Luxemburg, CVC is a leading private equity and investment advisory firm with 24 offices in Europe, Asia, and the United States. It currently manages more than US$75 billion of assets.

The parties signed an agreement on July 11, 2019 effecting the transfer of the entire packaging technology business and its 6,100 associates in 15 countries. It has been agreed that the purchase price and other details of the purchase agreement will not be disclosed. Completion of the sale is subject to the approval of various bodies, including antitrust authorities, and is expected to close at the turn of the year.

Positive prospects for the Packaging Technology business

Dr. Alexander Dibelius, Managing Partner of CVC, said: "Bosch Packaging Technology is a strong company in an attractive market with long-term growth prospects. Packaging Technology has an excellent reputation for quality and innovation, a broad product range, a global footprint, and experienced associates. Together with the management team, we will work to take the business forward in the years ahead, and to make it even more competitive."

Dr. Stefan König, the President of Robert Bosch Packaging Technology GmbH, said: "My colleagues and I in executive management regard this new partnership with CVC as a huge opportunity for our future success. Just under two years ago, we completely modified our strategy. It now includes working on a completely new range of smart and sustainable process and packaging technologies. This will allow us to offer our customers even more attractive product solutions and services in the future. Our customers and our associates will benefit from the progress we have made."

Dr. Stefan Hartung, member of the board of management of Robert Bosch GmbH and chairman of the supervisory board Robert Bosch Packaging Technology GmbH, said: "With its experience in growing companies over the long term, its broad industrial expertise, and its viable strategy for taking the division forward, CVC was the right choice for us. The growth concept it has presented, as well as the investments it plans to make, are very promising. For Packaging Technology and all its associates, our aim was to find a reliable new owner with a long-term approach, under whose leadership the business can develop successfully. We have achieved just that."

Bosch is consolidating its resources

Bosch announced a year ago that it was looking for a buyer for its packaging technology business. The company is giving increasing attention to mobility and connectivity over the internet of things. It is focusing its existing resources on areas of future importance, such as shaping the transformation process and preparing for further digitalization. Bosch firmly believes that the Packaging Technology division's competitiveness, and thus also its future viability, can be further enhanced through this new partnership, and that significant stimuli for growth can be created.

BOSCH
Technik fürs Leben

Robert Bosch Packaging Technology GmbH
Stuttgarter Straße 130
D 71332 Waiblingen
Telefon: +49 711 811 0
Telefax: +49 711 81158509
E-Mail: packaging@bosch.com
Internet: https://www.boschpackaging.com

If Machines Could Smell ...

Fraunhofer IPA drives Biological Transformation with an innovative platform

What, if robots could smell? Sniffing explosives at the airport, diagnosing diseases based on a patient's breath, locating gas leaks and much more? As part of its lighthouse topic "Biological Transformation", the Fraunhofer Institute for Manufacturing Engineering and Automation IPA in Stuttgart is now increasingly connecting biological and technical systems. A new plat- form technology is developed to automatically manufacture cell-based sensors and make them economically usable.

For the economical use of biological sensors, Fraunhofer IPA is developing a technology that automatically produces cell-based biosensors. Such sensors could then give machines, for example, a sense of smell. The platform is initially validated on a product of the Californian start-up Koniku. However, it will later also be used for other applications. IPA project manager Martin Thoma sums up the innovation: "We are basically developing a generic tool that will enable cell-based biological sensors for industrial use in the medium term." Biology and technology merge.

The project is supported by the Baden-Württemberg Ministry of Economic Affairs, among others. With biointelligent products and the associated production technologies, new value creation potentials can emerge for the innovation area and industrial location of Baden-Württemberg. The project aims to realize them for the country's economy.

In order to enable the targeted development of an economically usable product, Fraunhofer IPA will develop a screening process for receptor selection and reliable automated production of so-called transfected cells, i.e. cells in which foreign DNA or RNA is integrated.

The US-company Koniku has been cultivating such cells for several years now. Olfactory receptors are introduced on small autonomous optical selection units by Koniku. The cells can be kept alive and are functional for an extended period of time to detect tiny particles from the environment. However, there are still many unanswered questions in this field of research.

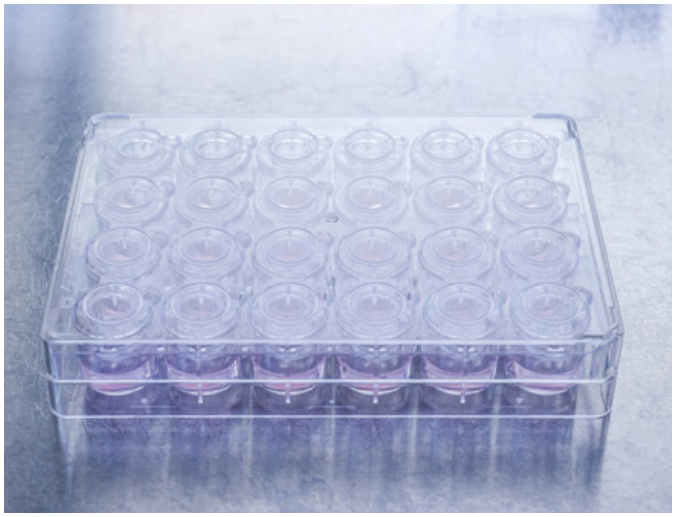
To determine the right olfactory receptor for a specific application, several thousand receptors and their combination must be screened. For this process to become eco-nomical, a platform is needed that makes it possible to automatically modify cells, i.e. transfect them, and then examine them for their specific reaction to smells and tastes.

With such a transfection and screening platform, it would be possible to modify the cells very quickly for different olfactory stimuli and thus to open up other areas of application, such as medical diagnostics. "I am particularly excited about being able to deploy the Koniko-re in every home in a few years," says Osh Agabi. Founder and CEO of Koniku Inc. "A solution which can help people detect or screen disease at the earliest stages, naturally some hurdles remain to accomplish this goal nevertheless, step by step we are moving closer to this reality. The partnership with Fraunhofer IPA is another key milestone laid in this journey."

Fraunhofer IPA

Fraunhofer-Institut für Produktionstechnik und Automatisierung IPA
Nobelstraße 12 D 70569 Stuttgart
Telefon: +49 711 970 1667
E-Mail: joerg-dieter.walz@ipa.fraunhofer.de
Internet: http://www.ipa.fraunhofer.de

With a transfection and screening platform, it is possible to modify cells very quickly for other olfactory stimuli, thus opening up other areas of application, such as medical diagnostics. (© Fraunhofer IPA)



To determine the right odour receptor for a specific application, several thousand receptors and their combination must be screened. This is only economical when automated. (© Fraunhofer IPA)

motan on circular economy ...

Plastics are too valuable to be thrown away

Today's world – and our current prosperity – would not be possible without plastics for very many reasons. These polymer materials are used in the most diverse applications: for household appliances, automotive and aircraft manufacturing, in electronics, in the medical field and the construction sector. They are nearly indispensable for packaging materials, which contribute greatly to resource efficiency by functioning as insulation or light building material and thereby reducing heating oil and fuel consumption, or by extending the shelf life of food stuffs as packaging material.

However, it is also very clear that plastic waste has become a global problem that affects us all and needs to be solved by society as a whole. In addition, there is also the problem of an ever increasing demand for resources that are already scarce: many resources are limited and as the global population continues to grow, the demand for these resources is also steadily increasing. This is why circular economy is an important topic for the plastics industry.

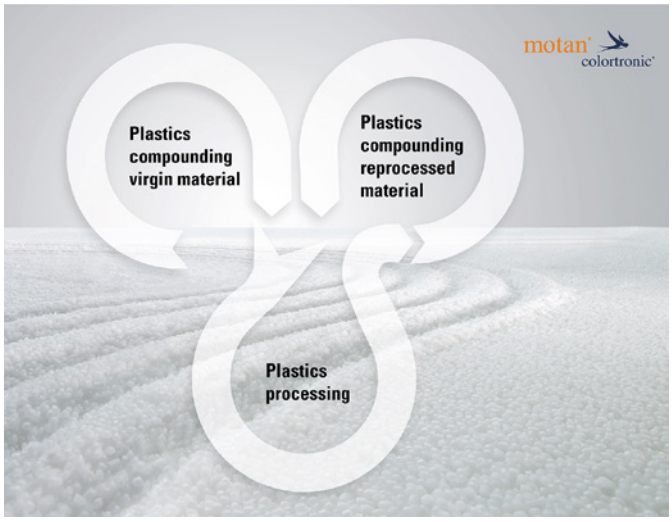
Being economical with the resources we have is one of the great challenges of our time

Circular economy is a model for production and consumption, where existing materials and products are shared, leased, reused, repaired, reprocessed and recycled for as long as possible. This expands the life cycle of products. In practice, this means that waste is reduced to a minimum.

After a product has reached the end of its life, as much as possible of the resources and materials used to make it remain in the circular economy. They can then be productively reused in order to continue to generate added value.

Circular economy is the opposite of traditional, linear economy models – also known as throw-away economies. These models are based on large amounts of cheap and easily accessible materials and energy, something that is no longer the case in today's world.

Being economical with the resources we have is one of the great challenges of our time. This is particularly true for the ever-dwindling reserves of fossil fuels. Therefore, a functioning circular economy can be a sensible and necessary addition to save and reduce consumption of the valuable resource "plastic". It can also help to counteract the current negative image of plastics. This last point should not be underestimated in the often emotional and heated debate about plastics in general, and plastic waste in particular.



motan's materials management and the circular economy – data and material flow in the plastics industry. (motan group)

Ideal properties for recycling

Plastics have ideal properties for recycling. However, a requirement for a functioning circular economy is that all actors along the entire supply chain work together and communicate with each other. For the plastics industry (plastics manufacturers, plastics processors, and plastics recyclers) this also applies to their customers and distributors, who influence the product design and the possibility of using a recycled material with their requirements and material specifications.

Another requirement for efficient circular economy is suitable material flow management with the goal of having mostly homogenous plastic waste. The more homogenous it is, the easier it is to reprocess it. One goal in this context is to generate the required amount to ensure supply with recycled materials. Advancements in the development of sorting systems for mixed material flows from general collection systems help to achieve this. Also, nowadays hardly any real production waste is produced, as this is directly fed back into running production or is passed on to specialized processors.

