Testo Industrial Services are moving into new rooms– Enough space for 90 new jobs

Cleanroom in Kirchzarten: Trainings have the highest priority.

After about one year construction time and at once with the 15th anniversary of the Testo industrial services GmbH the building works have been completed. The subsidiary service company of Testo AG, producer of measurement equipment in Lenzkirch, created enough space for 90 new jobs.

Further 900 square meters have been built for accredited laboratories and 600 square meters for offices plus meeting rooms and an ultra-modern training center.

The calibration laboratories of Testo Industrial Services in Kirchzarten has to hold 24/7 stable environmental conditions for 365 days in the year to meet the norm´s requirements and guarantee the measurement´s high quality. To make this possible a unique system of air conditioning and ventilation was installed. For this reason there are 3 climes, which meet the different requirements on the laboratories. The present system of air conditioning and ventilation has been reconstructed and assimilated to the new building. In the individual laboratories there have been installed conditioning cabinets, which are regulating the temperature and humidification and dehumidification.

Ultra-modern GMP-training center

Besides the industrial services they are offering customer seminars and practical workshops, like for example the calibration of different measuring equipment or the awareness raising to GMP-related issues. Because the training division is growing continuously the rooms have been expanded. A special feature for the further education is the new functional clean room with personnel lock, which can be regulated to the ISO-classes 5-8 with variable air flow. In 90 square meters participants of seminars are able to get to know the hygienic way of behaving in clean rooms and the realization of clean room measurements.

“One of the main reasons for building a new training center was the training and further education of our employees.” Stefan Erens, division manager sales GMP and GxP services. “For the sensitive areas and high requirements of the GMP-environment we appoint highly qualified experts for our customers.” In the cleanroom there are several instruments for training, e.g. an autoclave and a safety cabinet.

More than 500 employees work at Testo industrial services GmbH in Germany and at the four subsidiari-

Testo Industrial Services are moving into new rooms– Enough space for 90 new jobs

es in Europe. The company´s revenue grew last year by 14 % to 38,1 millions euro. The head office was built in 2004 and was already extended in the years 2006 and 2010 - new laboratories and office spaces emerged. While maintaining economic success further investments into the head office in Kirchzarten are planned- the next construction stages has already been planned.

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Testo industrial services´ headquarters in Kirchzarten, Germany.

Faster, More Cost Effective, and Flexible: **M+W Group Relies on Modular Construction for Data Centers**

The global engineering and construction company M+W Group, headquartered in Stuttgart (Germany), has introduced an innovative concept for the construction of data centers. It is based on its own experience with numerous data center projects across the world. The concept called ‚Delta Data Center' consists of three key elements:
- Modular building structure with prefabricated elements
- Modular cooling and electrical engineering concept
- Sustainable energy supply.

Installing prefabricated modules on site reduces the build time by up to 60 percent. This enables considerable cost savings, while improving work safety. In addition, room capacities can be extended more quickly than in the past thanks to the modular construction to enable flexible investment planning to meet requirements.

The tested quality of the prefabricated units means that the concept can also be used in countries and regions with a poorly developed infrastructure. Even upgrading of existing computing centers is possible because the nuisance caused by noise and dust are minimal compared with a conventional build.

The modular construction results in 70 to 80 percent of the assembly being carried out in a hall at the manufacturer. That reduces the dependency on extreme weather conditions, improves material planning and results in less waste. As the individual modules are stackable, it is possible to construct a ‚data tower' over several floors and therefore adapt flexibly to the available plot.

Modular Building Technology

The building technology also has a modular structure, so that a phased expansion is possible without affecting the operation. Simply constructed, standardized, and independent units for cooling and the provision of electrotechnical services allow for optimal flexibility to adapt to requirements.

Energy-Efficient Cooling through Fan Tower

The buildings are cooled via an innovative technology adapted to data centers: the fan tower. Its principle results in a low loss of pressure on the air side, minimizing the power consumption of the circulating fans. At the same time, this cooling concept enables a modular construction over several floors: The fan tower is able to supply up to three server floors with recirculation air, mixed air, and/or pure outdoor air cooling. That saves building space and accordingly investment costs.

Only around seven percent of the cooling performance has to be supplied by refrigeration machines. Together with the recirculating air-system´s significantly reduced power consumption, an average PUE value (Power Usage Effectiveness) of 1.20 is achieved over a year at normal air temperatures. This figure puts energy consumed overall in the data center in proportion to the energy consumed by the servers and enables data center efficiency to be compared.

The energy efficiency can also be increased through the optional application of a fuel cell combined with an ORC module (ORC = Organic Rankine Cycle). The residual heat of the fuel cell is used to generate additional electrical energy with the help of the ORC module and to increase the overall effectiveness by over 50 percent. Electrical energy, heat, and water(steam) are produced in a fuel cell in a chemical reaction of oxygen and steam. The technology of the fuel cell is particularly important for climate and emission protection, as the fuel cells work virtually free of pollutants.

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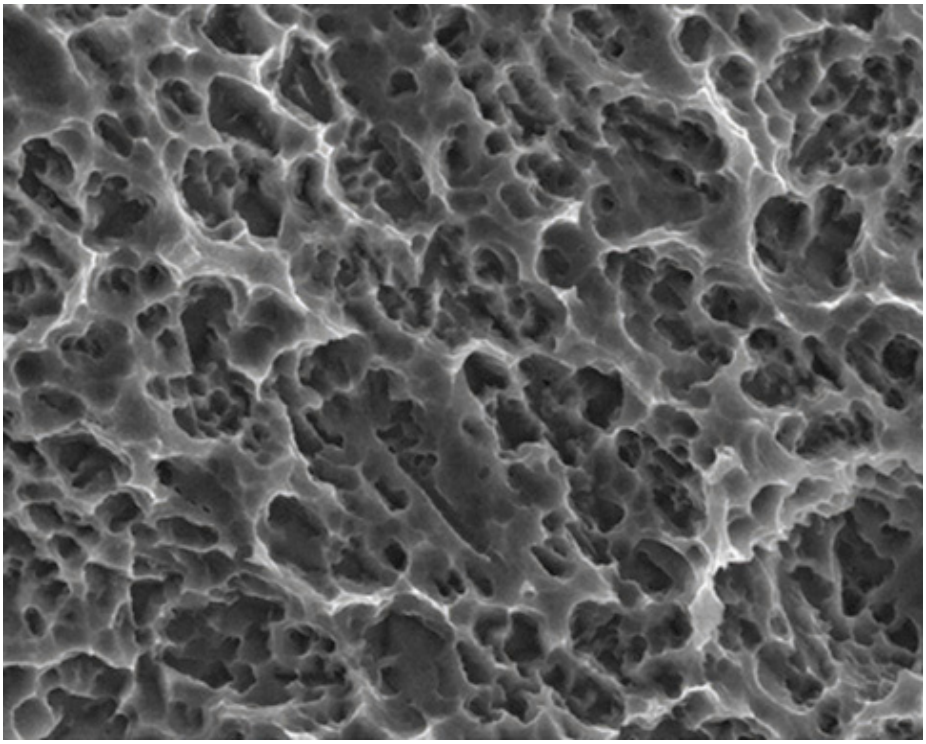
Surface technology and packaging of dental implants in clean room conditions

Bego is expanding its Surface Technology Centre in Bremen

With the start of the New Year, Bego Implant Systems inaugurated the expanded Surface Technology Centre at its headquarters in Bremen. This will mean that Bego Semados® implants can be fabricated under strict conditions in the modernised clean room, and then immediately packaged in the low-germ, low-particulate environment. The core process is the subtractive finishing of the implant blank through various treatment steps to produce a defined roughening of the surface, ensuring optimal osseointegration. The quality features are the defined, homogeneously distributed surface roughness and its purity.



The high-purity TiPurePlus surface has a successful track record of more than 20 years.

The modernisation and expansion of Bego's Surface Technology Centre comes in response to increased demand, especially from international markets, for Bego Semados® implant systems and the associated prosthetic components.

The fabrication and processing of dental implants demands high purity standards, which the Bremen-based dental specialist goes a long way to satisfy. For example, access to the clean rooms is restricted to specially trained staff and is only possible via an airlock. As soon as surface finishing is complete, the implants are transferred via a separate airlock into the new clean rooms, which comply with the requirements of ISO 14644, CL. 7 / EG GMP C. There they are fine-cleaned and undergo a final examination under the video microscope before being packaged under clean, low-germ conditions.

All the implant systems in the Bego Semados® product range are given the proven TiPurePlus surface finish. This entails sandblasting and etching the implant blank, which is made of Grade 4 commercially pure titanium, using a special, precisely defined technology.

The Bego Implant Systems GmbH & Co. KG, certified according to ISO 9001, ISO 13485 and Directive 93/42/EEC. By expanding its Surface Technology Centre in Bremen, the company has underlined its field of competence and demonstrated its experience in the development and production of system solutions for all aspects of dental implantology.

Bego Implant Systems has its head office in the Technology Park at the University of Bremen. Here, Bego's team of highly qualified scientists from a range of disciplines and engineers and technicians specialising in diverse subject areas are able to access other modern laboratories and research establishments in addition to their own in-house technical facilities.

BEGO Implant Systems GmbH & Co. KG
D 28359 Bremen

Dear readers, dear subscribers,

we are very proud : the next cloonroom printline is finished and will be send to you at the end of april – encluded the cleansman galerie 2013.

Yours sincerely
Reinhold Schuster

NEW
If you click at this sign in the pdf-document you will easily get more information in the internet

Memmert Generation 2012 heating oven UF750plus receives Fraunhofer TESTED DEVICE certificate of purity

In its standard version, the Memmert universal oven UF750plus received the Fraunhofer TESTED DEVICE certificate of purity. To guarantee the highest quality assurance standards, tests were performed in accordance with the uniform and statistically verified VDI standard.

Just like the appliances of the previous generation, the universal oven tested was given the cleanroom certificate without any modifications such as particulate filters, for example. Apart from the compact construction and uncompromising quality of the insulation materials, it is above all the design of the forced air circulation which makes an essential contribution to the excellent results of the particulate emission test. Even with maximum air circulation, the universal oven UF750plus attains ISO class 7 in accordance with DIN EN ISO 14644-1. Without recirculating air, its chamber is certified ISO class 5.

Memmert GmbH & Co. KG D 91107 Schwabach

Cleanroom certificate IPA TESTED DEVICE® for Memmert universal oven UF750plus

MHRA Guidance supports SteriShield Delivery System

Ecolab Contamination Control has welcomed recently published guidance from the MHRA regarding dispensing systems for disinfectants in cleanrooms.

It emphasises the need to reduce the potential for contamination of the contents during preparation and manufacture by using a protective closed system, defined as one which is not exposed to the atmosphere.

The guidance further states that dispensing systems should also minimise the potential for contamination of the supplied contents as the unit is used, typically this involves a bag in bottle or some other mechanism to prevent 'suck back'.

James Tucker, Marketing Director at Ecolab Contamination Control says the guidance validates the firm's own unique SteriShield Delivery System: 'We are delighted that the MHRA has clearly stated the need for a fully closed system to prevent air entering the bottle and recognise it is essential that the integrity of the product is also completely protected throughout its entire use, and not simply at the manufacturing stage. This definition is therefore clearly applicable to the guidance for trigger spays as well.

'Research has proved that conventional trigger sprays used with cleanroom disinfectants 'suck back' air, meaning the contents of the bottle can be contaminated from the first moment of use, leading to a spread of contamination around the cleanroom.

'We believe our system is the only validated protected closed trigger spray system on the market and delivers fully in accordance with the recommendations of the MHRA.'

The system developed by Ecolab Contamination Control ensures that the trigger spray operates as a closed system due to the vacuum created in use, with the dip tube providing the only point of entry into the bag of sterile liquid. The patented and unique way the trigger head works forms a complete seal, preventing any air being drawn into the bottle.

Unique vacuum and particulate testing has been undertaken which has proved that the trigger and bottle combination creates and maintains a closed system which protects the sterility of the contents indefinitely, with a recommended best practice of in use shelf life of three months.

Mr Tucker says that the guidance issued by the MHRA should force other organisations to review their guidelines relating to trigger spray systems, which could have far reaching consequences. 'It is highly likely that there will be a unilateral shift to closed systems to eradicate any possibility of content contamination, which puts us very much at the forefront of the industry.'