As a manufacturer of products and systems for material handling of bulk materials (granules, regrind, flakes and various powders), motan is a partner of three plastic subareas: manufacturing of virgin materials and recycled materials as well as plastic processing. In conjunction with the setup of circular systems, digitalization and the networking of production processes – generally referred to Industry 4.0 – also plays an important role in motan's view. The data from dryers, dosing and mixing systems, and from crystallization has already been made available and can be used within the individual processes. In future, more data will follow, for example the composition of the material and its moisture content, recipes, material constants, and production data from the processing machine. It is important to bear in mind that the properties of recycled materials can change after repeated processing. This is where motan knowhow also comes into play, for example when precisely dosing additives for the making of regenerate.

The success of circular economy will depend on transparency

Quality control will also require more data from the process than previously and will connect it with already acquired information. This will make additional sensors necessary in processing, both in the processing machines and in the tools. The digital network of all systems is currently one of the most important tasks motan is working on. The success of circular economy will depend on transparency, i.e. what

motan on circular economy ...

exactly a product consists of and where this product is going. We already have first approaches to tag materials and make them identifiable. motan is developing solutions for automating the information flow of the material flow parallel to materials handling, in order to have a constant, digitalized information chain from goods in to the finished product.

If recycled materials are homogenous or well-sorted and prepared, there is almost no difference between them and virgin material. How important transparency in terms of origin and composition of material is, can be shown with the following example: If one material in a mix needs to be dried, this can lead to uncontrolled evaporation, which, worst case, can destroy the desiccant. If the material composition is known prior to drying, a suitable drying process can be planned. This requires the necessary documentation and quality control from the recycling cycle and the original processor.

For successful circular economy, everyone also needs to contribute in their role as a consumer. This means separating and avoiding any unnecessary waste and requires us to accept and choose products made from recycled materials. This is where we need to work on informing and educating ourselves and others.

Finally, it is also important to remain realistic as to the possibilities and limitations of circular economy. If mixed or contaminated waste can't be recycled easily or well, it should be chemically recycled. There are already some early, promising projects working on this. Energetic recovery, preferably with efficient energy recovery, should be the very final stage of circular economy.

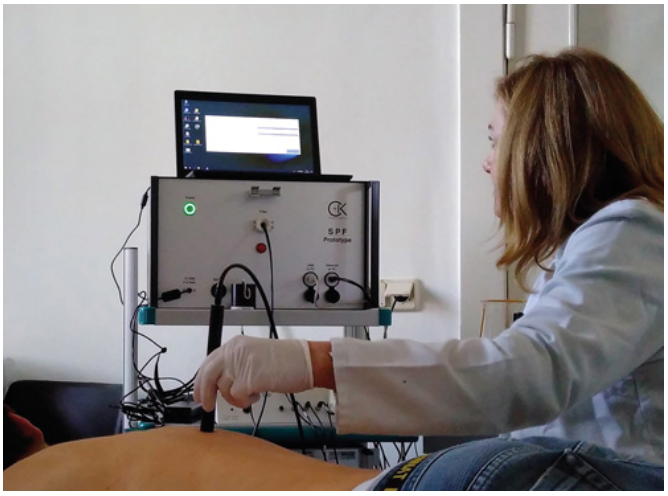
motan holding gmbh
D 78467 Konstanz

New approaches in standardized sun protection factor determination of sunscreens

In June 2019, a meeting of ISO committee „Cosmetics" (ISO/TC 217) working group „Sun protection test methods" (WG 7) was held in Brussels. Prof. Dr. Jürgen Lademann, head of the »"Center of Experimental and Applied Cutaneous Physiology" of the Charité and topic leader for medicine in the consortium ‚Advanced UV for Life' was invited to present the latest research results on the non-invasive determination of the sun protection factor (SPF) of sunscreens.

To date, SPF values have been determined in special laboratories using a standardized measurement method on probands (in vivo). Skin treated with sunscreen is irradiated with a defined dose of ultraviolet (UV) radiation until sunburn occurs. The sun protection factor is determined from the irradiation dose and time. In other words, what is actually protected from by sunscreens is induced.

The Food and Drug Administration of the United States (FDA) and the European Union are urging the development of a method without skin damage. The ISO Committee 217 is therefore working on an international guideline for an in vitro method using artificial skin models instead of test persons. „Due to the specific texture of skin, such in vitro measurements have a significant disadvantage", Prof. Lademann knows. „The temperature and especially the biofilm of skin are very important for the application of sunscreens and their protective function. This cannot be achieved with plastic plates."



Messsystem zur in-vivo-Bestimmung des Lichtschutzfaktors von Sonnenschutzmittel. (Copyright: Charité)

Together with the worldwide leader in skin testing equipment »Courage + Khazaka electronic GmbH and the manufacturer of dermatological care products »Hans Karrer GmbH, Charité develops a measuring system for non-invasive sun protection factor determination. Using light emitting diodes, UV radiation of a specific wavelength is applied via fibers to the sunscreen treated skin of test persons. Reflected and in the tissue scattered light is detected and the sun protection factor is determined directly – without time-consuming erythema assessment. „This measuring principle allows to consider the specific texture and reaction of skin without harming the probands", summarizes Prof. Lademann.

Thus, the project team convinced the ISO and was asked to advance the development and to characterize the measurement method as a possible standard process. The next step is a combination of the project team's non-invasive sun protection factor determination on test persons and a spectral analysis of the sunscreen product itself. „This hybrid method has a great advantage," comments Prof. Lademann. „Sun protection factors of 80 and 100 could be measurable in this way." According to the European Union, these high sun protection factors do not need to be listed - the upper limit here is 50+. However, such a measurement would be very important for cosmetics manufacturers. Sunscreens and their active ingredients can be characterized and their effects better understood. In order to exploit this potential, the project team also works on miniaturizing the measurement setups. „The compact UV LEDs provide a good basis for this", Prof. Lademann says. „Finally, we aim at a reliable, user-friendly and cost-effective system that will be used for ISO standardized sun protection factor determination of sunscreens".

Ferdinand-Braun-Institut
D 12489 Berlin

Endress+Hauser strengthens expertise for advanced analysis

Group invests 2 million euros to expand the Lyon location

Endress+Hauser has expanded its center of competence for advanced analysis in Lyon, France. The Group invested 2 million euros in a new production facility and office space to meet the growing demand in the area of advanced process analyses.

Advanced analysis: Endress+Hauser expands competence center in Lyon.

From Lyon, around 20 employees support Endress+Hauser sales centers across Europe in the application and sales of advanced analysis technology, with a focus on the project business and after-sales services. Ten Endress+Hauser sales centers across Europe already have specialists on board to handle this complex field of activity.

Customer-specific manufacturing

The new 630-square-meter production facility will be used for customer-specific manufacturing and the assembly of complete analysis systems. Rounding out the facility are offices, rooms for factory acceptance tests and space reserved for future use. The adjacent 1,500-square-meter office building, which opened in 2017, is also home to the Endress+Hauser France regional sales office. With a total of 7,000 square meters, the property offers sufficient space to grow the location even further.

Strategic focus

"The expansion of the Lyon location allows us to do an even better job of bringing our expertise in the field of process analysis to our customers," emphasized Matthias Altendorf, CEO of the Endress+Hauser Group, during the dedication ceremony on 17 July 2019. "This is an important strategic goal for us and helps our customers acquire more information from their processes."

Analysis portfolio expands

Advanced analysis provides immediate information related to material properties and product quality. Endress+Hauser continuously develops its analysis portfolio to provide online monitoring of quality parameters, for example through spectroscopic techniques. This allows customers to reduce time to market and optimize their processes. Customers in industries such as life sciences, chemical, food & beverage and oil & gas can benefit the most from Endress+Hauser's advanced analysis portfolio.

Advanced technologies

The Lyon location combines the expertise of Endress+Hauser and its subsidiaries Kaiser Optical Systems and SpectraSensors under one roof. The Raman analyzers from Kaiser Optical Systems are used to examine the composition and material properties of liquids, gases and solids and enable the real-time measurement of product characteristics. SpectraSensors is a leader in the field of TDLAS technology, which can be used to reliably measure trace-level concentrations of gases.

Endress+Hauser AG CH 4153 Reinach BL 1

Dedication ceremony: John Salusbury (Corporate Sales Director Endress+Hauser Group), Matthias Altendorf (CEO Endress+Hauser Group), Doriane Corsale (Representative from the City Council of Saint-Priest), John Schnake (Corporate Director Process Analyzers and General Manager SpectraSensors), Ivano Mazzoletti (Corporate Sales Director Endress+Hauser Group)

Arburg Awards for outstanding TUM graduates

- Award: Arburg recognises pioneering dissertations and master's theses of the Technical University of Munich (TUM)
- Winners 2019: Maria Gabriele Bauer and Dr.-Ing. Hannes Löwe
- Pioneering: Research on bioplastics and on the prevention of hospital germs

Since 2016, Arburg has been honouring outstanding dissertations and master's theses at the Technical University of Munich (TUM) as part of a close cooperation. In 2019, the Arburg Awards were presented to Dr.-Ing. Hannes Löwe and Maria Gabriele Bauer. As part of the "Day of the Faculty of Mechanical Engineering" at the TUM on 12 July 2019, Dr.-Ing. E. h. Herbert Kraibühler, former Arburg Technology Director and Honorary Doctor of the TUM, and Arburg Training Manager Michael Vieth presented the cash prizes and certificates to the two graduates.

The aim of the Arburg Award is to advance research in plastics and medical technology. Two scientific papers are honoured each year with this award.

Best dissertation: Dr.-Ing. Hannes Löwe conducted research on bioplastics

In his doctoral thesis, Hannes Löwe dealt with the increasing environmental pollution caused by plastic waste. Summarising the research, the thesis stipulates that the problem also offers an opportunity for innovative, bio-based and biodegradable plastics. The doctoral thesis describes the use of the "Pseudomonas putida" bacterium for the production of "polyhydroxyalkanoate" bioplastic. Production was carbon neutral, as sugar from the „Synechococcus elongatus" cyanobacterium was used as a raw material. In a mixed culture of CO_2, sunlight and mineral salt solution, valuable bioplastic was produced. The dissertation focused on the genetic adaptation of the bacterium for mixed culture and on establishing the required technical process. The research showed that genetic modification leads to an artificial dependency between the bacteria, leading to the production of significant amounts of bioplastic. The results offer hope for a more sustainable production of plastics and other recyclable materials from CO_2 and renewable substrates.

Best master's thesis: Maria Gabriele Bauer researched coatings for medical plastic products

In her master's thesis, Maria Gabriele Bauer dealt with the prevention of hospital pathogens, as around 45 percent of hospital infections can be traced back to medical equipment contaminated with biofilm. Disposable products used on a daily basis, such as catheters and tubes, represent the second most common cause of such infections. The aim of this thesis was to test a covalently bonded mucin coating on various medical plastics and to investigate its possible application as an anti-biofouling coating. This would prevent such hospital-induced infections and reduce the average length of stay of patients and their treatment costs.

Arburg Award as an important part of long-standing cooperation

The successful cooperation between Arburg and the Technical University of Munich has existed in many fields and for many years. Since 2016, it has also included the annual presentation of the Arburg Awards to graduates for outstanding scientific papers. The candidates were nominated by the professors of the departments of plastics technology, medical technology and related scientific fields. A panel made up of four TUM professors of mechanical engineering examined the nominations and finally selected this year's Arburg Award winners Dr.-Ing. Hannes Löwe and Maria Gabriele Bauer. At the presentation of the cash prizes and certificates, Dr.-Ing. E. h. Herbert Kraibühler and Michael Vieth congratulated the winners, praised their commitment and emphasised the importance of their research for the plastics and medical technology sectors.

ARBURG GmbH + Co KG
D 72290 Loßburg

Maria Gabriele Bauer (centre) received the Arburg Award 2019 for her master's thesis from award coordinator Prof. Birgit Vogel-Heuser and Arburg Training Manager Michael Vieth. (Photo: TUM)

Hannes Löwe (centre) won the Arburg Award 2019 with his dissertation, which Dr.-Ing. E. h. Herbert Kraibühler presented on behalf of Arburg together with award coordinator Prof. Birgit Vogel-Heuser. (Photo: TUM)

The new DEPRAG step feeder system: eacy step feed

For the best in efficiency, intelligence and technical cleanliness - Specifically designed for longer screws

Once the doors open, all the big names in the industry can be found at the MOTEK international trade fair for automation in production and assembly from the 7th to the 10th of October 2019 in Stuttgart. 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. In hall 5, at stand 5302, trade visitors can discover in-depth the latest innovations from DEPRAG.

The focus is on the timely supply of parts and fasteners for assembly - a key component for the productivity and reliability of assembly processes. Feeding devices are designed to efficiently and precisely supply the required quantity of correctly aligned component parts and fasteners. Screws are the most common feed part automatically supplied, although other components include rivets, threaded pins, O-rings and labels.

DEPRAG SCHULZ GMBH u. CO. can provide the optimal feeding technology for almost any application. "If the feed system needs to handle particularly long screws, which would be too long for a standard sword feeder or vibratory spiral feeder, we have now come up with a new solution for this challenge. The new DEPRAG step feeder system, eacy step feed, now enables the efficient, intelligent and technically clean feeding of even longer screws", explains Product Manager Daniel Guttenberger.

The complete system, comprising a storage container, material-handling technology, linear conveyor, separator, housing and controller – specially designed for longer screws – offers hassle-free, reliable operation with 24V technology, independent from mains voltage and mains frequency. The DEPRAG step feeder system combines all the advantages of a step feeder with the outstanding energy-efficiency of DEPRAG's vibration and regulating technology.

Main features of the DEPRAG eacy step feed

The feed material is quietly fed in stages over linear feed plates from the storage container towards the feed rails. A brushless electric motor, controlled by the smart energy-efficient DEPRAG eacy feed PFC100 controller, is used to drive the feed plates. The directly adjustable feed rate supports gentle part feeding.

The integrated sequence controller PFC100 regulates the complete feeding process for -EP and 11911-x designs used in combination with handheld screwdrivers. Each new cycle is triggered via a start impulse. This significantly reduces integration in higher-level system controllers. As an alternative, the system can also be controlled via an external PLC/IPC controller. Direct integration in IPC environments is also an option with the PFCi100.

The feed material is geometrically aligned in the feed rails. A linear conveyor then transports the feed parts towards the separator. Fill level sensors in the storage container and the feed rails measure and regulate the feed rate. In the separator feed material is separated and pre-positioned to be the shot through the feed hose or for pick-up using vacuum tool or gripper.

Gentle component handling and CleanFeed concept

The feeding system exhibits particularly gentle handling of feed material. Vibration is only used in the vicinity of the linear feed rails. A brushless electric motor is used as the drive for the feed plates ensuring a calm, gentle motion. The feed rate can even be directly controlled via the smart, energy-efficient DEPRAG eacy feed controller.

This gentle part handling and low-friction feeding guarantees that particle build-up is kept to an absolute minimum. However, there is also the option of adding vacuum suction equipment to boost technical cleanliness at certain interface points. The DEPRAG CleanFeed concept is also available for each processing step of the eacy step feed system – from component handling and feeding to fastening – prevent, reduce and remove abrasion.

The new DEPRAG step feeder system: eacy step feed

Compatibility with other DEPRAG components

The step feeder can also be optionally combined with DEPRAG storage systems. They are the ideal complement for optimal processing, ensuring a constant fill volume and extended re-load intervals. Eacy step feed is, of course, also compatible with DEPRAG's other automation components, such as the DEPRAG Feed Module DFM, the DEPRAG screwdriving function modules and DCOS, the DEPRAG Controller System.

Guttenberger clarifies, "The high feed rate, long life-span and compact size – specifically for longer feed parts – provides an alternative to vibratory spiral feeders and sword feeders".

It is clear that the step feed system, in combination with DEPRAG automation components, is an attractive complete solution for numerous assembly applications. All key technology is produced in-house and therefore all components are perfectly coordinated with one another.

In addition to their diverse range of components, the company is also presenting other highlights to support the interconnected digital factory: pioneering smart tools which can be connected to the newly developed DEPRAG Cockpit software solution. This enables the supervision and evaluation of all assembly tasks and provides analysis tools for continuous process optimisation and the recognition of trends.

A further attraction is the live show "The future of screwdriving technology" – at 10am and 14pm daily at the DEPRAG exhibition stand.

DEPRAG SCHULZ GMBH u. CO. D 92224 Amberg

Michael Wright Appointed Managing Director, Connect 2 Cleanrooms

Following a sustained period of accelerated growth, integrated cleanroom solutions provider, Connect 2 Cleanrooms (C2C) is delighted to announce the promotion of Michael Wright to MD, effective 1st July 2019. Michael succeeds founding MD, Joe Govier, who has moved to a CEO role to seek out new strategic opportunities for the business, setting out the next exciting chapter in the story of C2C.

Michael joined C2C in 2016 to head up its operations, bringing over 20 years' experience in leadership and knowledge of critical production environments. Prior to that, Michael held a series of high-profile senior roles, including heading up the manufacturing function of BAE Systems for its Typhoon assembly.

As MD, Michael will be responsible for ensuring C2C protects and supports the interests of existing clients whilst offering new and exciting services, with a key role in achieving the company's aim of becoming the UK and Europe's leading integrated cleanroom solutions provider.

Joe comments, "Michael brings to his new role a high level of technical ability to scale systems and processes and I look forward to working closely with him to develop C2C, in the UK and internationally, as an integrated cleanroom solutions provider."

Michael adds, "Joe has built a phenomenal brand and business model and it's a personal privilege and opportunity to lead such a fantastic team in sustaining our existing operations, whilst growing our capabilities to offer a broader range of services to clients."

Connect 2 Cleanrooms
Riverside House, Forge Lane
LA2 6RH Halton, Lancashire
Vereinigtes Königreich
Telefon: +44(0)1524 813022
Telefax: +44(0)1524 811589
E-Mail: info@cleanroomshop.co.uk
Internet: http://www.cleanroomshop.com

Cleanzone 2019 offers more in the field of plant engineering

One of the focal points of this year's Cleanzone is the design, planning and construction of modern production facilities in which contamination – be it micro-organisms, particulate or molecular contamination – is rigorously controlled.

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

Numerous companies from the field of plant engineering will be at the trade fair in Frankfurt on 19 and 20 November 2019 to exhibit their concepts and solutions for increasing both product quality and production efficiency in cleanrooms within modern production facilities. Kerstin Horaczek, Group Show Director for Technology at Messe Frankfurt, explains: "We are delighted that we have been able to expand the range of products and services on offer in this area. This means that all visitors who are planning new production facilities or looking to overhaul their existing systems will find even more professional partners, contacts and expertise at the trade fair."

The plant engineering offering includes not only planning and construction services, but also ceiling and lighting systems, building management systems, ventilation and air-conditioning technology, airlock systems, laminar flow modules, mini-environments, cleanroom workstations and cleanroom flooring. Exhibitors in this product field include Asys, Cleanroom Competence,cleanroom.de, Colandis, Daldrop + Dr. Ing. Huber, Dittel Engineering, Drees + Sommer, Egon Buchta, Friedrich Sailer, Klima Systeme 2000, Metisafe Cleanroom and Biosafety, MK Versuchsanlagen, nora systems, Ortner Reinraumtechnik, Viessmann Technologies, Weiss Klimatechnik, ROM Technik, Siemens and Verein Interessengemeinschaft Pharmabau 3000 (VIP3000), a group promoting the interests of those involved in pharmaceutical construction.

Josef Ortner from Ortner Reinraumtechnik in Austria knows how important Cleanzone can be for these companies: "I think Cleanzone is a very, very important trade fair. Cleanzone has the potential to create focal points, be it technological focal points, markets, or knowledge in very specialised fields. The Cleanzone trade fair can do this very well."

At Cleanzone 2019, companies from the field of plant engineering will be showcasing innovations designed to increase production efficiency. Digitalisation and automation are already helping to optimise processes in cleanrooms. Data generation, data organisation and data exchange are all prerequisites for enabling AI-based systems to react flexibly to changes – such as ventilation systems that adapt their air volume to the average number of employees at particular times during the day. Thanks to the use of smart simulations in advance, it is possible to eliminate some problems during the planning phase. The requirements for clean environments can vary according to the product, the desired quality and requirements for employee protection. Cleanzone exhibitors will be offering new approaches and solutions based on flexible modules, tents, mini-environments and innovative covers for machines, in keeping with the motto: "Cleanrooms do not have to be expensive." The trade fair will be accompanied by a high-calibre supporting programme. You will find the latest information on the events at www.cleanzone.messefrankfurt.com/events.