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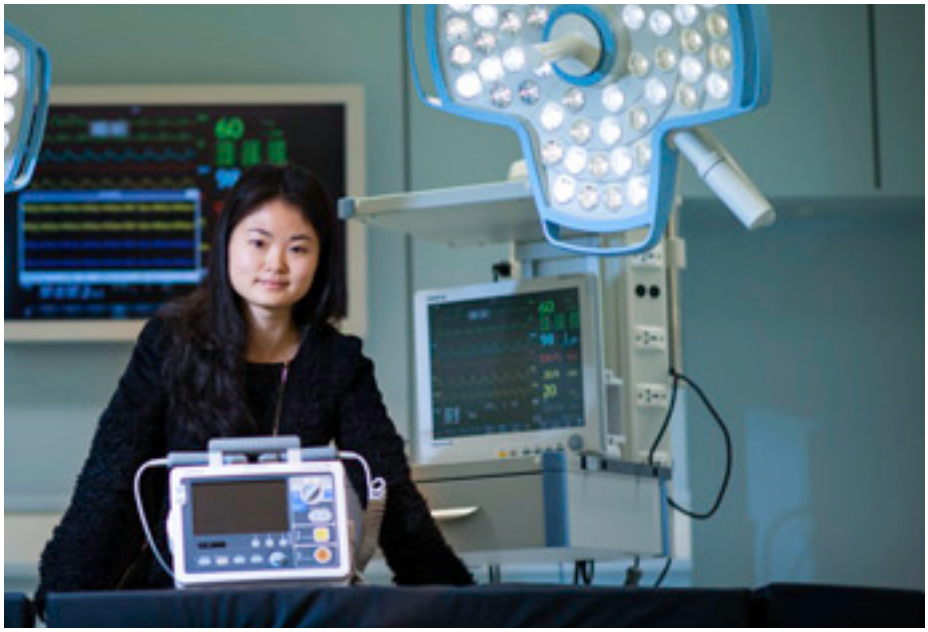
Monitoring the medical monitors



Clinical engineer Kun Fang, researching innovations in patient monitors, predicts.

A Chinese-based medical device maker has become a world leader in its field in just two decades. But the company never stops trying to come up with innovative new products and improvements to existing ones.

Mindray, a medical device company founded two decades ago in the Chinese boomtown of Shenzhen, is continually making technological advances. But how does the company know whether a new feature truly improves a device's usefulness and helps doctors to save lives?

That's where Mindray clinical engineer Kun Fang comes in. Fang researches innovations in patient monitors, which display a patient's vital signs and other data on a screen. The faster she can get feedback about a device from doctors and hospitals, the faster Mindray can perfect it. "We work hard to get approval for our innovations as quickly as possible from the Chinese State Food and Drug Administration," she says.

Currently, Fang is gathering feedback on a new patient monitoring function designed for newborn infants with breathing problems. When babies are born and begin to breathe air, their circulatory system should start pumping blood through the lungs. But for this to happen, a fetal blood vessel to the heart – the ductus arteriosus – must permanently close. In rare cases when this duct does not close, however, a newborn may suffer from a condition called persistent pulmonary hypertension of the newborn (PPHN).

To check for this rare condition, doctors place a pulse oximeter on two of the baby's fingers. The oximeter uses a light sensor to measure the percentage of hemoglobin saturated with oxygen. In a healthy person, this should approach 100 percent.

Fang is researching Mindray's new feature, which adds oximeter readings to the screen of its BeneView patient monitor. "We will need to get feedback from doctors to see whether the new measurements and functions are helpful in making diagnoses," Fang says.

In addition to researching the effectiveness of the new software, Fang also helps evaluate new hardware. Since the end of 2011, Mindray has been producing the BeneView T1, a small, lightweight patient monitor with a handle, making it easy to transport when a patient needs to be moved. "We started developing this device using a simulation scenario, and then collected feedback from hospitals," Fang says. "Based on our findings, we suggested certain modifications. This process of getting feedback is often repeated more than once during the design phase."

Fang has worked as a researcher at Mindray for two years. She cooperates closely with five other team members dedicated to the same project. Outside the company, she communicates mainly with doctors and medical staff at various hospitals, as well as with hospital administrators and government regulators at the State Food and Drug Administration.

"My job requires good interpersonal skills," Fang says. "I'm dealing with extremely busy hospital staff members, trying to get valuable, constructive feedback within a short timeframe."

Another challenge she faces in her job is learning about software from a technical perspective, right down to the algorithms. "For example," she says, "how does an ECG [which monitors electrical activity in the heart] use conventional resistivity to provide signal processing? If we can develop a better understanding, that helps us to focus on critical points."

Looking to the future, Fang predicts that mobile medical devices will continue to develop rapidly, especially within China. Patients in China generally do not have a regular family doctor they can see. Instead people who become ill must head to a hospital emergency room – and wait. "Members of China's fast-growing middle class do not want to line up for hours in a crowded hospital to see a doctor," Fang says. "They would rather register online through mobile devices, to see whether a doctor's visit is truly necessary." She sees a growing demand for portable, compact and at-home medical monitoring devices.

Computerization of medical records is only just beginning in China, Fang explains, and most patient records are still written by hand. Looking ahead, she says, "digital records and better- connected networks will reduce human error, improve regulation and expand access to medical information."

Critical care

Polymer-based solutions for medical applications often require manufacturing in special cleanroom environments, where contamination is excluded with air quality continuously controlled and monitored.

Trelleborg has a strategic aim to support the life sciences, medical and pharmaceutical industries with its advanced processes. Building on its expertise, it is investing globally in market-leading facilities that meet current, and more importantly, future demands for super clean, application-critical products.

Mindray

Headquartered in Shenzhen, a Special Economic Zone within China, Mindray was founded in 1991. It is a world leader in the development, manufacture and marketing of medical devices and has three business areas: Patient Monitoring and Life Support Products, In-Vitro Diagnostic Products, and Medical Imaging Systems.

Trelleborg Sealing Solutions Silcotech AG
CH 8260 Stein am Rhein

Phillips-Medisize Corporation Reaches 50th Year Milestone

In February Matt Jennings, President and CEO of Phillips-Medisize Corporation, announced that 2014 represents the company's 50th year of continuous operation

Mr. Jennings made this announcement while providing a medical outsource design and manufacturing market overview for the trade press at the Medical Design and Manufacturing Exposition (MD&M West) in Anaheim, California, commenting, "This is a big year for Phillips-Medisize as we reach the significant milestone of 50 years of continuous operations. The past 50 years were built on the tried and true principles of building partnerships with our customers based around quality, innovation and service. We made these partnerships work by investing in our employees, processes, facilities and equipment which created a world class outsource design, development and manufacturing organization. This organization has allowed our customers to integrate their product designs with advanced molding technologies and automated assembly, within a robust quality system. This milestone also marks the company's ongoing involvement in the high growth medical and specialty commercial markets serving our blue chip customers worldwide. We look forward to our next 50 years of operation by recommitting ourselves to the timeless principles of quality, service and innovation by continuing to invest in our people, processes and facilities."

Phillips-Medisize Corporation
CH 8309 Nürensdorf

Engel has appointed a new managing director for Sweden, Denmark and Norway. Jens Thor Hansen is an experienced plastics expert for these strategically important markets.

Engel appoints new managing director in Scandinavia

Having previously been the managing director at a plastics-processing company specialising in clean room production, Jens Thor Hansen has gained extensive experience in this area over the last six years. All told, the 49-year-old plastics technology engineer has worked in management positions for medical technology and raw material companies for 25 years. „Medical technology is one of our important growth markets in Scandinavia, and we will benefit hugely from Mr Hansen's experience", remarks Dr Christoph Steger, CSO Engel Holding GmbH, Austria. „In addition to this, our continued growth in Scandinavia depends to a great extent on providing efficient solutions for innovative applications. And this is precisely our company's strength, as well as that of the Scandinavian industry."

Jens Thor Hansen is the new managing director of Engel in Scandinavia. (Picture: Engel)

Ralf Godbey, the previous managing director of Engel in Scandinavia left the Group at the end of 2013. „We thank Mr Godbey for his great commitment in the past few years", says Christoph Steger. „Under his leadership, our company gained a strong foothold in Northern Europe. Based on where we are already, I am convinced that we will be able to solidify our market presence in Denmark, Sweden and Norway."

Engel is represented by subsidiaries in Solrød Strand, Denmark, and Jönköping, Sweden, as well as a sales and service office in Hobøl near Oslo, Norway.

ENGEL AUSTRIA GmbH
A 4311 Schwertberg

The theme of this year's PDA from April 7-9 at the JW Marriott Hotel in San Antonio in Texas (USA) is biopharmaceutical and sterile manufacturing. Gerresheimer will be exclusively presenting its entire portfolio of standard and specialist plastic packaging solutions for the pharma and healthcare industry at booth 405.

PDA Annual Meeting 2014: Gerresheimer presents innovative plastic packaging solutions

The Gx MultiShell vial is ideal for biopharmaceuticals. It was developed as a new and safer solution for formulations with alkaline pH values and toxic pharmaceuticals. The new Gx MultiShell vials unite the best properties of plastic and glass in a new, high quality container for liquid medications. They are made of COP/polyamide/COP (cyclic olefin polymer) in a sandwich structure. These multi-layer vials are far more break-resistant than glass vials.

Gerresheimer specializes in reliable primary packaging for pharmaceuticals made of materials that are ideal for the product application. GX® and MultiShell® are registered trademarks of the Gerresheimer Group.

Gerresheimer AG D 40213 Düsseldorf

Basic Design Concepts for Clean-in-Place-able Equipment Used in GMP Regulated Industries

Author: Elizabeth Rivera

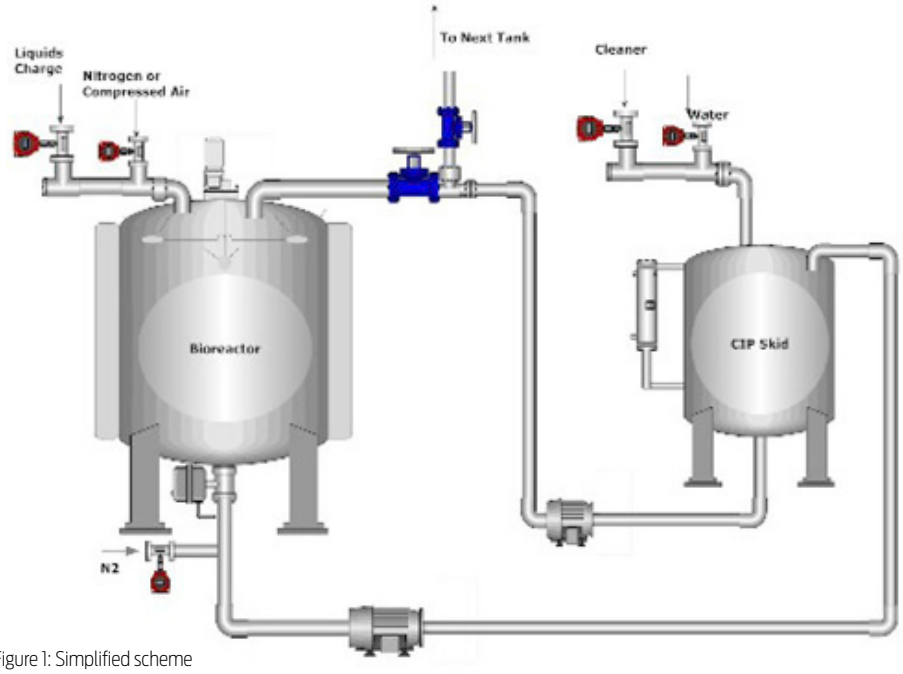


Figure 1: Simplified scheme of a CIP skid connected to a manufacturing vessel.

In today's pharmaceutical, biopharmaceutical, cosmetics and medical device industries a variety of methods are used to clean process equipment. Cleaning methods vary from using manual wipes and brushes to employing sprayers, baths, washers and clean-in-place (CIP) systems, among others. These methods differ mainly in the mechanical action applied on the surfaces and the degree of personnel involvement.

Even though many of these validated cleaning methods are accepted by drug regulatory agencies around the globe, a significant number of companies are switching from their existing cleaning processes to CIP systems. There are three reasons for this conversion; CIP systems are effective, consistent and reliable.

CIP systems have been used in the food industry for decades. Their effectiveness was proven in this industrial application long before they were introduced to pharmaceutical companies [1, 2]. Consistent cleaning results are achieved because there is minimal operator intervention, reduced likelihood of human error, and consistent control of critical parameters. For these reasons and others, the use of CIP systems has become a standard practice, particularly for GMP regulated facilities.

The principal objective of a CIP system is to achieve the desired cleanliness without disassembling the process equipment. Generally, CIP cleaning is done by circulating cleaning solutions through pipes, pumps, valves, and spray devices that distribute the cleaner over the surface areas of the equipment. The cleaning process may include steps such as preparing cleaning solution to a pre-established concentration, heating the cleaning solution, circulating wash and rinse solutions through all equipment surfaces, and finally drying as needed.

Benefits and challenges of CIP cleaning

CIP systems are capable of controlling, monitoring, and documenting critical parameters used in automated cleaning processes. Typically, parameters such as time, action, detergent concentration, and temperature (TACT) determine the cleanliness achieved by a process. Controlling these parameters effectively results in consistent cleaning performance. In addition, the cycle documentation that is critical for process validation and product batch release is generated automatically in a CIP process.

Another benefit is that cleaning parameters can be easier to optimize when using a CIP system. A CIP process allows the user to set more aggressive TACT parameters than are possible with other cleaning methods that involve manual intervention. For example, alkaline or acidic chemistries can be used instead of the neutral products that are safer for manual applications. Higher concentrations and temperatures can also be applied to achieve more efficient cleaning.

In addition, CIP systems offer operator and process safety benefits. For example, cleaning processing equipment without dismantling it reduces operator exposure to potent drug residues and hazardous cleaners. Also, the risk of damaging process equipment is minimized since the assembly and disassembly of the equipment is subject to human error which, if it is not executed correctly, can lead to malfunction or serious damage to the equipment. Moreover, CIP systems may obviate the need for personnel to get inside the vessel to clean sharp parts likes agitator blades or hard-to-clean locations, which reduces the added risk of personal injury.