Before Cleanzone opens its doors in Frankfurt in November, the second Cleanzone Middle East will be taking place in Abu Dhabi on 18 and 19 September. This conference and exhibition is focused on the Middle East, parts of Asia and Africa, bringing together the manufacturers of cleanroom technology and equipment with user industries.

Example plant engineering

cleanzone

cleanzone
Messe Frankfurt Exhibition GmbH
Ludwig-Erhard-Anlage 1
D 60327 Frankfurt am Main
Telefon: +49 69 7575 6290
Telefax: +49 69 7575 96290
E-Mail: anja.diete@messefrankfurt.com
Internet: http://www.messefrankfurt.com

Information, innovation and expertise

parts2clean supporting program

Properly cleaned parts and components are a basic requirement in every branch of industry today in order to ensure the integrity of downstream processes and trouble-free product functionality. parts2clean in Stuttgart highlights various options for optimizing processes. Special displays and a forum program also provide attendees with valuable information and expertise at the leading international trade fair for industrial parts and surface cleaning.

22nd - 24th October 2019: parts2clean 2019, Stuttgart (D)

Users of industrial cleaning technology are facing major changes and new challenges. This applies to a variety of sectors, including the automotive industry, mechanical engineering, medical technology, aviation, electronics, precision engineering and micromechanics, optics and semiconductor suppliers. Manufacturers are looking for ways to remove not only particulate residues, but also surface films. At the same time, new materials and manufacturing technologies, such as additive manufacturing, as well as ever-smaller production runs, and not least the move towards electric power in the automotive industry, are all driving the need for specialized cleaning solutions. "The exhibitors at parts2clean will be showing how industrial users can solve new problems and meet the changing needs of their customers," says Olaf Daebler, Global Director of parts2clean at Deutsche Messe. "They will be showcasing solutions for improved energy and resource efficiency, increased cost-effectiveness and flexibility, as well as the automation of parts cleaning and its integration into networked processes." parts2clean takes place from 22 to 24 October in Stuttgart.

Supporting program with information-rich special displays

Key topics for the present and future of industrial parts and surface cleaning will be addressed in an informative supporting program consisting of dedicated displays and forums.

(Source: parts2clean)

"Demand for automated robotic solutions from the industrial parts cleaning sector has grown rapidly in recent years, both in Europe and other regions, especially Asia," reports Peter Pühringer, Division Manager at Stäubli Robotics. "In order to meet the special requirements of the parts cleaning sector, we recently modified our standard robot program specifically to handle applications in parts cleaning." The special presentation "Parts Cleaning 4.0 in practice" highlights this development. Live demonstrations will show how easily process and equipment data can be made available, and how these data can be defined and edited for specific requirements and purposes.

The special "QSREIN 4.0" display staged by the German Industrial Parts Cleaning Association (FiT) in Hall 7 serves as a hub for exploring the future of industrial parts cleaning. Here exhibitors and users can get together to discuss forward-looking process solutions for parts cleaning. The topics covered include new-generation modules for cleaning chemistry and processes, technology for measuring, testing and processing lines and customized process control for adaptive cleaning processes. "The aim of this initiative is to provide a starting point for discussions about adaptive process solutions that self-adjust to the condition of the parts and the degree of cleanliness required. This involves the optimization of existing processes and the development of new, problem-solving solutions," remarked Dr. Lothar Schulze, a member of the FiT excecutive board.

The special "Process flow in parts cleaning, including cleanliness checks" display staged in conjunction with the CEC (Cleaning Excellence Center) enables visitors to track the various stages of the parts-cleaning operation. After deburring, the parts are cleaned in a clean-room environment, and then transferred to a Class ISO 7-compliant clean room for final cleanliness checks, using a clean-room-compatible transfer cart to avoid contamination. Specialists in industrial cleanliness will be giving visitors guided tours of this special showcase on all three days of the show (in the mornings and afternoons).

Bilingual forum: a valuable source of information and expertise

One of this year's highlights will again be the three-day parts2clean Industry Forum. "For visitors from Germany and around the world, the forum is highly valued as a source of information on state-of-the-art advances in parts and surface cleaning, also thanks to a strong line-

Information, innovation and expertise

up of contributing speakers," commented Daebler. Top experts from industry and the R&D community will be sharing knowledge and expertise in talks on the following topics: cleaning processes, upstream and downstream processes, analytics and metrology, digitization and automation, field reports and examples of best practice from various sectors, as well as future scenarios. The forum will be in German and English, with simultaneous interpreting provided. The future of industrial parts and surface cleaning is also the subject of the session organized by FiT under the title "QSREIN 4.0 – process solutions for parts cleaning in the future". The complete forum program will be available as of mid-September on the parts2clean website, under "Supporting program". Admission to the forum is free of charge for all parts2clean attendees.

Guided Tours – the shortest route to the right solution

The Guided Tours program enables visiting professionals to gather information about specific areas of interest in parts and surface cleaning at selected exhibitor stands, with every link of the process chain covered. They are a quick and easy way to discover relevant solutions and innovations, and to identify likely suppliers capable of solving challenges being faced by users. Tours last about two hours, and are available for groups of up to 25 persons (max.) on all three days of the show. Each tour is led by a trained guide, with commentary in English.

Deutsche Messe AG
D 30521 Hannover

Innovative micro-infusion pump from Gerresheimer subsidiary Sensile Medical developed and successfully launched for EVER Pharma

Developed specially by Sensile Medical for EVER Pharma under the brand name D-mine®, this wearable microinfusion pump recently received European CE certification and has already been launched in several European countries. The compact, patient-friendly infusion pump is used for the continuous subcutaneous administration of drugs to treat Parkinson's disease. The first micro pump from Gerresheimer subsidiary Sensile Medical to be available on the market, it gives Parkinson's patients greater independence in their day-today lives.

The D-mine® pump is used to administer apomorphine in the advanced stages of Parkinson's treatment. Simple handling, safety, and ease of use were the main aims behind the development. The compact design is down to Sensile Medical's special micro-rotation pump technology and is straightforward to use thanks to an intuitive menu interface.

"In developing the EVER Pharma D-mine® pump for treating Parkinson's disease, we have completed a very challenging project with a tough set of requirements," explains Georges Kahwati, General Manager at EVER Pharma GmbH. "This product signals clearly that EVER Pharma is committed to focusing on the needs of patients and providing them with customized solutions and innovative medical products."

"With EVER Pharma's successful market launch, Sensile has delivered an ambitious project with highly innovative user requirements," adds Derek Brandt, CEO of Sensile Medical AG. "Parkinson's patients now have an innovative solution at their fingertips. Our integrated pump technology is already proving its worth in other treatment areas."

Parkinson's patients often have difficulty moving and appreciate the pump's ease of use, such as the automatic dosing function, the lack of complicated flow rate calculations, and the intuitive menu system. Its integrated choice of languages and the full-text display on its color screen make it easier to learn the ropes, while modern technologies such as data storage and individually adjustable basal rates support better treatment management. The D-mine® pump comes with a specially designed charging station and does not need any conventional batteries.

With its brand of the Parkinson's drug apomorphine and its own medical product, EVER Pharma now offers a comprehensive treatment package.

Gerresheimer AG
D 40468 Düsseldorf

Lab Innovations 2019 announces educational scientific conference programme themes

Visitors to earn CPD points in the free-to-attend conference programme

30th - 31st October 2019: LabInnovations 2019, Birmingham (UK)

Lab Innovations, the UK's only trade show dedicated to the laboratory industry, announces that sustainability and digitisation of the lab will be the main themes within its three, free-to-attend conference theatres at this year's event on 30 and 31 October. Industry professionals will demonstrate how to run an environmentally friendly lab, reduce costs and make funding go further, and expert speakers will outline how to future-proof laboratories by identifying the right technologies and lab systems to drive efficiency.

The laboratory industry is constantly evolving with new technologies, regulations and ways of working. To help visitors keep up-to-date with these developments, Lab Innovations 2019 will feature up to 35 hours of CPD accredited presentations covering industry-specific solutions to these challenges. Presentations take place within the Royal Society of Chemistry Theatre, the Insights and Innovations Theatre, and the Cleanroom Hub, as well as the Sustainable Laboratory zone.

Sponsored by PerkinElmer and with content curated by Laboratory News, the Insights and Innovations Theatre will focus on lab management and digitisation, with topics including the use of artificial intelligence in science, virtual reality in the lab, handling big data in the digital age and more. Speakers will help scientists identify laboratory practices or workflows that could be improved, and present technologies which can enable them to do this.

2019 has been designated by UNESCO as the International Year of The Periodic Table (IYPT) to mark the 150th anniversary since Mendeleev first ordered the elements into the iconic and universally-recognised 'periodic table'. The Royal Society of Chemistry (RSC) is celebrating the IYPT in its dedicated theatre, with presentations concentrating on 'Exploring the weird and wonderful world of the periodic table' on the first day, and 'Elements of our future world' on day two. The RSC's two keynote speakers will also be reflecting on the theme. Professor Andrea Sella, chemist and broadcaster, will raise the question: 'Mercury - Should you be afraid of The Element of Science?' and explore how mercury came to underpin the sciences, and why it is one of the key indicators of change to our planet. Comedy science presenter, Helen Arney, will introduce an element of fun in her keynote presentation by mixing songs and stand-up in a unique take on the periodic table.

Within the Cleanroom Hub, the educational content is curated by industry journal Cleanroom Technology. Here a dedicated programme focusing on controlled environments will be delivered by cleanroom experts, discussing the latest trends in products and technologies, as well as regulation and legislation for cleanrooms.

"Thanks to the input of our knowledgeable advisory board and conference partners, this year's conference agenda, running alongside our extensive laboratory product showcase, will again make Lab Innovations on 30 and 31 October a real highlight in the laboratory calendar," said Alison Willis, Divisional Director, Lab Innovations. "The combination of expert speakers, dynamic sessions, panel discussions and practical learning makes dipping in and out of our free, CPD-accredited conference sessions a valuable element of both days of the show."

Lab Innovations 2019 returns to the Birmingham NEC on 30 & 31 October. For free advance visitor registration, click 'Register for free' on the Lab Innovations homepage.