Although the disadvantages of CIP systems are minimal, some companies still have some resistance to adopting CIP technology. One of the most common reasons is the physical limitation of their process equipment. Not all manufacturing equipment can be completely cleaned in-place without engineering modifications; and even with

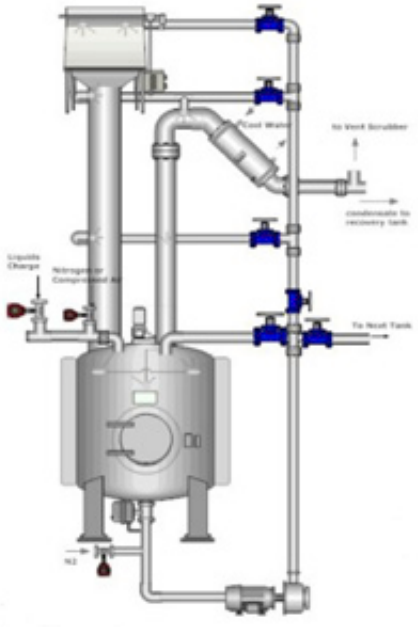


Figure 2: Simplified scheme of a CIP system embedded into the manufacturing vessel.

Basic Design Concepts for Clean-in-Place-able Equipment Used in GMP Regulated Industries

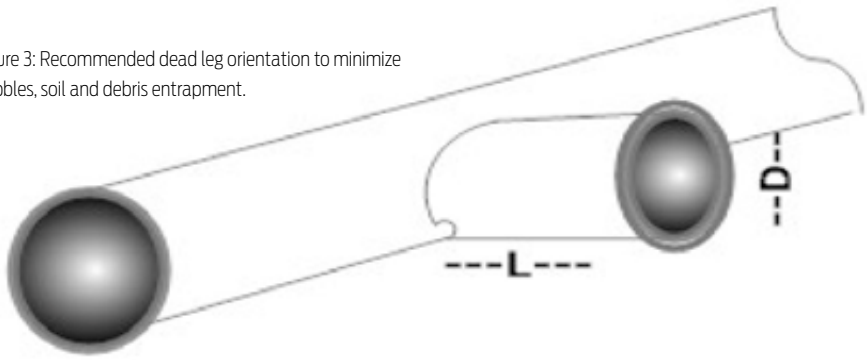


Figure 3: Recommended dead leg orientation to minimize bubbles, soil and debris entrapment.

modifications, some cleaning out-of-place may still be needed. Time and cost are also factors; CIP equipment must be qualified, which consumes time and resources. In addition, the required software and hardware may be complex and may need to be custom-designed for each process; there is no "one-size fits all" solution. Consequently, a CIP system requires an initial capital project investment for acquisition, installation, and qualification of the unit before running it in a GMP regulated environment [3].

If a facility chooses to invest in a CIP system, here are some design guidelines that will optimize its operation and cleaning effectiveness.

CIP AND CIP-able Equipment

A CIP system includes equipment and/or components that are used to perform cleaning in-place. These systems can be fully or semi-automated for minimal operator intervention. They can be fixed installations or portable systems used to clean multiple pieces of equipment in the same manufacturing train. Figure 1 is an example of a fixed CIP skid unit connected to manufacturing equipment. CIP systems can also be designed and integrated into the equipment itself. Figure 2 illustrates a large vessel with all the necessary components to perform cleaning without the use of a separate CIP unit. All cleaning steps, particularly cleaning solution preparation and heating, are performed in the same process vessel.

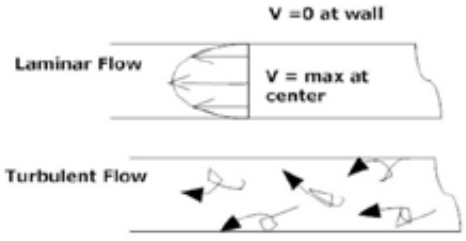


Figure 4: Velocity profiles for flow in a tubular pipe.

Materials of construction

Materials used for GMP equipment must be easy to clean, corrosion resistant, and nonreactive with either manufacturing or cleaning process conditions. Surfaces should have a smooth appearance and be fabricated appropriately with materials that are adequate for the process. Processing equipment is primarily made of 304 or 316-grade stainless steel and with glass, hastelloy or equally corrosion-resistant materials. Seals, gaskets and closures are made with plastic and elastomers that are suitable for the intended application.

For optimal cleaning, surfaces must be free of scratches, crevices, etching and any irregularities. Polished surfaces with roughness of Ra ≤ 1.6 µm have been established particularly for the biotechnology industry to facilitate cleaning [4]; nonetheless, recent studies suggest that surface cleanability is mostly affected by surface defects rather than surface roughness [5].

Piping and process connections

Welding is the preferred method for connecting piping used to handle product and transfer cleaning solutions. A properly welded connection should not have excessive cracks, crevices, misalignments, or other surface deformities that will later contribute to corrosion. In the case of non-permanent joints used for maintenance or multi-process reconfigurations, "sanitary" clamp-type connections are universally accepted for joining two similar end pieces with a centered elatomeric gasket. Variations of the clampype connection have also been developed or high pressure applications. Flanged and am-type connections must be avoided beause the sealing material may not align adeuately and may eventually collect residues n the gasket area.

Diaphragm and pinch valves are most ften recommended and are generally considered "sanitary" valves. Other types of valves (ball valves, gate valves and butterfly valves, for example) carry some contamination risk by accumulating soil and debris at gasket spindles and crevices, so they are difficult to clean in-place. Ball valves used in API manufacturing are commonly located at the bottom of large vessels because they can withstand high pressures. If a ball valve is installed, specific instructions should be included in the process cleaning procedure for dismantling and visually inspecting the ball valve once CIP cleaning is completed. Additional manual cleaning steps and sampling for cleanliness may also be necessary.

Dead legs, pitch and pumps

Dead legs are areas in a piping system where liquid or gases can become stagnant and where water is not exchanged during flushing. For obvious reasons, dead legs should be minimized or, if possible, avoided in CIP piping. Bacteria and soil in dead-end pipe lengths and crevices become "protected" from flushing and sanitization procedures and eventually can recontaminate the piping system. Dead-end in piping are unacceptable unless they can be physically inspected and sampled for cleanliness. Branches and/or tees used for instrumentation should be horizontally positioned and with their length limited to 1.5 times the pipe diameter. Figure 3 depicts an illustration of a dead leg and its recommended orientation.

Piping can be effectively cleaned by circulating the cleaning solution at flow rates that produce turbulent flow conditions. Usually, CIP flow rates will be much higher than the flows used for manufacturing processes. A parameter called Reynolds number (Re) is used to determine whether a flow will be laminar or turbulent. This dimensionless number describes the expected velocity profile for a fluid flowing under certain set parameters. For a fluid running in a circular piping, Re can be calculated as follows:

$$Re = DpV/\mu$$

Where D is the pipe diameter, p is the fluid density, V is the fluid mean velocity, and µ is the fluid viscosity. Re numbers higher than 4000 will produce turbulence that creates random eddies, vortices, and other flow instabilities that can help exert some mechanical action on the pipe walls [6]. Random eddies are better than smooth constant fluid motion because they promote mixing and help prevent soil redeposition (Figure 4). Most CIP designers would recommend a fluid velocity of approximately 5 feet per second (1.5 meters per second) for water-based solutions in order to displace gasses, pene-

Basic Design Concepts for Clean-in-Place-able Equipment Used in GMP Regulated Industries

trate dead-legs and fill vertical downward piping.

Horizontal ductwork must be sloped at 1/16 to 1/8 inches per foot of piping (0.5 to 1 cm per meter of piping). The pitch must be towards drain points.

Pumps should be cleaned in line with the piping circuitry. When a pump is not required to operate in the CIP circuit the flow may be deviated through a by-pass. In general, the hygienic attributes of a pump are the materials of construction for its main pump chamber and sealing points. With a few exceptions, pumps typically include some sealing mechanism on the rotating shaft. Most hygienic pumps have seal mechanisms outside the product contact zone with minimal elastomeric exposure to product and cleaning solution.

Tanks, internal components and ancillary equipment

Pharmaceuticals can be processed in a variety of vessels with different shapes, sizes, and configurations. However, if they are to be cleaned in-place, processing tanks must have a conical dome and a bottom that facilitates draining. Flat bottoms, which are rarely used in pharmaceutical applications, need to have either bottom or side drain ports. When side drain ports are used they must be located below the end of the side wall and the tank should be sloped towards the drain. For good results, the vessel has to be able to drain liquid at the same rate that it takes in liquid. These same principles should also be followed for CIP skid tanks.

A vortex breaker is typically required for the bottom outlet nozzle of a vessel to prevent the swirling (vortexing) of flow. Disc and X-type breakers are most commonly used and both are easy to clean in place.

Nozzle design should follow the same sanitary guidance as discussed for piping. The length-to-diameter ratio should be kept within the 1.5 value and located preferably on top of the vessel. For example, pressure relief devices like rupture discs are easier to clean when mounted directly onto the nozzle rather than on an extension pipe. Tank insulation may affect nozzle design and may require a flare shaped nozzle. Side ports must be sloped towards the drain point.

Spray devices

Tanks can be effectively cleaned by distributing cleaning solutions using spray devices. A variety of these devices are available, including static devices like spray balls, spray tubes and spray bubbles; and dynamic devices that can rotate on multiple axes. Spray devices can cover large surface areas in vessels, charge chutes, vent lines and pipes larger than 8 inches (20 cm) in diameter. In vessels, static spray devices direct the solution to the top dome, from where it cascades down in a sheeting action. In comparison, dynamic spray devices operate at relatively high pressures and can rotate at different angles to produce surface impingement.

All CIP spray devices should contain drain ports that allow them to be self-cleanable. Periodic inspection is recommended to ensure that the spray holes are not clogged with particles and debris that can impact spray coverage and pressure.

The flow rate required for proper spray and cascading effect has been determined to be 2.5 gpm per foot of vessel perimeter in a vertical tank (31.1 L/min per meter of vessel perimeter) and 0.25 gpm per square foot of surface area in a horizontal tank 10.2 L/min per square meter of surface area). Baffles, dip tubes, nozzles or agitators in a tank add challenges to the cleaning process by preventing sprayed fluid from striking the far side of the vessel walls. When these mechanical items are present, additional spray devices may be necessary to reach protrusions and 'shadowed' areas.

Many types of agitators are available and are selected for specific application in the manufacturing process. Agitators with pitched blades can be cleaned utilizing the tank spray devices. Other types of agitators, like Rushton impellers used in biopharmaceutical processes, may require spray devices below the impeller to assure thorough cleaning. Other options for cleaning agitator blades may include immersing them in cleaning solution and adding mechanical agitation to facilitate soil removal.

The most effective way to clean vent lines, condensers, charge/discharge chutes, and any other type of ancillary equipment is by direct application of CIP solution from a spray device. Bubble sprayers connected to permanent or semi-permanent CIP pipes are used for spraying upwards and across to form falling films that sweep away soils.

Transfer panels play an important role in CIP systems. They are metal boards with an array of nozzles that can connect multiple pipelines. Transfer panels are used for supplying and changing the flow of cleaning fluids through different CIP pipelines linked to multiple process equipment within a piping circuitry. A transfer panel jumper, or u-bend, helps to break the flow between different fluids used in manufacturing without the risk of cross-contamination.

CIP Cycle Development and Validation for GMP Applications

Once a CIP system has been thoughtfully designed, it must be tested. Equipment qualification should be successfully executed before placing the CIP system into full operation. The installation Qualification (IQ), Operational Qualification (OQ), and Computer Qualification (CQ) provide a good basis for assurance that all the CIP components are installed and will operate as they were designed.

In addition to testing the mechanics of the system, it is important to determine the cycle phases and cleaning formulations that will be most effective. Pre-validation studies are helpful for establishing the cleaning chemistries and cycle parameters to be used in a CIP cycle. A standard CIP program can include:

1. A once-through flush-to-drain to remove bulk soil load
2. A recirculated alkaline wash
3. A short water rinse to remove alkaline cleaner
4. A recirculated acid rinse
5. A water rinse to remove acid cleaner
6. A high quality water rinse to drain
7. Drying by heat or nitrogen purge

Validation is the demonstration that a series of steps and parameters will consistently produce the expected results. An internally reviewed and approved protocol should be developed for this testing that includes objectives, methodology and acceptance criteria. Validation should follow the protocol, and all the data developed during its execution must be collected and attached to the final validation closure package. Many reference books and training materials are commercially available to assist with the development of cGMP cleaning protocols and procedures [7].

Take advantage of all CIP design resources

An effective CIP process design depends on the correct identification of system components and an understanding of how these components can help or hurt a successful cleaning configuration. Having these guidelines at hand can simplify the understanding of requirements for designing and implementing a reliable and effective clean-in-place process. It can be used by quality, technical and production personnel who wish to have some reference as to what to look for in a good CIP system.

However, it is important to note that CIP

Basic Design Concepts for Clean-in-Place-able Equipment Used in GMP Regulated Industries

system designs are far more complex than the concepts discussed here, and they usually require the involvement of subject matter experts to assure that all necessary aspects of the process are addressed. The principles described here, even when supported by published references, cannot replace the advice and expertise of manufacturers and project design professionals who can provide direct, practical and cost-effective guidance during an on-site review. It is wise to take full advantage of the available expertise, which can save time, resources and aggravation in the long run.