Cherwell Laboratories Ltd
OX26 4XB BICESTER
Vereinigtes Königreich

Preserving value - saving resources

Circular Economy: Hot Topic at K 2019

16th - 23rd October 2019: K 2019, Duesseldorf (D)

Plastic products have become an integral part of almost every area of life. For good reason. Plastic packaging extends the shelf life of food, plastic parts in cars reduces their weight and CO_2 emissions. In medicine, plastics ensure maximum hygiene standards and make medical products safe. Despite its many advantages, this important raw material has come into disrepute for some time now - because of the plastic waste that pollutes entire regions and floats in huge carpets on the world's oceans. But this problem can be solved. As the concept of "circular economy" plays a central role in this, it has become a hot topic at K 2019, the world´s flagship fair for plastics and rubber, which will be hosted from 16 to 23 October 2019 in Düsseldorf/Germany.

The idea at the root of the circular economy concept is quite simple: once used, valuable raw material can be processed at the end of its service life and be reused to create a new product - in an infinite loop. While some materials have limitations that do not allow this, a vast array of polymer materials are perfectly suitable for this approach. A circular economy dramatically reduces waste and also protects the resource of crude oil, because wherever new products are made from recycled plastic, there is no need to use raw, i.e. previously unused, materials.

About seventy years ago, plastics became a mass product. The University of California estimates that about 8.3 billion tons of plastics have been produced since then. Particularly in the wake of the strong population growth in many parts of the world, plastics production rates have shot up in recent times. The survey shows that the figures rose sharply: from 2 million tonnes of plastics produced in 1950 to 348 million tonnes in 2017. Accordingly, we have witnessed a substantial rise of plastic waste and we are faced with an urgent question: how to manage plastic waste sensibly? Two pressing problems are at the root of this complex challenge: littering and the unrestricted use of resources, which not only damages the environment but also slows economic growth.

Tackling the problem

Many countries have now realized that they need to change their approach if they want to harness the undeniable benefits of plastic products for years to come. In its plastics waste management strategy presented in 2018, the EU has shifted its focus to the recycling sector. In China's current five-year plan, circular economy is postulated as a goal. Countries such as India and Indonesia have declared war on plastic waste pollution. There are also approaches to a cycle in Africa, for example in Nigeria. Because criticism of plastics has also been growing among consumers in many places, a whole series of international brand manufacturers have already committed to the cause and adopted their own recycling strategies. Companies such as Coca-Cola, Ikea, Kraft Heinz or Adidas have promised to increase the proportion of recycled plastics in their products or their packaging in the future or – as in the case of Chinese Gree Electric Appliances, one of the largest manufacturers of electronic domestic appliances in China – have vowed to make their products completely recyclable.

Many factors come together

However, the implementation of a circular economy is still very much in its infancy. Many prerequisites still have to be met. First of all, we need waste collection systems. If used plastics are to be recycled, a sufficient quantity must be available. At present, there are various different recycling systems established in many countries throughout the world. In Germany, for example, there are deposit systems for PET bottles or models that coerce the industry and retailers to participate in the financial costs of packaging collection. They are all based on the idea that plastic waste is a valuable asset worth collecting. Product design is also important. So far, the main focus has been on functionality and, in the case of consumer goods, appearance. In the future, recyclability should become an important aspect that comes into play in the early product development stages.

Recycling is another core component of any circular economy. We need technologies that allow cleaning, segregation, shredding and pelletising of used plastics to ensure that it is ready for reuse in the production of plastic parts. Many of these technologies already exist. However, the quality of the recycled material often poses a problem. Only pristine recycled material is suitable for the production of high-quality plastic parts. In practice, however, it is virtually impossible to predict the purity of secondary material generated from recycled plastics. This is why Thorsten Kühmann, Managing Director of the Plastics and Rubber Machinery Association of the VDMA, proposes the introduction of standards for recycled materials. "So far, no one who uses recycled materials knows what quality they will receive. This makes the processes less reliable, because production cannot be influenced as much as when standardized virgin material is used. Standardised recycled material would be much more acceptable." In any case, the cleaner the plastic waste, the easier it can be re-processed into high-quality plastic pellets. Many experts therefore advocate separate collection systems to ensure that different plastics need no longer be separated by the recycling company, which in itself wastes a lot of water and energy.

Networking required

Networking waste management and recycling with production is a core aspect of the circular economy concept. At present, this part of the process is still in its infancy. „The main problem are various players and groups, which obstruct the introduction of a functioning circular economy", Henning Wilts, expert for Circular Economy at the Wuppertal Institute for Climate, Environment and Energy explains. He identifies a lack of cooperation to promote a cross-company network of collection, recycling and production. There is little to no exchange of data among companies. For example, at present, producers have no way of knowing which polymer material the recycler is generating at any given time, which means that they cannot plan with any certainty the quantities they will receive. Also, the individual areas of the cycle are usually subject to completely different legal regulations. „The systems

Preserving value - saving resources

have developed separately over decades. Bringing them together is a major challenge," Wilts concludes.

Nevertheless, removing obstacles is a worthwhile effort, not only because it helps us protect the environment and promotes resource conservation. The EU Commission also maintains that a circular economy for plastics will improve competitiveness and therefore considers it a very real economic benefit. Wilts: „If we succeed in establishing a closed-loop economy, its massive cost-efficiency would encourage other countries to follow suit." The first country to successfully implement a circular economy will become the role model for everybody else. Retaining the value of plastics by reusing it and treating it as a resource is also a convincing argument for those countries and regions that are only beginning to be faced with the problems of plastic waste.

Not all plastics can be recycled in an economically viable way, and not all used plastics find their way back into the cycle. But these materials can also be useful. Thermal recovery, i.e. incineration, of this group of plastics, for example, can save the fuel required by cement plants. In this application, plastic as a basic material is used at least a second time.

All experts agree on one thing: sustainable, global change and the successful and permanent implementation of a circular economy requires support and cooperation along the entire value chain, from the material manufacturer to the end consumer. Sustainable behaviour begins at home and at school.

People need to be made aware of the value of plastics across all nationalities, age groups and social groups. But a high level of commitment from politicians and legislators is also essential. Protectionism, which only takes into account one's own national interests and a restricted number of influences connected with trade policy, will neither help to implement appropriate measures nor promote a general rethinking process.

Some positive initiatives are already underway: The Member States of the European Union are obliged to achieve a collection rate of 90% for disposable plastic bottles by 2025. However, much more tangible measures are required, such as setting margins for the use of recycled material in production or defining a fixed amount of electricity that must be generated by plastic waste incineration.

At K 2019 in Düsseldorf, the subject of recycling management will not only cover a large amount of space at the exhibitors' stands, but will also feature prominently in the supporting programme. For example, the circular economy will be the dominant topic at the „Plastics Shape the Future" special presentation hosted by PlasticsEurope, and the VDMA will organize the „VDMA Circular Economy Forum" for K 2019. At the entrance gates to K 2019, the „Touch Points Circular Economy" will attract the trade visitors' attention to this topic and point out relevant exhibits in the various halls.

Messe Düsseldorf GmbH
D 40001 Düsseldorf

A country report in the run-up to K 2019

North America: Technology Developments and Market Opportunities Drive Industry Growth

The North American plastics industry, led by the United States, is posting good business results this year. Sales, revenue and growth indicators are pointing up for the foreseeable future. Among the factors driving growth are the digital revolution in controls and machine communication which yields significant advances in process and automation capabilities, as well as benefits in productivity, manufacturing economy and quality; new and evolving markets that generate demand for plastics applications; and a pro-business climate in the U.S. that under President Donald Trump is characterized by lower federal taxes, increased government spending and a relaxation of many onerous regulations since 2017. At "K 2019" 100 US and 18 Canadian enterprises will be represented while to the tune of 8,500 trade visitors will travel from North America to this, the international No. 1 trade show for plastics and rubber in Düsseldorf. Reason enough to take a closer look at the economic situation in North America and the local market conditions for the plastics industry, in particular, in the run-up to "K 2019".

Cautious Economic Optimism

Analysts report that U.S. gross domestic product (GDP) posted a 3% increase in 2018 from 2017 and should expand 2 to 3% in 2019, a range that represents healthy growth but is not considered high enough to trigger inflation, prohibitive interest rates or "irrational exuberance" among investors, lenders and consumers that could lead to an economic contraction.

Some experts, however, anticipate that 2019 GDP results will be at the low end of that scale. According to The Balance, an online publication, U.S. GDP growth will slow to 2.1% in 2019 and decline to 1.9% in 2020 and 1.8% in 2021. The reasons stem from a predictable reduction in demand for goods and services that follows the healthy growth of the past two years, and to the side effects of what the publication calls Trump's trade war, during which he imposed 10% tariffs on $200 billion (€224 billion) worth of products from China, and levied tariffs against other countries.

The president also ordered tariffs on imported steel and aluminum and renegotiated a trade agreement with Canada and Mexico that will replace NAFTA, the 25-year-old North American Free Trade Agreement, with a treaty known as USMCA, or the U.S.-Mexico-Canada Agreement. The impact of the steel and aluminum tariffs has been

A country report in the run-up to K 2019

generally good for the balance sheets of U.S. producers of the metals and costly to most end-users. The verdict is still out on how successful USMCA will be. Though it has been signed by the leaders of the U.S., Canada and Mexico, the treaty must be confirmed by the legislatures of each country before it takes effect. At stake is $1 trillion (€1.12 trillion) of annual trade between the neighbors.

Another concern created by the tariffs on China and other countries is their cost to U.S. consumers in the form of reduced product availability, higher domestic product prices due to less competition, the passing along of tariff penalties by importers and supply disruptions. The New York Federal Reserve Bank, for example, estimates that the China tariffs alone cost U.S. consumers at least $6.9 billion (€7.7 billion) of income from January through November 2018, and possibly as much as $12.3 billion (€13.7 billion), depending on how the numbers are interpreted.

"We find that the U.S. tariffs were almost completely passed through into U.S. domestic prices, so that the entire incidence of the tariffs fell on domestic consumers and exporters … with no impact so far on the prices received by foreign exporters," report the Fed economists. "We also find that U.S. producers responded to reduced import competition by raising their prices."

Despite these concerns, U.S. manufacturing is poised for growth. The MAPI Foundation (Manufacturers Alliance for Productivity and Innovation) forecast last year that U.S. manufacturing as a whole will grow by an average of 2.8% per year between 2018 and 2021; spending on capital equipment will increase by an average of 6.8% annually during that period; and exports will rise by 6% per year.