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Gerresheimer AG, one of the world's leading partners of the pharma and healthcare industry, is extending its production capacity for medical plastic systems at its plant in Peachtree City, Georgia/USA. The production area will be increased by an addi-tional 5,600 m² (60,000 square feet). Production of new medical devices will start right after completion of the infrastructural enlargements. Gerresheimer is investing double digit Million Dollars in the project in Peachtree City, which will create around 120 additional jobs in the medium-term future.

Gerresheimer extends medical devices operations in the US

"We're experiencing worldwide growth in demand for user friendly, safe and easy to use medical devices such as inhalers and insulin pens. As a result of this growth, and new customer projects, our excellent plant in Peachtree City will be significantly increasing its production capacity. There are a great many opportunities for us in this business segment in the US and our Peachtree City facility will play a crucial role in helping us to exploit them. We greatly appreciate the generous support of the state and local authorities in Georgia in this challenging project," commented Andreas Schütte, member of the management board of Gerresheimer AG with responsibility for the Plastics & Devices Division.

Andreas Schuette

The additional production area will significantly increase Gerresheimer's Peachtree City plant's production capacity. Two thirds of the additional production area will be ISO class 8 cleanroom.

Gerresheimer is taking advantage of Georgia's internationally acclaimed workforce training program, Quick Start. The approximately 120 new jobs to be created in the medium term will include executive, adminis-trative, supervisory and production positions.

"Georgia's healthcare industry is uniquely poised to help Gerresheimer grow," said Governor Nathan Deal, State of Georgia/ USA. "This leading global company is taking advantage of an eager, skilled workforce and an advanced life science and healthcare ecosystem. Our state is the ideal location to support Gerresheimer's newest expansion."

Gerresheimer established its first Peachtree City production facility in 1993 and expanded it in 2009 with the establishment of a Technical Competence Center (TCC). The plant in Peachtree City is part of Gerresheimer's Medical Plastic Systems business unit. Gerresheimer Headquarters is based in Düsseldorf, Germany. Peachtree City and the other plants in this business unit develop, industrialize, manufacture and assemble customer-specific devices such as inhalers, insulin pens, lancets and various diagnostic systems.

Gerresheimer AG D 40213 Düsseldorf

Life-saving robots on the rise

Computer-assisted surgery is steadily making inroads across the world, improving patient care and recovery as well as enabling hospitals to better control costs.

Robots would make ideal surgeons, says physician and researcher Catherine Mohr. They never tire and are always as precise as possible when it comes to performing complex procedures in the fields of urology, gynecology or oncology. And with surgical robots, humans are always in control, sitting at a console to guide the machine's multiple arms and attached tools.

"It's an extension and augmentation of the surgeon," Mohr explains. "It takes the surgeon's skills and filters out any tremors and allows precise motions on a very small scale. That gives surgeons the dexterity and intuitiveness of motion, even when they're working through very small incisions. It's hard to imagine any procedure we do as humans that wouldn't be improved by better information, dexterity, vision and navigation."

Mohr probably knows more than most trained surgeons about robots in the operating room. Since 2006, she has been the Director of Medical Research for Intuitive Surgical, the California-based maker of the da Vinci robots. Considered an oddity when they were first introduced in 1999, the machines – some 2,400 so far – have found their way into operating rooms around the world. Most are in the U.S., but robot deployments are also growing fast in Europe, Latin America and Asia.

The rise of surgical robots is due to several factors, Mohr says: "Patients benefit when surgery can be minimally invasive rather than done with incisions large enough to get a surgeon's hands into. It reduces the risk of complications and the need for blood transfusions. In many cases, patients don't have to spend time in the intensive care unit and can go home after a few days."

Using a robotic helper therefore helps hospitals and health-care systems keep perioperative costs down, and surgeons can perform physically demanding procedures repeatedly and still feel fresh at the end of the day. Mohr points to a study in Sweden where minimally invasive surgery reduced the period of paid sick leave for patients from seven weeks with open surgery to less than two weeks.

There is a lot of development work and innovation still to come. Mohr calls the current state of computer-assisted surgery merely the first phase. "The second phase will be about integrating new clinical knowledge and information into the robotic platform to aid in clinical decision-making," she says. "The surgeon's eyes are limited to the visible spectrum. But with cameras, we can overlay three-dimensional vision and use near-infrared and fluorescent dyes to see nerves, blood vessels and tumors deep inside the body."

Robotic surgery is steadily expanding its reach, from orthopedics, prostate procedures and hysterectomies to more complex procedures such as operating on lung cancer or even removing the pancreas – the so-called Whipple procedure. "That's the Holy Grail of open surgery that only a few expert surgeons tackle," Mohr says. "It is incredibly invasive. Surgeons have begun performing this procedure with the da Vinci robot, but only in a few centers." As far as removal of the prostate is concerned, robots have already become the standard, she says.

In her career, Mohr has embraced several scientific fields, but sustainability has been an underlying theme. After studying robotics in graduate school and working on innovative new cars, airplanes and fuel cells to keep the planes aloft for months, she attended medical school to study surgery, linking this knowledge with her robotics work. The native New Zealander now talks regularly to her peers and students across the U.S. about the urgent need to kindle more interest in science, culminating in two appearances at the renowned TED conference.

Mohr is passionate about bringing sustainable technology into all realms of life. She and her husband spent years designing and fine-tuning their house in Silicon Valley, blogging regularly about what it means "when geeks build green." An app on her smartphone allows her to check the house's up-to-date consumption of water and electricity.

This emphasis on sustainability is the reason why Mohr doesn't believe robotic systems are a precursor to full-on telesurgery. "I think that's a misguided notion," she says. "First, the robot is not an autonomous device. Human judgment can't be replaced when lives are at stake. Second, you would need uninterrupted, reliable high bandwidth to transmit the commands to control the robot remotely. And third, and most important, telemedicine does not solve the systematic problem of the uneven global distribution of resources and know-how." Instead, Mohr champions the idea of telementoring. "You need to train people to provide basic life support locally," she says. "Then you can connect a good surgical technician through an audio and video link with a skilled mentor who walks them through a procedure. That's a scalable and sustainable approach."

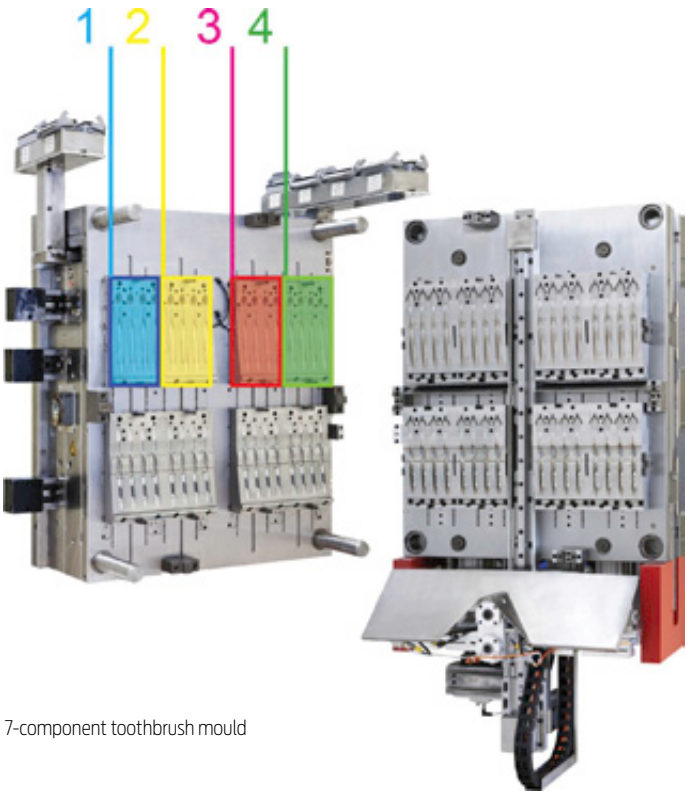
Precision Tubing for the Operating Room

Every surgery requires highly reliable systems and components to handle fluids such as blood, waste products, gases and external fluids. Once these components were made from stainless steel; today, storage tanks and tubing are manufactured out of thermoset materials such as polyurethanes, silicones and acrylics and are disposable. Trelleborg provides a wide range of hoses, silicone sheeting, custom-molded components and seals that are used for intravenous lines and catheters, as well as other medical equipment.

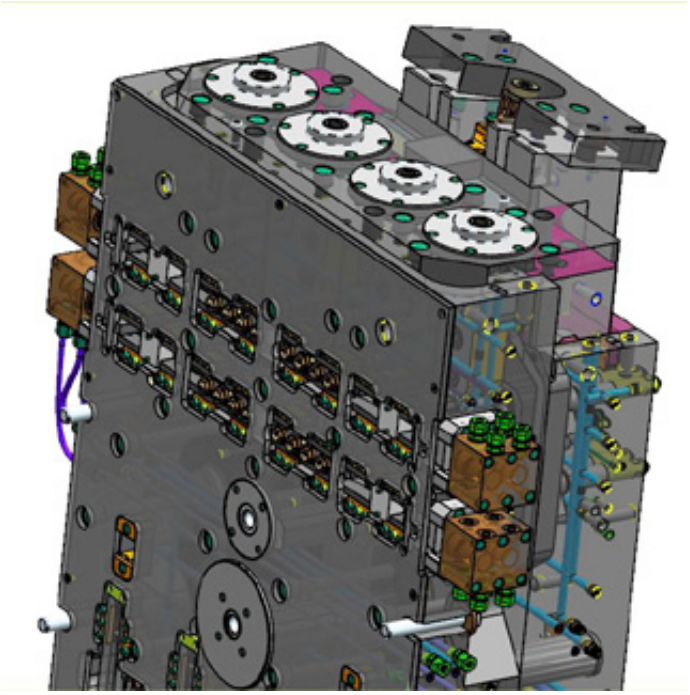
Trelleborg AB (publ)
SE 231 22 Trelleborg

Every surgery requires highly reliable systems and components to handle fluids such as blood, waste products, gases and external fluids.

First 7-component mould worldwide in use



7-component toothbrush mould



3D graphics with various nozzles

To make toothbrushes, Zahoransky has delivered a 7-component injection mould to the company Schiffer.

The makers say that this is worldwide the first 7-component mould ever built. The 16-fold injection mould has two injection stations and one loading and removal station located outside the mould. Two different materials in the same colour are processed in the first station, while two different TPEs are used in the second station. One of these is injected in four different colours. This requirement is a must especially in the world of toothbrushes as they are always retailed in four different colours. This 7-component technology allows toothbrushes to be made today without time-consuming colour changes. What has been produced during the day can now be in the supermarkets' storerooms by the evening. Linking the injection mould online with the downstream production right through to packaging has been state of the art in engineering in this industry for many years.

The unequalled advantage of this multi-component technique is that colour change is totally eliminated, unlike in the past when each colour change meant a production stoppage of at least two hours. Also, the costs of the expensive plastic material required when released during colour change are now saved in full.

Toothbrushes being injected one after the other - which is the usual procedure - also causes longer lead and delivery times and the need for the toothbrushes to be put into intermediate storage.

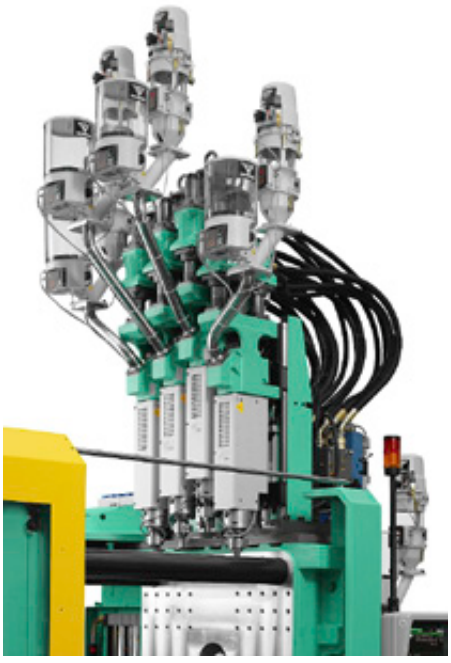
Complex multi-component moulds: the cost-effective solution for making identical products with different colours

Building a 7-component mould was a major technical challenge both for the mould and toolmaker, considering that 7 injection units had to be connected to the mould in the tightest of spaces. The availability of several material feeds, the different processing temperatures of the various materials and the close spacing between the different nozzles at the same cavity were also factors which had to be taken into account. Injection molding was done on a 6-component machine from Engel. The 7th injection unit from Boy was integrated additionally in the production process.

Mold-Masters supplied the best hot runner technology for this complex application, with the advantages of this hot runner system being the special two-part soldered runner which is unique for Mold-Masters. Instead of having only straight channels, these runners have as many as three melt levels with gentle curves and turns. This means absolute design freedom owing to natural balancing, a uniform thermal profile and a comparatively low construction height. This technology allows two or more melt flow-ways to be integrated into a single runner. The design also allows six and more materials and colours in a single runner.

In general, these complex multi-component moulds are the most cost-effective solution where identical products are to be made in different colours.

ZAHORANSKY Formenbau GmbH
D 79108 Freiburg



7-components injection unit from Arburg

Scientists prove benefit of textiles with antiviral and antibacterial effect

The end of the road for pathogens

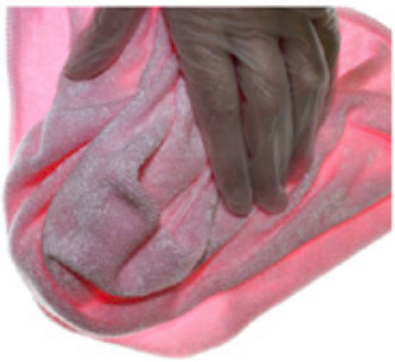


Fig. 3: Laboratory test under realistic conditions with cleaning cloths for the inactivation of viruses, bacteria and mouldson surfaces. ©Hohenstein Institute

As part of an AiF research project (AiF no. N 17407), scientists from the Hohenstein Institute in Bönnigheim (Germany) have, for the first time, developed a textile finishing with both an antiviral and an antibacterial function. This technology can be used for products in nurseries, child day care centres and hospitals to interrupt chains of infection.

Most infection-induced respiratory problems are caused by viruses. For example, the respiratory syncytial virus, a pathogen belonging to the family of paramyxoviruses, can cause infections of the upper respiratory tract in the form of colds, coughs, acute bronchitis or even pneumonia, particularly in small children. At the start of winter, the rate of infections in child day care centres and nurseries regularly increases. Diarrhoea caused by noroviruses and rotaviruses as well as bacterial infections of the respiratory tract and the alimentary tract, on the other hand, are „in season“ all year round.

To avoid droplet and smear infections as far as possible, hygienic hands, textiles and surfaces are of paramount importance.

The essential factor in avoiding or limiting the spread of disease in childcare facilities is regular and thorough hand-washing, by children and their carers.

However, textiles can also play a part in spreading pathogens. Viruses do not have their own metabolism and can therefore only survive for a limited time outside a host, and unlike bacteria, do not multiply there. However, as studies have impressively documented, textiles that are in regular contact with hands have been proven to contribute to the spread of viruses (Sauver et al., 1998). In a scientific examination, clothes as well as domestic and hospital textiles in the form of bed linen, towels, kitchen towels and so on are, alongside hands, an important potential transmission route for viruses (see figure 1).

Surfaces of all kinds, which can also be contaminated by viruses and bacteria via the hands or air, are the third key transmission route for viruses. One important element in preventing infection is therefore the cleaning of surfaces. The Hohenstein scientists are investigating these factors in their current research project.

The test design included cleaning cloths in which, for the first time, antiviral and antibacterial effectiveness were combined with each other in one functional textile finishing. „Over the long term, we are interested in finding out whether the risk of infection, that is to say the spread of germs from person to person, can be reduced by using biofunctional textiles in the future,“ says Prof. Höfer, head of the hygiene, environment and medicine department.

To achieve this goal, various organic and inorganic colloidal or nanoparticle copper compounds and copper complexes were first applied in a sol-gel process. The effectiveness of the textile microfibre substrate was optimised using various application techniques such as foulard or spray methods. The inactivation of the test viruses was significant, was retained over 15 washing cycles and was at the same time abrasion-resistant.

Fig. 1: Schema of transmission routes of germs via hands and textiles (following Bloomfield, 2011). ©Hohenstein Institute

Fig. 2: Colour differences in cleaning cloths made of microfibres before and after finishing with copper pigments. ©Hohenstein Institute

A second alternative antiviral finish of microfibre cloths was achieved by finishing with copper pigments in a high-temperature exhaust process. In a similar way to dying with dispersion dyes, the dispersed copper pigments were incorporated in the fibres in a slightly acid environment. In a second step, fixing was carried out using a polymer binding agent in a cold padding process to protect the copper particles against mechanical abrasion. These copper finishes also produced good evenness, but there was a slight green tone compared to the originally lighter fabric colour (see figure 2). All samples passed the laboratory tests on skin-friendliness.

The effectiveness tests under realistic conditions were carried out on different surfaces, such as glass, stainless steel or wood, which were contaminated with viruses and wiped with the finished cleaning cloths (see figure 3). The bacterial virus MS2, a non-pathogenic surrogate virus, which due to its structure and environmental stability is comparable to clinically relevant viruses such as novovirus, poliovirus, hepatitis A or enteroviruses, was used as the test virus. The finished microfibre cloths absorbed 91 % of the applied viruses. At the same time, the virus concentration in the cloth was reduced by approximately 90 %. Effectiveness tests against bacteria and mould were also carried out in accordance with standards (DIN EN ISO 20743 and EN 14119). With this test set-up, the finishes were optimised in a targeted manner.

The research project reveals that antiviral cleaning cloths provide an efficient hygienic effect and can help to reduce the germ transfer rate e.g. of pathogens in nurseries and child day care centres. However, this new functionalisation could be of interest in the domestic environment, in hospitals, old people‘s homes, care homes and in communal facilities (e.g. canteens) and in protective clothing for the fire brigade, emergency services and military.

Hohenstein Laboratories GmbH & Co. KG D 74357 Hohenstein

Increasing demands from the global medical market for ultra-high quality medical devices are driving organisations to seek cost effective and prompt solutions to contamination control for all stages of device production; from manufacture and assembly to inspection and packaging.

Rapid Cleanroom Solutions for the Medical Market from Connect 2 Cleanrooms

Rapid-Room - Application-Shot

Connect 2 Cleanrooms has developed a low-cost and quick-to-install modular cleanroom system, which meets the exacting demands of the medical market. Aptly named the Rapid Room, as it can be installed in just 30 minutes, this cleanroom comes with full assembly instructions and is available through Connect 2 Cleanrooms' supplies division, Cleanroomshop.com.

The high level of regulation placed on the sector for clinical trials and manufacturing practice is imperative to ensure patient safety. However with the increasing level of competition driving down prices, it can be difficult for organisations to find a contamination control solution that meets their needs from both a quality and financial perspective.

Rapid Room Cleanroom

A modular cleanroom can provide a mission critical environment for a relatively low-cost, but nonetheless crucial investment. The past decade has seen these flexible systems rise in popularity for the industry; from the small start-up firms, to the large multi-national blue-chip heavyweights.

Through HEPA filtration, the Rapid Room cleanroom system can achieve cleanroom class limits according to ISO Standard 14644-1 Class 7. With a 1.8m by 1.8m footprint, the Rapid Room is a starter-size cleanroom environment, available from stock and can easily be shipped next day in the UK, or to anywhere in the world in a matter of days.

Protect Your Investment

As a freestanding structure with carbon steel frame construction, a Rapid Room provides a solid and robust clean environment. The flexibility of the modular design means that these rooms can be dismantled and relocated, making them ideal for short term projects, clinical trialling and R&D.

Investment in a Rapid Room is also protected for longer term projects. To grow the cleanroom production area, organisations can either opt to simply install more Rapid Rooms, or the existing area can be adapted into a more bespoke cleanroom system. This staged growth is smart and lean, as organisations only have to outlay what they need at that time and so investment is future-proofed.

With a Rapid Room, organisations are also able to create a mini-environment within a larger cleanroom, meaning a cleaner environment can be achieved economically. Covering machinery such as moulding machines is also achievable and wall construction can be easily adapted to ensure a close-fit for part-coverage of machinery.

To find out more about how a Rapid Room cleanroom could add value to your business or to buy online please click on further information, or call +44(0)1524 813022 for a same day quote.

Connect 2 Cleanrooms is an industry leader in creating modular cleanroom solutions for critical environments, both in the UK and internationally. The company designs and manufactures hard and soft wall cleanrooms in-house and delivers quality cleanroom solutions to meet the ISO 14644-1 standard required. Its consumables division, Cleanroomshop.com, supplies a full range of consumables, equipment and furniture to the cleanroom industry worldwide.

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Internet: http://www.cleanroomshop.com

Rapid-Room - Full-View

AAF offers bright blue energy labels based on revised Eurovent Energy Efficiency Classification for 2014

- **Revised Eurovent Guideline 4/11 limits number of energy classes from seven to five**
- **Class A remains best, class E is now worst; energy classes F and G have been removed**
- **The revised energy label shows different color coding of the energy classes**
- **Air filters from AAF that were A rated in 2013 remain A rated in 2014**
- **AAF to finalize transition to new situation by spring 2014**

For 2014, the Eurovent Energy Efficiency Classification has undergone several modifications, comprising the energy efficiency classification itself and the design of the energy label. The best news stays unchanged; air filters from AAF that were A rated in 2013 remain A rated in 2014. And in many cases not ordinary A-labels, but bright blue energy labels for additional energy cost savings per year.

Changes to the Eurovent Energy Efficiency Classification for 2014

Eurovent conducts independent tests to verify the promised performance of an air filter, including its energy efficiency. For the latter purpose, Eurovent introduced a new method in 2011 under the name Guideline 4/11; the Energy Efficiency Classification of Air Filters for General Ventilation Purposes. This method was intended to help customers in selecting the most energy-efficient air filter.

For 2014, Eurovent Guideline 4/11 includes various notable modifications. Among others, the number of energy classes has gone down from seven to five classes. Class A remains the best level and class E has become the worst level, replacing energy classes F and G. Also the limits between the energy efficiency classes have been slightly modified with the exception of energy class A. This means that AAF's A rated air filters in 2013 remain A rated air filters in 2014. The energy rating procedure and calculation methodology remain fully unchanged in Guideline 4/11 2014.

Revised energy label design

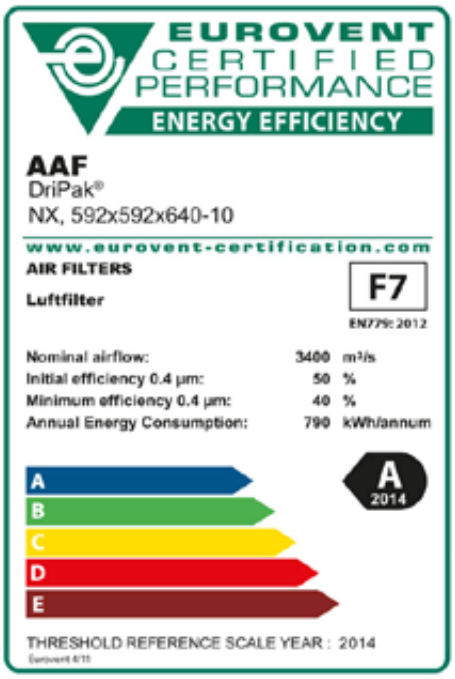
The revised 2014 energy label shows a different color coding of the energy classes. Class A is from now on displayed in blue instead of green and the worst class, now being E, is in brown instead of in red. In contrast to the 2013 energy label, which showed energy consumption ranges (e.g. 0 - 1200 kWh for an A rated class F7 filter), the 2014 energy label includes the exact energy consumption of the air filter. This makes it easier for customers to distinguish between an average A rated filter and an excellent A rated filter.

AAF delivers bright blue A-labels

AAF already offered a broad range of energy-efficient A rated air filters which will now change color from green to blue. Many of these air filters do not have ordinary A-labels, but rather bright blue A-labels. This is because they perform substantially better than the A-label limit values established by Eurovent. Therefore, not all A-labels should be considered the same; energy cost differences between an average and excellent A-label can be tens of euros per year.

An example of an excellent A-label air filter from AAF is the DriPak® NX pocket filter, launched last year April. This air filter, with double tapered pockets in a unique design made from highly efficient synthetic material, offers a Eurovent certified annual energy consumption of only 790 kWh for filter class F7 and 1450 kWh for filter class F9. Compared to the A-label energy consumption limit values of Eurovent Guideline 4/11 2014, this means an additional energy savings of up to 35% per air filter per year.

DriPak® NX



Revised Eurovent energy label 2014

AAF implementation of Eurovent Guideline 4/11 2014

In order to limit potential confusion in the market, AAF aims to have the modifications to the Eurovent Energy Efficiency Classification implemented as soon as possible. It should however be noted that during the transition period from the old situation to the new situation it can be possible that customers are simultaneously confronted with the old and new energy label. AAF strives to finalize the complete transition by spring 2014.

In case of any questions about the impact of the described changes on the AAF certified air filter portfolio, an AAF Portfolio Impact Guide can be requested at the AAF affiliate offices.

AAF-Lufttechnik GmbH
D 46047 Oberhausen

New humidity and temperature transmitter from E+E Elektronik

Highly accurate humidity and temperature measurement for demanding climate control

The new EE210 transmitter from E+E Elektronik has been developed for highly accurate measurement of relative humidity and temperature in demanding climate control applications. Excellent temperature compensation ensures outstanding accuracy over the entire temperature working range.

Besides relative humidity and temperature, EE210 calculates further physical quantities such as dew point temperature, absolute humidity and mixing ratio. Two of the measured and calculated values are available on the freely configurable analogue voltage or current outputs.

The combination of completely encapsulated measurement electronics inside the sensing probe and HCT01 humidity sensor with E+E proprietary protective coating enables the use of the EE210 even under harsh and aggressive environmental conditions.

The innovative enclosure of the EE210 provides outstanding protection against contamination. Thanks to the external mounting holes the housing remains closed during installation and so the electronics is protected from construction site pollution or mechanical damage. At the same time the installation costs are minimized.

EE210 humidity & temperature transmitter from E+E Elektronik. (Photo: E+E Elektronik GmbH)

Up to three individually selectable measurement values can be shown simultaneously on the optional display. The smooth cover surface avoids accumulation of dust in protruding edges.