All of this is good news for plastics, which, based on one metric, employment figures from 2012 to 2017, outperforms the U.S. manufacturing industry. During that period plastics manufacturing employment grew by 1.6%, while total U.S. manufacturing employment rose 0.9%, according to figures developed by the Plastics Industry Association (PIA) and Probe Economics LLC.

In a report released late last year that covers results in 2017, PIA (formerly the Society of the Plastics Industry) states that plastics manufacturing generated 989,000 jobs in the U.S., a 2.4% increase from 2016, and 1.81 million jobs counting suppliers. The association's "2018 Size and Impact Report," an annual publication, puts the value of manufactured plastics shipments in 2017 at $432.3 billion (€484.1 billion), an increase of 6.9% from the year before. When suppliers are included, the value of shipments reached $590.6 billion (€661.4 billion), up 7% from 2016.

While it's likely that industry growth will slow somewhat in the next three years, demand for plastics products in the U.S. and the rest of North America, along with the evolution of major end-use markets, could be enough to cushion the impact of an economic slowdown for processors and suppliers. The relative stability, and in some cases depreciation, of the U.S. dollar compared with other major currencies will keep American-made products competitive at home and in export markets. The short-term outlook for the U.S. plastics industry and North America generally, is positive.

Enhancing Automation

The PIA report notes that the U.S. plastics industry is essentially at full employment. Anecdotal information from molders, extruders and other fabricators reveals that most are having a difficult time finding qualified workers. This situation is spurring efforts by product makers, compounders and others to further automate operations.

Many such initiatives are based on Industry 4.0 (I4) automation principles. I4 received a major boost from the German government in the past decade as a way of promoting digital manufacturing to improve productivity, product quality and, ultimately, competitiveness. In North America progressive processors are taking advantage of new and powerful controls and software from such specialists as Siemens, IQMS/Dassault Systémes, Allen-Bradley, Omron, RJG and others, as well as from select equipment and robotics vendors, to create connected operations in which machines communicate seamlessly with

An autonomous vehicle operated by technology developer Waymo moves along a street in San Francisco. Fully autonomous vehicles could be a feature on many U.S. roads by 2030. (Credit: Waymo)

A country report in the run-up to K 2019

each other and provide detailed operational data in real time.

The results allow product makers to extend quality control to ever-smaller batch sizes, even individual parts if necessary, and assure that production fully meets customer specifications.

Automation suppliers, meanwhile, are equipping robots with vision-inspection systems and other sensors to detect quality problems ranging from excess flash on parts to surface imperfections and short shots. This data can be used to manually or automatically adjust a processing machine or mold to eliminate quality problems.

I4 connectivity is also effective for predictive maintenance on machines, molds and tooling, and other equipment. By placing sensors at key points and monitoring them, processors detect when a component needs replacing, thereby eliminating the potential for unexpected and costly downtime, as well as off-spec production.

Such capabilities are increasingly available in software systems and machine controls. As such, they have the potential to create fully automated process plants—so-called lights-out manufacturing facilities—in which human operators are either eliminated or reduced to a handful of supervisory personnel.

The capital expense of installing I4 and similar automation may be daunting to end-users, but suppliers maintain that the return on investment can be as little as one year or less and the upside in productivity, quality, economy and competitiveness is worth the cost. As a result, U.S. adopters of digital technologies include medium and even smaller companies as well as large manufacturers. Much of the attraction of I4-level automation relates to the production involved, rather than company size. Medical, automotive and electronic parts, for example, have high quality thresholds, and advanced automation is the price of market entry.

Automation is not without its downside—at least to critics who claim it deprives humans of jobs and governments of tax revenue from displaced workers. Initiatives are periodically proposed to levy taxes on robots. The latest effort in the U.S. comes from Chicago, Illinois, where a city official wants an annual tax on each robot that is equivalent to one year's salary of every worker it replaces.

To date, no U.S. city or state has passed a law to tax robots. The European Union Parliament has rejected such a measure; and the only country in the world where a similar proposal has become law is South Korea. In this country, however, the government has removed business tax deductions for robots that take human jobs, not levied a tax on their use.

For now, however, mass replacement of humans by robots isn't likely. Robot makers say that when manufacturers install their equipment, they typically reassign affected workers to higher-value jobs. And with the industry at full employment in the U.S., companies do not want to lose workers.

The Road Ahead

New and evolving markets will account for a range of innovative applications in coming years. Two areas in particular that will generate important opportunities for North American plastics are electric vehicles and autonomous vehicles.

Electric vehicles (EVs) are common in North America, if underrepresented when compared with the number of cars and trucks powered by internal combustion engines. EVs, however, are more reliant on plastics to achieve the weight they need for optimum cruising range with a manageable battery size. Too much vehicle weight necessitates a disproportionately large battery (the ratio is geometric), which in turn requires an inordinate amount of interior space and consequent tradeoffs in vehicle design and passenger comfort.

Similarly, autonomous vehicles (AVs) will become major users of plastics and composites since they will be powered by electricity or, in some cases, hydrogen, both of which will be weight-dependent for maximum range.

Every legacy automaker in the U.S. is developing AVs, as are global competitors with manufacturing plants in America such as Daimler, Volkswagen Group and BMW, as well as newcomers like Tesla and Waymo.

Auto OEMs expect to begin selling AVs with limited autonomy as soon as 2022, and with full autonomy no later than 2030. In addition to electric propulsion, AVs will be electronics-rich environments, with connections to personal communication devices like smartphones, the internet, and of course the high-tech sensors and lidar (light detection and ranging) systems that make autonomous operation possible. Aptiv (formerly Delphi Automotive Systems), a specialist in AV electronics, says that by 2020 a car with some autonomous capabilities will transfer 100,000 pieces of data each microsecond. The current data-transfer rate in AVs is 15,000 per microsecond.

These and other requirements mean that plastics and composites will play major roles in weight reduction, part consolidation, heat dissipation, high-tech lighting like OLEDs (organic light-emitting diodes), and flexible touchscreens for controls and morphable (shape-changing) instrument panels.

The transition to AVs seems unstoppable. While they may never entirely replace conventional gas- and diesel-powered vehicles, the auto industry is preparing for a major shift in unit sales and revenues. Consultant Roland Berger says OEMs will see their share of conventional car sales decline worldwide to 29.9% in 2030 from 34.7% in 2015, and their share of profits fall to 22.3% from 38.1% in the same period. AV fleets, in contrast, will capture 19.6% of global revenues in 2030 compared with 1.2% in 2025, and 40.3% of profits from 2.8% in the five-year timespan.

Dow paved two roads at its Texas plant in February with a special asphalt modifier that included LLDPE scrap. The process could become a major recycling option for consumer waste. (Credit: Dow)

A country report in the run-up to K 2019

16th - 23rd October 2019: K 2019, Duesseldorf (D)

AVs won't be just for the road. A number of companies in the U.S. are working to develop autonomous urban air taxis that will ferry riders around congested cities as well as to and from airports.

Arguably the best known of these is Uber, the ubiquitous ride-sharing program, which formed Uber Elevate to make urban air taxis a reality. The company plans to open "skyports" in at least two cities, Los Angeles and Dallas, by 2020, with an eye toward full commercial service in 2023. Uber ground vehicles, autonomous or with drivers, will transport passengers to a skyport where they will board a small autonomous air taxi that is programmed to fly them where they want to go. The vertical-takeoff-and-landing (VTOL) vehicles will be electric and require lightweight polymer technologies to optimize flight range and battery power and to accommodate the electronics required for flight, air safety and passenger convenience. Uber is working with five aviation companies on designs for the air taxis.

One major aerospace manufacturer developing such a vehicle is Boeing, whose Aurora Flight Sciences division is one of the companies working on air taxi designs with Uber. Early this year Boeing flight-tested a VTOL prototype. How the concept of autonomous air taxis develops is anyone's guess at this point. However, enough corporations are investing significant sums of money in the idea and the technology that it could well be a commercial service in the next five or so years.

Rethinking Recycling

Recycling concerns seem to be cyclical in the U.S. The industry is currently in an "up" cycle, which is generating publicity among consumers and regulators. Most attention is on single-use plastic bags, with restrictions at local and state levels. California banned them entirely, and New York passed a similar law this year. In addition, some 350 U.S. cities and counties restrict or prohibit their use.

The restrictions are not likely to have much effect on recycling or the environment. This is because consumer recycling programs in general are not effective in the U.S.

Major resin suppliers are promoting local efforts to reclaim flexible waste, primarily packaging. These favor mono-material constructions, not mixed waste. While flexible food packaging is too valuable to restrict, efforts are underway to redesign packages for recycling.

Dow, for instance, has an all-polyethylene standup food pouch that facilitates recycling, as well as compatibilizer technology that allows PE packages with EVOH barrier layers to be recycled in the same stream. The company also has a solution for plastic bags: blend the scrap with Elvaloy, a reactive elastomeric terpolymer, for mixing with asphalt paving modifiers.

In February, the resin producer proved the concept by paving two private roads with a combined length of 0.5 miles (almost 1 km) at its plant in Freeport, Texas, using a blend of Elvaloy and 1,686 lb. (765 kg) of linear low-density polyethylene scrap, the equivalent of 120,000 single-use plastic bags. The road surfaces appear indistinguishable from conventional asphalt.

Eastman upgraded its methanolysis technology for thermoplastic polyesters, which breaks scrap into its constituent chemicals for repolymerization.

BASF and 30 other companies announced formation this year of the Alliance to End Plastic Waste, a global effort that seeks to eliminate waste from the environment and, notably, the oceans.

The industry's message is that it has the will and resources to increase recycling. The issue now, many experts say, is whether the public and regulators are listening and, most importantly, willing to change their personal habits to promote effective recycling programs.

Messe Düsseldorf GmbH D 40001 Düsseldorf

Boeing tested a prototype autonomous air vehicle early in 2019. Such vehicles could be used as air taxis in the U.S. as soon as 2023. (Credit: Boeing)

Long-lasting, high-speed medical IntElect S performs live at K-2019

Sumitomo (SHI) Demag Plastics Machinery GmbH will reveal its newest IntElect S medical machine at K-2019. Built for high speed and precision, the latest 180-tonne all-electric machine is also proven to deliver the highest repeatability and cleanliness.

16th - 23rd October 2019: K 2019, Duesseldorf (D)

Aimed squarely at mass manufacturers of medical plastic components, the machine has been specially built for extremely narrow tolerance applications requiring fast cycle times between 3 and 10 seconds. Being all-electric, the IntElect S series is cleaner, cooler, faster, quieter and more energy efficient. The layout of the mould space ensures it's clear of contaminants, particles and lubricants. This makes the IntElect S GMP-compliant and consequently the ideal machine choice for medical cleanroom environments.