EE210 transmitters are available for wall or duct mounting. Typical applications are agriculture (stables, incubators, hatchers, green houses), storage rooms, cooling chambers or indoor pools.

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Specialized coupling provides added flexibility for making connections

Colder Products Company Expands Back-to-Back Adapters Product Offering for Single-Use Bioprocessing

Colder Products Company, the leader in the design and manufacture of single-use connection technology and connectors for the life sciences markets, announces the expansion of its MPC/MPX Back-to-Back Adapters product offering to now include inserts. MPC/MPX Back-to-Back Adapters give end users the flexibility of connecting single-use systems that feature identical coupling connections at the end of their tubing.

"MPC and MPX quick connects are an industry standard and the new back-to-back insert adapters build upon the successful introduction of our back-to-back body adapters," said John Boehm, business unit manager, bioprocessing markets. "End-users will benefit from the added process flexibility of connecting two separate single-use systems that both incorporate female body connectors, as well as easily combining systems that incorporate different tubing sizes."

The easy-to-use MPC/MPX Back-to-Back Adapters provide a solution for end-users when challenged with making a connection with identical connector halves. Combining both MPC and MPX couplings provides a reducing option for users who need to transition between tubing diameters ranging from 1/8- to 1/2-inch.

MPC/MPX Back-to-Back insert adapters are compatible with industry standard MPC and MPX polycarbonate and polysulfone female connectors. Able to withstand gamma and autoclave sterilization, MPC/MPX Back-to-Back insert adapters are offered in polysulfone material. Colder's bioprocessing connections are manufactured in an ISO Class 7 certified cleanroom and meet USP Class VI material standards.

The new MPC/MPX Back-to-Back insert adapters are an addition to Colder's family of single-use connectors that include sterile connect and disconnect solutions. Available in a full range of 1/8- to 1-inch flow configurations, the single-use connection technology from CPC provides ease-of-use, robust construction and reliable performance for transferring valuable media for a wide range of applications including single-use bag and tubing assemblies, cell banking systems, bioreactors, mixers, sampling and filling.

Colder Products Company GmbH
D 55252 Mainz-Kastel

Fresh and colorful: new products and trade fair highlights for filtration

Author: Barbara Knipper

01st - 04th April 2014: analytica Munich (D)

Visitors to Hahnemühle's Analytica booth will enjoy a colorful package of new products and activities. One highlight will be the presentation of the new filtration unit. Hahnemühle's brand ALBET LabScience expands its portfolio by introducing the new 3-in-1 system. The compact filtration unit replaces the three traditional components: vacuum pump, vacuum bottle and filtration manifold. The flat aluminium housing features a liquid pump and three positions for filter units. The system allows uncomplicated routine analysis with high sample throughput. Users benefit from high time and cost savings. With its flat design and low weight, the system is small and easy to use.

A "product tree" presents a selection of Hahnemühle's filter paper portfolio of more than 150 grades. The development and production of high quality filter papers is the core business in the filtration and technical paper area of the international trading company. High-tech papers for demanding applications have been produced at the site in Dassel, Germany for more than 130 years. Leading companies e.g. in the beverage industry, the pharmaceutical industry or diagnostics, trust the purest filter papers "Made in Germany".

Marc Robitzky, freelance illustrator, will create exclusive caricatures of visitors at the Hahnemühle booth. Visitors will have the chance to look over Marc Robitzky's shoulder while he is creating cartoons, pose for him and take their personal cartoon home as a special souvenir.

Hahnemühle FineArt GmbH
D 37586 Dassel

analytica Conference 2014

Focus: Fine particulate matter

Why do mountain ranges look blue on some days, but then a completely different color during sunrise or sunset? Why have some cities set up low-emission zones? Lots of questions with one answer: Because of aerosols, or finely dispersed solid or liquid matter in the air. If the matter is solid, it is called fine particulate matter. Depending on its origin, chemical composition, quantity and size, it can be hazardous to people and the environment. Leading scientists will discuss these challenges at the analytica Conference, which is being held in conjunction with analytica at the ICM – Internationales Congress Center München from April 1–3.

01st - 04th April 2014: analytica Munich (D)

To protect people from fine particulate matter that is hazardous to their health, scientists in various disciplines have been researching aerosols for years. One of the greatest challenges is chemical and biochemical analysis, which is why „Aerosols and Health" is a main theme of the analytica Conference in Munich. On the first day of the conference (April 1), Professor Ralf Zimmermann, a chemist at Rostock University and Munich's Helmholtz Center—the German Research Center for Health and the Environment—will lead a full-day session on this topic. A total of 14 lectures from scientists from Germany, Australia, Finland, Great Britain, Canada, Norway, Switzerland the United State are planned. They will explain how aerosols are characterized, how they make their way through the body, and how they impact our health. Among other things, they will introduce studies on the combustion of diesel, marine diesel, biodiesel and biomass and their effects as well as the share of nanoparticles in the aerosols that are created.

Nanoparticles—i.e. particles that are up to 100 nanometers in diameter—can be very successful at conquering the human body. However, allergies can also be triggered by pollen, which is approximately ten micrometers in diameter. Besides allergies, fine particulate matter can also cause asthma as well as other respiratory and cardiovascular diseases. Organic compounds account for some 70 percent of all dry particulate matter and several hundred of those compounds can be detected in the particles. Analytical chemistry faces some major challenges in this area. They start with the question of what the best way is to „collect" the particles and how complex the samples are that are taken this way. Chromatography separation techniques with subsequent mass-spectrometry analysis are the methods of choice, and they are increasingly being refined for the task at hand. Techniques based on mass spectrometry with ultrahigh resolution or modern online analysis techniques are still used to detect gas and particle phases.

Besides the topic of fine particulate matter, sessions on water analysis, metabolomics and proteomics are also on the agenda. As a result, the analytica Conference covers the entire range of analysis topics. The current program of events is available online at www.analytica.de/conference or at www.gdch.de/analyticaconf2014. Admission to the conference is included in the price of admission to the fair.

Germany's three leading scientific associations—the GDCh (German Chemical Society), the GBM (Society for Biochemistry and Molecular Biology) and the DGKL (German Society for Clinical Chemistry and Laboratory Medicine)—are responsible for the program of events at the analytica Conference from April 1–3.

Messe München GmbH
D 81823 München

parts2clean 2014 (24–26 June)

- Ideal cleaning solutions ensure process security and cost-effectiveness
- "parts2clean" show provides overview of latest developments and trends

Cleaning: Critical quality factor in production processes

24th - 26th June 2014: parts2clean Stuttgart (D)

Residual impurities are not only detrimental to product functionality and safety – they can also impact on subsequent processes in the production chain, such as coating, bonding, welding, hardening, measuring, testing and assembly – all of which require clean surfaces. This raises the question of which processes, process media and measures can guarantee the required degree of cleanliness in the most failsafe and economical way. From 24 to 26 June 2014, Parts2clean will highlight all the most promising solutions in Stuttgart, Germany. "As a leading trade fair, parts2clean provides a comprehensive overview, including the areas of cleanliness testing, corrosion protection, conservation and packaging," explains Olaf Daebler, Director of parts2clean.

Batch processes vs. individual cleaning

Whether it involves an injector, implant, cylinder block, turbine, micro-component or electronic component – manufacturing enterprises need to fulfill increasingly stiffer requirements for component cleanliness. There is no patent recipe for meeting the standards for residual dirt on component surfaces. Depending on the production stage, the requirements for cleanliness vary from rudimentary to intermediate to extreme, requiring an individually tailored solution in each case. Significant factors include the material or combination of materials, the type of impurity, the geometry of the component, cleanliness requirements with regard to particle and filmic impurities and the necessary production throughput. This makes it possible to select the optimum solution in terms of cleanliness and economy for a number of different processes.

This can, for example, consist of wet chemical cleaning in an immersion, ultrasound or spray process using a aqueous cleaning agent or solvent. Batch processes which clean parts – either in bulk or as individual products – have the advantage of supporting high throughput in a relatively short period of time – thus contributing to cost reductions. These solutions are often decentralized, intermediate cleaning steps – for example directly after a cutting stage in the production process. This prevents a mixing of different processing media which could necessitate increased cleaning exertion later on.

Cleaning technologies like high-pressure aqueous spray and dry processes, which include CO2, dry ice, plasma, impact and vibration cleaning are often employed for cleaning individual parts. Depending on the process, they enable the targeted treatment of channels, drill holes and functional surfaces, generally supporting a high degree of automation, thus helping streamline the integration of production cleaning processes. For particular tasks, a combination of cleaning technologies can be beneficial – for example, if functional surfaces on the workpiece need to have a higher degree of cleanliness before the next production step can take place.

Cleaning chambers and media treatment

Both the cleaning chamber and media treatment exercise a substantial influence on the quality and cost of the cleaning process. Effective filtration and removal systems, for example oil removal, particle filters, membrane filters, water treatment and – for solvents – distillation processes – contribute to reducing the length of time for baths, thus helping reduce costs. For aqueous media a continuous monitoring of the concentration of cleaning components guarantees that the bath water is not changed too early – perhaps even conserved until a part is deemed too impure for the next production step. Consistent monitoring of the bath makes a significant contribution to optimizing process security and economy.

Expertise in the cleaning of parts and surfaces

As the world's only trade fair devoted to the cleaning of industrial parts and surfaces, parts2clean also boasts a three-day forum. Featuring extensive expertise, the presentations on a variety of industrial cleaning topics will be translated simultaneously (English/German).

Running concurrently with parts2clean, the Stuttgart exhibition center will also be hosting O&S – the international trade fair for surface treatments and coatings – as well as LASYS, the leading trade fair for laser material processing, plus AUTOMOTVE Expo, all from 24 to 26 June.

Deutsche Messe AG / Presse D 70825 Korntal

POLed for success – BOY trio in Kielce (Poland)

27th - 30th May 2014:
PLASTPOL plastics exhibition
Kielce (Poland)

At the PLASTPOL plastics exhibition in Kielce (May 27 – 30), BOY will demonstrate in hall F two E-Series injection moulding machines equipped with efficient servo drives. The BOY 35 E and BOY 60 E, both compact and complete production units, will surely impress the show attendees. The BOY presentation in the Polish distributor's booth (Wadim Plast Sp.j.) will be completed with an injection unit for multi-component injection moulding.

How singles become partners

The BOY 2C XS – an injection unit for two- or multi-component injection moulding – offers flexible possibilities by converting a conventional injection moulding machine into a 2C-machine. The injection unit with its own integrated hydraulic drive and Procan ALPHA ® 2 control provides a plasticizing volume of up to 76,4 cm^3 and achieves injection pressures of up to 3,128 bar.

The BOY 2C XS can be connected to different injection moulding machines with a few simple steps. The unit is easy to transport and therefore more flexible to use due to steerable wheels. In addition, the positioning and use of several BOY 2C XS units to a basic machine is possible.

Injection moulding, bagging, done!

The BOY 35 E (350 kN clamping force), which is equipped with an antistatic coating, will produce insulin syringe protection caps in a 16-cavity mould in accordance with cleanroom class 7 laminar flow (according to ISO 14 644). The protection caps will be sealed in aseptic packaging immediately following removal from the mould. Printed with production data for potential retracing, the transparent bags will be sealed air tight. To save space, the packaging machine will be positioned under the cantilevered clamping unit. The harmonious cleanroom concept of the four-tie bar BOY 35 E injection moulding machine will be completed through a higher ground clearance.

Compactly automated

A new BOY 60 E (600 kN clamping force) will produce beer glasses out of highly transparent polycarbonate. The plastic glasses produced on the BOY 60 E will be removed from the mould with a handling device and placed on a conveyor belt. At the push of a button, the glasses can be filled with German beer.

The machine, which is newly available from BOY, is equipped with a higher clamping force, the multi-patented multi-touch Procan ALPHA ® 2 control and EconPlast. The newly developed, optional heating system named EconPlast reduces the energy required for plasticizing plastics by up to 50 %.

The whole unit – which includes the injection moulding machine, a three-axis linear robot with integrated rotary and swivel function, conveyor belts, and CE-compliant safety housing – can be ordered as a complete turnkey from BOY.

Certified saving models

Since the Polish plastics industry is also confronted with rising energy costs, the use of certified energy-saving machines is now encouraged and sponsored by the Polish government. The program PolSEFF deals in advantageous credits and supports small and medium-sized companies in the purchase of these certified machines. After implementation of Euromap 60.1, this measure is a further step to encourage and reward the purchase and use of only the most efficient machines in the market.

The BOY 60 E, equipped with the servo-motor pump drive and optioned with the EconPlast technology, achieves the energy classification 9+ according to Euromap.

Due to these governmental assistance measures, BOY and Wadim Plast expect that additional market opportunities will open up in Poland.. The manufacturer of injection moulding machines with clamping forces up to 1,000 kN feels it is best prepared for the implementation of the energy saving guidelines.

Dr. Boy GmbH & Co. KG
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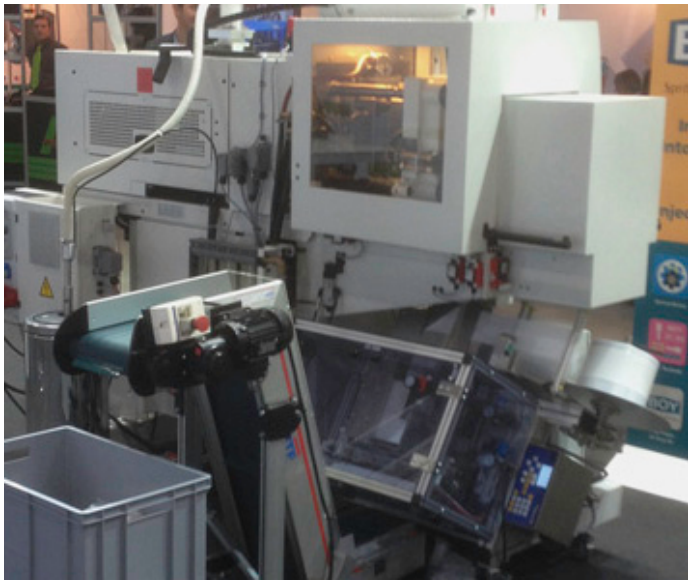

The compact clean room production with the BOY 35 E.

The new BOY 60 E with integrated handling unit.

Safety in the laboratory has top priority

New special exhibit for occupational health and safety

Many laboratory workers believe they know the dangers of their work inside out. However, the fact that work accidents still occur on a regular basis shows just how important it is to keep abreast of safety issues. For the first time ever, the analytica 2014 is offering the Special Exhibit for Occupational Health and Safety.

01st - 04th April 2014: analytica Munich (D)

The Special Exhibit for Occupational Health and Safety offers information about all the important issues in this area – from the correct protective work clothing and the safe handling of hazardous substances to avoiding dangerous chemical reactions. „We offer an exciting mix of up-to-date information, spectacular live demonstrations and international expertise," explained Project Manager Susanne Grödl. In the Live Lab in Hall A3, daily experimental presentations will be on the program: „Fires and Explosions" and „The Safe Handling of Hazardous Substances/Avoiding Health Risks".

The first of the presentations, „Fires and Explosions", will be given by asecos and will start at 12.00 each day. Company employees will explain how to avoid fires and answer the following questions: What is the correct way to store hazardous substances? And what properties of laboratory chemicals must be taken into account in order to avoid dangerous situations? The aim is to raise visitors' awareness of dangers and appropriate preventative measures. After all, the tiniest quantities of flammable substances and a spark are enough to trigger uncontrollable chain reactions. At the analytica, visitors can experience in person how even the smallest amounts of hazardous substances can cause dust explosions, exothermic reactions as well as controlled minor fires and flash fires. For example, a balloon filled with hydrogen 3.0 will be ignited with a naked flame. For international visitors, the experimental presentation will also be given in English each day at 14.00.

At 16.00, the „The Safe Handling of Hazardous Substances/Avoiding Health Risks through the EMKG and PPE" presentation will look at workers' health during day-to-day work in laboratories. Laboratory chemicals specialists from the company Bernd Kraft will demonstrate the best ways to organize a laboratory. This includes how to ensure that suitable protective suits, masks and gloves are immediately to hand when handling chemicals. The experts will also explain how laboratory chemicals can be categorized according to the danger they pose on the basis of the EMKG (Easy to Use Workplace Control Scheme) and what criteria are used at Bernd Kraft to decide on the appropriate PPE (Personal Protective Equipment). The special exhibit will be complemented by an exhibition of safety products such as safety cabinets, gas detectors and protective clothing.

Messe München GmbH D 81823 München

WTT-Expo under the patronage of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

Refrigeration and air-conditioning conference provides information on possible grants for refrigeration and air-conditioning systems

08th - 10th April 2014: WTT-Expo Karlsruhe (D)

WTT-Expo 2014 (taking place at the Karlsruhe Trade Fair Center between 8 and 10 April 2014) is being held under the patronage of Rita Schwarzelühr-Sutter, member of the Bundestag and Parliamentary State Secretary at the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). Simplified considerably since January 2014, the revised grant procedure for promotion of efficiency-improving measures for refrigeration and air-conditioning systems will also be presented by Wolfgang Müller from the Energy Efficiency department of the Federal Ministry for the Environment, Nature Conservation, Building & Nuclear Safety within the framework of the refrigeration and air-conditioning conference being organised by the Association of German Refrigeration and Air Conditioning Companies (VDKF) during the WTT-Expo on 10 April 2014. Companies can now apply for grants for compression-type refrigeration systems with 5 to 150 kW power input, compression-type air-conditioning systems with 10 to 150 kW power input and adsorption systems with five to 500 kW cooling capacity (as long as the heat has been produced by a CHP plant or waste heat is used).

Other subjects to be discussed during the refrigeration and air-conditioning conference will include adsorption cooling technology, ice storage, energy-efficient refrigeration engineering in industrial applications, efficient power control concepts for reciprocating compressors, possible industrial applications for high-temperature heat pumps and systems that are energy-efficient as a result of choosing suitable heat exchanger technologies.

About WTT-Expo – Trade Fair for Industrial Heating and Cooling Technology

The 5th WTT-Expo – Trade Fair for Industrial Heating and Cooling Technology – will be offering an ideal information platform for energy-efficient optimisation of systems in process engineering applications between 8 and 10 April 2014, with its core components – heat exchangers, heat transfer technology and industrial waste heat recovery. It is being held at Karlsruhe Trade Fair Center in conjunction with the 5th PaintExpo – the Leading International Trade Fair for Industrial Coating Technology – and the 1st HallTec – the Trade Fair for Technical Building Equipment in Industrial and Commercial Building Construction – for the first time this year.

Karlsruher Messe- und Kongress-GmbH
D 76137 Karlsruhe

Top-class expert knowledge

- **Chillventa Rossija Congressing convinced the experts**
- **New event cycle from autumn 2015**

Chillventa Rossija, Russia's most important gathering of the refrigeration, air conditioning and heat pump sector for commercial and industrial applications, took place in the Crocus Expo Center in Moscow from 4–6 February 2014. This year's event was very successful again and the exhibitors were satisfied too. 106 companies from Russia and abroad presented their products and services and were available for intensive talks. 5,455 trade visitors sourced information on components, products, systems and current industry trends with the focus on commercial and industrial refrigeration. Chillventa Rossija Congressing also convinced the visiting experts with a first-class congress programme and top speakers. An event from experts for experts.

14th - 16th October 2014: Chillventa Nuremberg (D)

"Chillventa Rossija was also successful in 2014," says a delighted Wolfgang Kranz, Member of the Management Board of NürnbergMesse. "The 5,455 visitors ensured that the exhibition halls were always well filled. We will continue to develop the position of this leading event, the only refrigeration trade fair in Russia," says Kranz. "We have listened carefully to our exhibitors and have implemented the positive and constructive feedback. First we will move Chillventa Rossija to the autumn, and second it will take place every two years in future in line with the needs of the Russian industry, and alternate with Chillventa in Nürnberg."

Permanent event in the exhibition calendar

Chillventa Rossija and Chillventa Rossija Congressing have developed excellently. After being organized four times, the exhibition is established as a permanent event in the Russian exhibition calendar. "One reason for the success of Chillventa Rossija is certainly the fact that we continuously develop the concept of the exhibition every year. This is confirmed by exhibitors and visitors alike. We will evaluate the feedback again this year and, in addition to changing the cycle and moving to the autumn, carefully adapt the event concept where necessary and advisable to ensure a successful future," says Kranz.

Exhibitors satisfied with Chillventa Rossija 2014

Overall, the exhibiting companies were very satisfied with the event in 2014. At Chillventa Rossija 2014, 106 Russian and international companies from altogether 17 countries presented their latest products and services for commercial and industrial refrigeration, air conditioning, and transport and household refrigeration. The companies exhibiting in 2014 came from Belgium, Belarus, China, Finland, Germany, India, Italy, Lithuania, Poland, Russia, South Korea, Spain, Sweden, Switzerland, Taiwan, Turkey and the USA. The international share was 46 per cent.

Visitors convinced by "their Chillventa Rossija"

Many refrigeration, air conditioning and heat pump experts came to Chillventa Rossija again this year. The exhibiting companies unanimously praised the quality of the 5,455 visitors. The visitors to Chillventa Rossija in 2014 came from 36 countries. Once again, a large share of them – 57 per cent – were decision-makers or involved in the decision-making process. Other visitors were engineers, buyers, marketing and sales staff, technicians, self-employed persons, developers, consultants and last but not least students of refrigeration and air conditioning technology. This year's Chillventa Rossija has once again improved its position as leading exhibition and knowledge platform for refrigeration, air conditioning and heat pumps.

Chillventa Rossija Congressing: from experts for experts

Chillventa Rossija Congressing, the accompanying congress programme, provided excellent and highly topical knowledge at first hand. The motto for this year's congress with international speakers was "The refrigeration industry under the conditions of industrial and infrastructural development in Russia." The following conference blocks were on the agenda: innovations in compressors, heat exchangers and automation and control, new applications and overview of the development of the heat pump market in Russia, applications for agricultural, industrial and logistic firms, energy efficiency in supermarkets, cleanrooms and air-conditioned chambers. The varied congress spectrum included energy-saving components and equipment, heat pumps in municipal and commercial buildings, and refrigeration and air conditioning for industrial and commercial use. Young professionals presented the results of their research projects.

Outlook – next stop Chillventa 2014!

The next highlight for the international refrigeration, air conditioning, ventilation and heat pump industry takes place at the Nürnberg exhibition centre from 14–16 October 2014: Chillventa 2014. The signs already indicate success. The organizers assume that this year's Chillventa will be bigger than ever.

ACREX India, South Asia's largest trade fair for air conditioning systems, refrigeration systems and building services, follows in spring 2015.

NürnbergMesse GmbH
D 90471 Nürnberg

Engel at Chinaplas 2014 in Shanghai

Integrated solutions for lowest unit costs

As the pressure to reduce costs continues to rise, innovation, efficiency and automation increasingly become the focus for injection moulding producers in Asia. Engel will be demonstrating how to successfully meet such current challenges at Chinaplas 2014, from 23rd to 26th April in Shanghai. All four highly integrated manufacturing cells on display at Engel's trade fair stand E01 in Hall E3 combine top performance with maximum energy and material efficiency while making clear that intelligent automation is also beneficial in terms of process technology. A further highlight: the company will be presenting the CC 300, its new generation control unit, in Asia for the first time.

23rd - 26th April 2014: Chinaplas Shanghai (China)

Engel automotive: Conserving resources with higher quality components

An Engel duo 900 injection moulding machine with integrated Engel viper 20 linear robot will be the focus of the automotive exhibition. With the Engel foammelt technology, oil sumps are produced on the large-scale machine with a 9,000 kN clamping force. Under the Engel foammelt banner, Engel offers turnkey solutions from a single source for MuCell structural foam moulding by Engel partner Trexel, from Wilmington, Massachusetts (USA). For the MuCell process, which is no longer protected by licensing fees, the plastic melt is loaded with nitrogen or carbon dioxide and then injected into the mould, during which time the gas expands in the mould cavity. The use of raw materials and the component weight are thereby reduced, while at the same time the rheological properties of the melt improved. This results in dimensionally stable injection moulded parts that are free from sink marks.

The manufacturing cell makes it clear how the optimized cooperation between the injection moulding machine and the robot opens up new potential for efficiency. Thanks to the complete integration of the control unit, the injection moulding machine and the robot access the same database and can precisely coordinate their move sequences. For example, the robot can enter the mould area during the mould opening movement, which frequently reduces cycle times.

„Automation is increasingly becoming an integrative process that enables extremely economical production processes and guarantees a constant high level of product quality," states Gero Willmeroth, Sales and Service Manager of Engel Machinery Shanghai. „With intelligent automation concepts we can clearly increase the competitiveness of our customers. The demand for automated system solutions continues to increase in Asia."

Engel teletronics: Maximum efficiency for even the smallest precisions components

In the electronic and telecommunication sectors, it is necessary to combine energy efficiency with maximum precision and flexibility. And yet, as the demands for quality increase, part sizes are decreasing. In order to meet these requirements while keeping costs low, Engel has expanded its Engel e-motion series of all-electric injection moulding machines with a small, tie-bar-less variety. As the first injection moulding machine developed in Europe, the Engel e-motion 30 TL with a clamping force of 300 kN is capable of producing optical lenses for mobile devices with a maximum form deviation of just a few µm. Equipped with an 8-cavity mould and an integrated Engel viper 6 robot, it will demonstrate this at Chinaplas 2014.

For the small, tie-bar-less Engel e-motion machine, a new frame concept was developed that enables a really light and very short machine design. With a length of only 3 metres, the Engel e-motion 30 TL is the shortest 30-tonne machine with all-electric drive technology on the market. In addition, the barrier-free mould space allows for comparatively large moulds. Both aspects greatly reduce the footprint of the plant, which is an important efficiency factor, especially in clean room production.

Engel packaging: Fully electric for maximum performance

The business unit Engel packaging will also be presenting an all-electric injection moulding machine in Shanghai. 500 ml food containers will be produced on an Engel e-motion 440/160 featuring a 2-cavity mould by Glaroform (Näfels/Switzerland). The containers will be decorated using in-mould labelling (IML). The high-performance IML automation comes from BECK automation (Oberengstringen/Switzerland), and the foils from Viappiani (Mailand/Italy). The auxiliary equipment partners are Piovan of S. Maria di Sala in Italy and ef cooling (Dällikon/Switzerland).