In addition to its clean environment, fast cycle times and unparalleled processing stability, the IntElect S heralds a new era for moulding sustainability, energy efficiency, and total cost of ownership (TCO).

Cleanroom ready and energy efficient, the IntElect S delivers unparalleled process stability.

Product manager Peter Gladigau confirms: "We have conducted extensive machine and part lifecycle durability tests for the IntElect S, comparing to equivalent all-electric injection moulding machines on the market. These tests have confirmed that the enhancements we have made to our high performance drives clearly increases the machines' lifespan and consequently increases TCO.

"Even testing clamp spindles under the hardest conditions, there was no evidence of visible wear after millions of cycles. Increasing the capacity of the IntElect's energy recovery system has not only improved energy efficiency but also extended the longevity of electrical components. Improved temperature control of the machine's spindles, motors and inverters all help to guarantee safe operation of machine, even for the highest performing applications," explains Peter.

With a dry cycle time of 1.2 seconds, the S model outperforms previous generations of IntElect machines for mould movements, as well as for metering speeds and ejector movements.

Peter adds: "The extended tie bar distance and huge mould heights means that multi-cavity moulds can be used in combination with small injection units. This is especially beneficial for precision medical moulders."

To demonstrate this impressive performance on the new IntElect S, Sumitomo (SHI) Demag will run a live production cell at K-2019, moulding pipette tips on a 64-cavity mould. The high-speed cell also includes an efficient automation system to remove and place moulded pipettes into the corresponding racks.

Sumitomo (SHI) Demag
D 90571 Schwaig

The GMP-compliant layout of the mould area protects against dust particles and ensures contamination-free production.

At K-2019, Sumitomo (SHI) Demag will produce medical pipette tips on a 64-cavity mould on the new IntElect S 180.

The MEDICA LABMED FORUM highlights laboratory medicine's top topics

From smart diagnostics and high-performance medicine to Artificial Intelligence

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

What functions will the laboratories of the future perform? And how can they make even more accurate diagnoses, ideally more quickly and at the place of treatment? From 18 to 21 November 2019, visitors in Düsseldorf will find the answers to these questions at MEDICA, the world's largest and leading medical trade fair with more than 5,000 exhibitors. The field of laboratory technology and diagnostics has moved into Hall 1, which has just been completed. Here, more than 800 exhibitors, among them renowned returnees like Abbott and Euroimmun, focus on all the trending topics in modern laboratory medicine.

In addition, the cutting-edge MEDICA LABMED FORUM sessions highlight progress in the fields of microbiology, cardiology and oncology from a laboratory medical point of view. They also take a closer look at a hot industry topic: promoting young talent and career prospects for young scientists. The forum also found a new home within the 12,000 square metres that make up Hall 1 and is organised by Prof. Dr. Georg Hoffmann (Trillium GmbH, specialists for medical publications) in cooperation with the German Heart Centre in Munich.

On 18 November, the programme will be chaired by PD Dr. med. Beniam Ghebremedhin (Witten/Herdecke University, HELIOS University Hospital Wuppertal) and launches with a closer look at microbiome analysis, currently a much hyped topic. Here, the forum addresses the sequencing of genomic information of all micro organisms in our bodies, which play a decisive role in determining the course of diseases. In his introductory talk, Prof. André Gessner (Institute for Microbiology and Hygiene, University Hospital Regensburg) will cover a range of areas, from great analytical challenges to surprising findings regarding what is known as the gut-brain connection. Dres. Laura Steenbergen (Leiden University, Netherlands) and Jean-Pierre Trezzi (University of Luxembourg) will hold an illustrative talk on the meaning of microbiomes in the development of depression and Parkinson's disease.

The first afternoon in Düsseldorf will be no less captivating. Here, the forum will illuminate an entirely new field of analytics, in which innovative start-ups are already active—breath analysis. Our breath provides valuable diagnostic information more quickly and easily than our blood—not only on infections and tumours in our lungs, but on diseases of the digestive tract and numerous inflammations. Dres. Simona Cristescu, Agnieszka Smolinska and Wolfgang Vautz will outline the areas of application for these issues. Prof. Wieland Voigt from Steinbeis University in Berlin will provide an extensive technological overview.

Parallels to sports medicine

The second and third days at the MEDICA LABMED FORUM (19 and 20 November) will be chaired by Prof. Stefan Holdenrieder (German Heart Centre in Munich) and are dedicated to cardiovascular diseases and cancer. Here, the forum highlights new scientific and technological developments, molecular high-tech analysis procedures and modern Artificial Intelligence (AI) applications for laboratories as well as the use of small and intelligent diagnostic devices for athletes and patients.

In the cardiovascular module, PD Dr. Markus Krane from the German Heart Centre in Munich and Prof. Bernd Giebel from the University of Duisburg-Essen will present innovative procedures to regenerate heart tissue made of stem cells and exosomes. PD Dr. Oktay Tutarel, also from the German Heart Centre in Munich, and Prof. Frank Klawonn from TU Braunschweig will update visitors on cardiological biomarkers in children and the urgently required standardisation of biomarker data.

"Due to the great interest visitors showed last year, we are dedicating an entire afternoon to the module on cardiology in sports medicine this year," explains Prof. Dr. Georg Hoffmann, who organises the forum. In this module, Prof. Perikles Simon from the University of Mainz will talk about circulating nucleic acids as biomarkers for athletic activities and performance, whilst Prof. Billy Sperlich from the University Würzburg will take the auditorium through sports medical diagnostics in athletic sport to their use in grassroots sports.

The MEDICA LABMED FORUM highlights laboratory medicine's top topics

The cardiology topics are particularly relevant to sports medicine and are expected to be highly popular with the specialist audience again this year. Therefore, another long-established element of MEDICA's programme, the 7th MEDICA MEDICINE + SPORTS CONFERENCE, will once again unite the who's who of the international professional sports medicine scene in the Congress Center Düsseldorf (CCD Süd) on 20 and 21 November 2019.

Gaining accurate cancer diagnoses from blood

When diagnosing cancer, histopathological and molecular pathological examinations of the tissue are still the gold standard, according to Prof. Christopher Poremba, Munich. Increasingly, this method is supported by digital image analysis procedures. Dr. Volker Bruns from the Fraunhofer Institute for Integrated Circuits IIS in Erlangen illustrates the "practical use of Artificial Intelligence in digital pathology" on the third day of the forum (20 November). Prof. Frank Klawonn and Dr. Dr. Huub van Rossum (Antoni van Leeuwenhoek Hospital, Amsterdam, Netherlands Cancer Institute) demonstrate the complexity of this topic, which is already being applied in blood diagnostics.

Mutation detection in our blood offers a significant expansion of future diagnostic possibilities, and methods such as liquid biopsies and liquid profiling are currently much talked about. These allow a molecular characterisation of tumours even in cases in which no tissue biopsy can be performed, which enables closely-meshed progress monitoring in personalised cancer therapy for the first time. Prof. Nicola Normanno from the University of Naples Federico II will summarise the current status and future perspectives at the MEDICA LABMED FORUM in the afternoon of 20 November.

Focusing on the future, in pursuit of young talent

In the field of biosciences, searching for new talent is increasingly proving almost as challenging as identifying diseases. The final day of MEDICA 2019 (21 November) focuses on this topic. In this module, young doctors and scientists will once again be given insight into captivating fields and current trends in the laboratory sector, whilst the afternoon sheds light on opportunities for professional development—in academic as well as industrial environments. Here, the focus is on professional aspects as well as general issues such as reconciling careers and work . The content of this theme day at the MEDICA LABMED FORUM was designed in cooperation with the German Society for Clinical Chemistry and Laboratory Medicine (Deutsche Gesellschaft für Klinische Chemie und Laboratoriumsmedizin, DGKL) as well as the Diagnostics Industry Association (Verband der Diagnostica-Industrie, VDGH).

The MEDICAL LABMED FORUM programme offer runs daily from 10:30 a.m. to 4 p.m. Participation is free for visitors with a ticket to MEDICA.

Messe Düsseldorf GmbH
D 40001 Düsseldorf

COMPAMED Innovation Forum: Sensors are the key to tomorrow's digital hospital world

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

On 10 July 2019, the COMPAMED Innovation Forum took place at the Helios Clinic in Krefeld and focused on high-tech solutions for hospitals. With its new concept, this year's forum created a direct dialogue between the manufacturers and developers of technical solutions and the end product users.

Not compact enough, not flexible enough, too expensive, cannot be integrated sensibly into operational procedures on the wards—the shortcomings users listed for medical technology products was seemingly endless. The first introductory discussion already indicated that high-tech medical technology in particular often seems to have been developed at cross purposes to the real needs of medical professionals.

Franziska Niederschelp from the Helios Clinic presented the digitisation measures that have been implemented and the progress within the Helios Group. In future, voice assistance systems for doctor's letters and file management will play a particular role. A further focal point is the patient data gained from medical devices, laboratories and wards, which has to be bundled automatically and combined digitally.

Anaesthetist and intensive and emergency care Dr. Jens Ebnet raised awareness for the particular demands medical technology faces in acute situations. As lack of acceptance, possibly due to moral

COMPAMED Innovation Forum: Sensors are the key to tomorrow's digital hospital world

conflicts, may give rise to risks, it is necessary to sufficiently involve specialist doctors in the development of automated, data-processing medical devices. Using Swordcath, his own development of an intuitive system for inserting blood catheters, as an example, he also criticised regulatory hurdles and the lack of political support for small and mid-sized companies.

In her talk, Maren Gessler from the Helios Centre for Research and Innovation in Wuppertal explained that there certainly are options to support and fund innovative concepts and ideas.

Sensors allow applications that improve patient care

The second session centred on technologies that may offer innovative opportunities for application in diagnostics and therapies. Swiss company CSEM has developed an optical method of reliably monitoring blood pressure. The method uses the light of a conventional smartphone's camera via an app. Eike Kottkamp from InnoME explained the advantages of single-use sensor products: In fields of use that do not require high precision measurements, single-use sensors are attractive alternatives to elaborate and expensive sterilisation processes and open up new fields of application, for example under wound dressings. Dr. Dirk Janasek from ISAS e.V. presented an innovative procedure for reliable haemophilia testing. Michael Görtz from the Fraunhofer Institute for Microelectronic Circuits and Systems explained how sensor implants are able to continuously monitor functions such as blood pressure, intraocular pressure and cerebral pressure and support therapy measures. Among other topics, Dr. Heike Kreher from Micronit explained how microfluidic chips used in rapid tests can identify a subtype of leukaemia, for example, and open up timely therapy measures for patients.

Regular exchange between users and manufacturers is essential

Another major theme were the presentations and discussions surrounding the development of products that are already market-ready and successfully in use—including in Krefeld. The spectrum ranges from intelligent home-alert systems by the easierLife GmbH, WLAN connections for medical-technical devices, an in-house logistics system that automatically prepares the medication doses for inpatients, an infrared-based system that discretely monitors the rooms of patients who are at risk of falling, innovative visitation trolleys for hospital staff and robotics systems that support paraplegics and can also be used by care staff who have to carry heavy loads.

The lively and productive discussions between the talks and in closing emphasised the tremendous need for communication between users and manufacturers.

Messe Düsseldorf GmbH D 40001 Düsseldorf

Fakuma 2020: **Digitalisation, Networking and Sustainability**

Further development at full bore: Everybody who's anybody in the field of plastics processing will meet at the 27th Fakuma international trade fair for plastics processing in Friedrichshafen from the 13th through the 17th of October, 2020. The technical event with an emphasis on injection moulding will occupy all available exhibition floor space in the modern exhibition centre on Lake Constance, and will be more international than ever before.

13th - 17th October 2020: FAKUMA 2020, Friedrichshafen (D)

The Fakuma international trade fair for plastics processing is an acknowledged industry and technology barometer where innovations covering all aspects of injection moulding are concerned, as well as associated issues such as materials, machines, periphery, processes and simulation. Fakuma continues to expand upon its leading position. 1933 exhibitors from 40 countries travelled to Friedrichshafen in 2018 to participate at Fakuma, and nearly 48,000 expert visitors from 126 countries attended the industry highlight on Lake Constance. Once again in 2020, the trade fair will approach the 2000 mark and occupy all existing exhibition floor space. Trade fair promoters P. E. Schall GmbH & Co. KG are announcing further increases in internationalism for the event.

Fakuma visitors are provided with a comprehensive overview of all plastics technologies: whether injection moulding (Fakuma occupies a globally leading position in this field), extrusion, thermoforming or 3D printing is involved, users are able to gather information regarding all processes, machines and tools which are relevant for plastics processing in a targeted fashion.

Digitalisation Permeates the Process Sequence

The plastics industry is growing and Fakuma's success will continue in 2020. And there's good reason for this, because Fakuma is a working event for established practitioners which is consistently aligned to the process sequence in the field of plastics processing. Exhibitors and expert visitors are able to discuss concrete new projects directly with each other on an equal footing. The issues of digitalisation, networking, extended process integration and system solutions for equipment and peripherals have long since arrived at the plastics processing machines as well, and will continue to drive the industry: numerous options which are still in the planning stage, or only exist as visions or in theory under the heading of digital transformation, will be demonstrated as factual reality at Fakuma 2020. And thus all interested parties from the field of plastics processing should save the date for their visit to the trade fair in fall 2020.

Advancing Interconnectivity for Plastics Processors

Products and services in the field of production technology should be sensibly interlaced with IT in order to conserve resources, become more transparent and flexible, and to work more efficiently. Meanwhile, manufacturers of plastics processing machines have made significant progress in this area, pushing ahead with digitalisation and networking for their machines. Fakuma 2020 will present further developments and benefits for users.

Circular Economy Getting Underway

Plastics don't have a very good image amongst the general public these days – pollution of the world's oceans with plastic waste is in the news almost every day. The plastics industry has a real reputation problem. Objective clarification and a differentiated discussion are thus necessary in this regard. For example, plastic plays an important role as a packaging material for soft drinks and mineral water, the most relevant beverages for PET bottles on the German market: the one-way deposit has a positive effect, resource recycling is a nearly closed-loop and PET bottles don't contain any plasticisers. Due to its comparatively minimal weight, plastic packaging has a better ecological balance sheet than glass bottles. Sustainability necessitates the use of more and more plastic.

The term circular economy has long since established itself in the plastics industry. The question is no longer "whether or not," but rather simply "how". The fact that the circular economy has also arrived where the production of plastics processing machines is concerned was demonstrated at Fakuma 2018 to a greater extent than ever before – it will advance to become one of the most important issues at the event in 2020 and will be dealt with intensively. In particular because higher recycling quotas and improved efficiency for waste management can only be dealt with at the global level by means of an open dialogue. Plastics processors will only increase their use of recyclates for the production of plastic products if reliable material quality is available in adequate quantities. However, this is only possible if enough recyclable waste plastic is collected. Everyone involved in the value chain will have to work together in order to implement closed-loop systems – including the final consumer. Mutual work on all of the decisive steps within the loop will be required, including production and use of the products, as well as disposal.

P. E. Schall GmbH & Co. KG
D 72636 Frickenhausen

New Multi-Tear Closure Label from Schreiner MediPharm: Double Tamper Protection for Pharmaceutical Packaging

Reliable Closure Seal for Medicine Packaging

Schreiner MediPharm is offering a new sealing solution for tamper-proof closure of folding boxes and wallets. The Multi-Tear Closure Label is provided with a special combination of security effects that prevents undetected opening of pharmaceutical packaging. Thus, it satisfies the requirements of the EU Falsified Medicines Directive and the international ISO 21976:2018 standard, "Tamper Verification Features for Medicinal Product Packaging," that is based on the European DIN EN 16679:2014.

The Multi-Tear Closure Label is a transparent closure seal for folding boxes and wallets that combines two security mechanisms. They are activated in an attempt to unnoticeably peel off the seal:

Das Multi-Tear Closure Label mit der Fiber-/Film-Tear Kombination bietet einen doppelten und zuverlässigen Manipulationsschutz.

The "film-tear" effect destroys the film and the "fiber-tear" effect causes the cardboard surface to tear. The seal is coated with a special high-strength adhesive. When the label is peeled off paper fibers are torn from the cardboard surface to which the label is applied. In addition, specially arranged security kiss cuts prevent the label from being removed as a whole: It will tear and thus be irreversibly destroyed. As a result, the fiber-/film-tear combination of the Multi-Tear Closure Label prevents undetected opening of medicine packaging because it clearly indicates any first opening.

Schreiner MediPharm's Multi-Tear Closure Label works on many different cardboard surfaces, as well as on varnished cardboard boxes. Due to the transparent material, neither logos or design elements nor overprinted variable data such as batch numbers and expiration dates are covered. Sealed in this way, folding boxes and wallets comply with the requirements of the EU Falsified Medicines Directive, as well as with current DIN and other standards for tamper-proof pharmaceutical packaging.

Schreiner MediPharm
D 85764 Oberschleissheim

New electrical position indicator for high-purity valves GEMÜ C12A

With the new GEMÜ C12A electrical position indicator, GEMÜ is offering a customer-oriented solution for intelligent process automation in the chemical and semiconductor industry.

The position indicator is available as a mounting part for the pneumatically operated GEMÜ C50 iComLine diaphragm globe valves and is particularly suitable for automation in wet process equipment. The GEMÜ C12A end position indicator detects the position of the valve spindle contactlessly. An electrical signal transmits the respective position of the valve (open/closed) to the plant control system. The electrical position indicator is particularly distinguished by its compact design with reliable functionality and simplicity of installation. It is available for all nominal sizes in the GEMÜ C50 iComLine series and can also be adapted to the GEMÜ PC50 iComLine M-block. The position indicator can be pre-assembled or supplied as a retrofit kit. The electrical position indicator has the IP 64 electrical protection class and is operated with a 24 V DC connection.

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

Pneumatically operated GEMÜ C50 iComLine diaphragm globe valve with GEMÜ C12A electrical position indicator.

New product: Stainless steel cleanroom touchpen

To ensure ergonomic and convenient use of capacitive touch displays in the cleanroom, Systec & Solutions GmbH has developed a GMP-compliant stainless steel touchpen in accordance with protection class IP65.

The touchpen is, for example, also designed for use in cleanrooms where staff wear gloves made of materials not suitable for the operation of capacitive sensors, so preventing capacitive displays and keyboards from being used there.

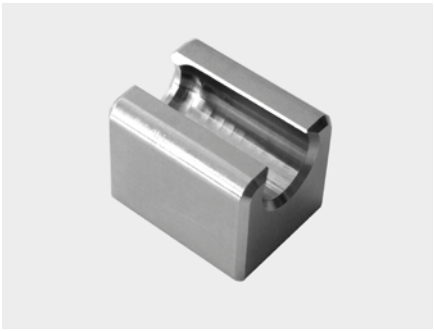
The touchpen is made entirely out of stainless steel and designed to be extremely easy to clean. The tip of the touchpen consists of silicone and is simple to replace if needed. This means that the touchpen can be used in a sustainable manner for many years. The matching spare tips are available in packs of 3.

Systec & Solutions offers the touchpen either individually or with various options for secure mounting. To make sure the touchpen is always at hand, it can be optionally secured to the HMI system with a stainless steel cable. This cable is encased to protect it from soiling. In addition, a touchpen holder made of stainless steel can also be secured to the HMI system. The holder is equipped with integrated fixing for the stainless steel wire cable and is open on one side to permit efficient cleaning.

Systec & Solutions GmbH
Emmy-Noether-Straße 17
D 76131 Karlsruhe
Telefon: +49 721 6634 400
Telefax: +49 721 6634 444
E-Mail: talk@systec-solutions.com
Internet: http://www.systec-solutions.com

(Image rights: Systec & Solutions GmbH)

(Image rights: Systec & Solutions GmbH)



(Image rights: Systec & Solutions GmbH)

(Image rights: Systec & Solutions GmbH)

(Image rights: Systec & Solutions GmbH)

(Image rights: Systec & Solutions GmbH)

Impressum:
cleanroom online / W.A. Schuster GmbH · Mozartstrasse 45 · D 70180 Stuttgart · Tel. +49 711 9 64 03 50 · Fax +49 711 9 64 03 66
info@reinraum.de · www.cleanroom-online.de · GF Dipl.-Designer Reinhold Schuster · Stgt, HRB 14111 · VAT DE 147811997
Original texts and images