The ongoing development of the Engel e-motion series has increasingly established these machines in the area of high-performance applications in the packaging industry. The newest machine generation is able to achieve cycle times easily under 3 seconds and injection speeds of more than 500 mm per second, thereby combining maximum performance with maximum energy efficiency. The closed system for toggle lever and spindle always guarantees optimal, clean lubrication of all moving machine components. This makes the Engel e motion even in regulated production areas – for example, in the production of food packaging – the preferred type of machine.

Engel medical: tie-bar-less technology saves space in the clean room

Petri dishes belong to the standard consumables in biochemical laboratories. In order to be able to optically analyze the micro-organisms and cells grown in the dishes, the plastic dishes must have a high level of transparency, optical clarity and a flat bottom. An Engel victory 1350/300 injection moulding machine will meet this challenge at Chinaplas. In an 4+4-cavity mould by Plastisud (Castelnaudary/France) eight upper and lower parts of the petri dishes will be pro-

Integrated solutions for lowest unit costs

duced out of polystyrene in every cycle. The parts are removed in pairs fully automatically, fitted together, stacked and prepared for packaging. Engel achieves such a high level of process integration together with its systems partner Hekuma (Eching/Germany). In medical technology, automation plays a decisive role in achieving high levels of process and product safety. That is because manual interventions represent the greatest risk of contamination in the clean room.

Thanks to Engel bar-tie-less technology, this manufacturing cell even fits within a small area. On the one hand because, thanks to the barrier-free clamping unit, the large mould fits in comparatively small machines. And on the other hand because the automation can be placed very close to the mould. The handling arm can directly access the mould area from the side.

CC 300: New Engel control unit simplifies complex processes

Process integration and automation are crucial to increasing efficiency in injection moulding production. At the same time, however, they make the manufacturing processes more and more complex. Making the operation of highly-integrated and automated production processes easier, more comfortable and safer was therefore the declared goal of Engel in the development of its new control unit generation CC 300, which will be presented in Asia for the first time at Chinaplas 2014. The new features include the extra-large 21“ multitouch display with a new and clearer structure, separate views for each task, which eliminate operator errors in full-feature scope, and the central control button e-move that gives the operator a feeling for the machine in spite of the multitouch functionality. By being rotated, e-move enables all machine and robot movements to be controlled millimetre by millimetre and in a speed-sensitive manner.

„We‘re setting a new trend with the CC 300,“ says Gero Willmeroth. „The feedback from our test operators has been extremely positive.“ One main reason has been that the operators are able to figure out the new control unit immediately. The basic principles that operators appreciated in the previous model have been retained. In addition, user technologies that have since become standard were transferred to the demands of the injection moulding processes – for example, the intuitive gesture controls found in smartphones.

„The control unit of the manufacturing cell has long since become an important factor in efficiency,“ Willmeroth stresses. „With our new CC 300 we can support our clients in maximizing the full potential of integrated system solutions while increasing process safety at the same time, even when the level of qualifications of the employees are low.”

Engel plus: Intelligent service products maximise productivity and efficiency

Under the Engel plus banner, Engel showcases its service products and services at Chinaplas 2014 in a separate exhibition area. The main focus is on Engel flomo and Engel e factory 2.

The Engel flomo electronic temperature control water distributor continually monitors all cooling and temperature control circuits, thus making maintenance-intensive cooling water distribution manifolds with sight glasses redundant. With its vortex sensors, the Engel flomo requires no moving parts and water filters. All the components are made of premium stainless steel. Engel flomo is one of the smallest manually configurable water distribution devices with electronic monitoring on the market, and can thus be mounted very close to the mould. This reduces heat loss.

Gero Willmeroth, Sales and Service Manager of Engel Machinery Shanghai.

With Engel e-factory 2, Engel sets new standards in production data acquisition. Thanks to the enhanced set of features, the new release of Engel‘s MES solution can be connected directly to ERP systems such as SAP – even injection molding machines of different brands can now be integrated. Production figures can be observed conveniently in real time from the desk in order to counteract deviations immediately. This results in higher productivity and efficiency in the injection molding production.

From injection moulding machines and automation, process technology and mould planning, to training and service, Engel offers optimized, turnkey system solutions around the world for the specific needs of individual business sectors and national markets. Local production in Asia ensures the fast and flexible adaption of injection moulding machines and system solutions while also guaranteeing short delivery times. Engel is the only western injection moulding machine manufacturer with two production plants in Asia.

ENGEL AUSTRIA GmbH A 4311 Schwertberg

Energy-efficient and space-saving

Interpack 2014: Bosch introduces new HQL sterilization tunnel series

- **Modular design for customer-specific requirements**
- **Increased energy efficiency through energy-saving components and measures for heat recovery**
- **Standardized conveyor belt sizes for optimal adaptation to customer processes**

08th - 14th May 2014: Interpack Duesseldorf (D)

At Interpack 2014, Bosch Packaging Technology, a leading supplier of process and packaging technology, presents the new 6000, 7000 and 8000 series of the HQL drying and sterilization tunnel. This new generation of tunnels is an energy-saving and especially flexible advancement of the proven HQL series for sterilizing and depyrogenizing pre-cleaned ampoules, injection and infusion bottles, as well as cartridges and syringes.

The modular design of the HQL series ensures a customer-specific tunnel arrangement. Each sterilizing and cooling module contains the entire technology for the respective process step. "The modules can now be variably put together. This allows the new series to be flexibly integrated into different line concepts," Matthias Angelmaier, product manager at Bosch Packaging Technology, explains. In addition, the new design facilitates access to critical areas such as HEPA filters, which can be easily replaced, thus simplifying maintenance of the tunnels.

Savings in energy and space

Pharmaceutical manufacturers profit from the increased energy efficiency of the new HQL series. In contrast to most sterilization tunnels, the new series requires less energy for electrical heating and ventilation due to an optimized airflow and measures for heat recovery. A flexible pressure zone concept ensures increased process safety by adapting tunnel pressures in the different zones to customers' requirements. The new tunnels are further characterized by a reduced overall tunnel size, making them shorter and more space-saving than the previous series.

Three standardized conveyor belt sizes

The new tunnels are available in three standardized bandwidths of 600 respectively 800 millimeters for the HQL 6000 and 7000 and 1 200 millimeters for the HQL 8000, which is on display at Interpack. With its different sizes, the drying and sterilization tunnel can be flexibly adapted to different requirements. "Based on the physical properties of our customers' packaging material we calculate, which tunnel modules are adequate for their processes," Angelmaier explains. This subsequently facilitates safe process validation and documentation. "The HQL 8000, for instance, with its broad conveyor belt and several sterilizing and cooling modules is suited for large glass containers and downstream filling machines with high output." The horizontal transport belt made of a stainless steel wire mesh makes sure all freestanding and non-freestanding containers are transported through the HQL tunnel gently and without abrasion.

Bosch Packaging Technology
D 74554 Crailsheim

New series of Bosch HQL sterilization tunnel: The new HQL series for sterilizing and depyrogenizing pre-cleaned containers is characterized by reduced energy consumption and a modular design.

Arburg to exhibit efficient industry-specific solutions at Chinaplas

- **Sophisticated: high-speed IML products, as well as LED carriers with Hotmelt**
- **High productivity: high-performance machines in „Packaging" version**
- **In demand in Asia: high-end injection moulding solutions from Arburg**

The 28th Chinaplas trade fair will be held from 23 to 26 April 2014 at the Shanghai New International Expo Centre. The Chinaplas has today become the largest plastics trade fair in Asia and the second largest in the world behind the "K" in Düsseldorf. Arburg has been aware of this development for a number of years and will again exhibit high-end injection moulding technology in 2014. The three exhibits to be shown on stand E1G01 in Hall E1 are precisely tailored to the needs of the key industries for the region – packaging and electronics.

23rd - 26th April 2014: Chinaplas Shanghai (China)

"With their strong growth rates, the markets in China and Asia are very important for us. We are therefore active at the local level here and have, for example, significantly improved customer support with our distribution warehouse near Shanghai, which we opened in 2013. We are in a position to deliver individually adapted Allrounders and Multilift robotic systems much faster than before in the region. The high level of customer satisfaction confirms that we have made absolutely the right choice," says Helmut Heinson, Managing Director Sales, adding: "Because of the dynamic technical development in these countries, we regard the Chinaplas as an important presentation forum for our high-end injection moulding solutions."

Meeting all customer requirements

"Thanks to their modularity, our Allrounder injection moulding machines can be equipped for specific applications or industries. We will be showing sophisticated examples of this at the Chinaplas 2014, with exhibits for the packaging and electronics industry," says Zhao Tong, manager of the Arburg subsidiary in Shanghai. "We will use the production of high quality ML packaging application and the Hotmelt process to make it clear to visitors that we are able to meet all our customers' requirements."

Max Man, Managing Director of the Arburg subsidiaries in Shenzhen and Hong Kong, explains: "The Asian market increasingly demands solutions that are characterised by high performance, automation and customisation and that can be made available quickly. This is exactly what we offer our customers, plus comprehensive pre- and after-sales service. This is very much appreciated by our customers, both local and international."

At the Chinaplas, the Hotmelt process for overmoulding electronic components will be demonstrated on a vertical Allrounder 275 V. (Photo: Arburg)

Special high-performance machines

In order to meet the high demands of the packaging industry, Arburg offers Packaging versions (P) of the hybrid and electric Hidrive and Alldrive high-performance machines. These combine high productivity and reduced energy consumption and are characterised by a well-balanced combination of distance between tie-bars, clamping force and opening stroke. Moreover, they provide precise, energy-saving mould movements (thanks to servo-electric toggle-type clamping units), high plasticising performance (thanks to barrier screws and servo-electric dosage drives), dynamic position-regulated screws and effective injection volume flows. Arburg will present the benefits of these machines at the Chinaplas 2014 with two Allrounder 570 H machines in the „Packaging" version.

Job done: four high-quality IML tubs in around four seconds

All the components in the production cell for the packaging industry are precisely coordinated. The Packaging version of the hybrid Allrounder 570 H produces four IML tubs in a short cycle time of around four seconds. The high performance machine features a clamping force of 1,800 kN and a size 800 injection unit. It is equipped with an IML system from French automation and in-mould labelling specialists Sepro Robotique and Machines Pagès. The 4-cavity mould from Swiss manufacturer Kebo was adapted for the high-speed production of IML tubs, while the labels come from Belgian suppliers Verstraete.

Hotmelt: reliable seals for electronic components

At the Chinaplas, the Hotmelt process for overmoulding electronic components will be demonstrated on a vertical Allrounder 275 V with a clamping force of 250 kN and a size 100 injection unit. The thermoplastic Hotmelt adhesives can be used over a wide range of temperatures and feature excellent adhesion on polar plastics. This makes them highly suitable for overmoulding sensitive electronic components, as found in the automotive sector for example. The low mould cavity pressures required for injection moulding are a major advantage due to the extremely low melting viscosity of the material. This means that the sensitive "inner workings" of the components remain undamaged and are perfectly protected from environmental influences.

An LED carrier will be produced as a demonstration part, with the insert consisting of an LED circuit board and two connector cables. The screw that has been adapted to process the material features a diameter of 35 mm and the injection moulding cylinder is equipped with a needle shut-off nozzle. With the 1+1-cavity mould used, the cycle time is around 110 seconds, which is ideal for a simultaneous manual insertion process.

ARBURG GmbH + Co KG
D 72290 Loßburg

Varied, inspiring and provocative: The next Cleanzone Congress will be taking place on 21 and 22 October 2014 at the same time as the Cleanzone trade fair in Hall 1.1 at the Frankfurt exhibition grounds.

Cleanzone Congress in Frankfurt: exciting topics – new structure

21st - 22nd Oct. 2014: Cleanzone Frankfurt/Main (D)

Launched in 2011, the Cleanzone Congress is a venue for international and cross-industry exchange between experts, researchers and users at a professional level. It is aimed at market participants from all industries, disciplines and sectors in which cleanroom technology plays a key role – or where it will be doing so in future. With its clear division into basic and advanced sessions, the congress is able to serve users who are new to cleanroom technology, as well as experienced specialists. "In 2014 we would like to create a programme that is not just varied, informative and inspiring, but also surprising and provocative," promises Frank Duvernell, Managing Director of Reinraum-Akademie (Leipzig), which is responsible for the content of the congress in its role as a partner to Messe Frankfurt.

Hall plan and exhibitor registration now online

International jury

A call for papers invited industry experts to submit their propositions for presentations on the areas of focus of the 2014 congress. Contributions cover latest research findings, innovations, new methods and practical examples, as well as extraordinary projects, provocative theories and visions. The content and professional quality of all submissions are reviewed by an international panel of experts. Its members are as follows: Arnold Brunner (SwissCCS – Swiss Contamination Control Society), Conor Murray (Irish Cleanroom Society), Frank Duvernell (ReinraumAkademie), Gernod Dittel (DRRI – German Cleanroom Institute), Koos Agricola (VCCN – Dutch Society of Contamination Control) and Thomas Wollstein (VDI – Association of German Engineers).

New structure

At Cleanzone 2014 it will be possible for the first time to book the congress sessions as individual modules. This makes it possible for participants to target individual subject areas while optimising their trade fair and congress visits. The 2014 Cleanzone Congress sessions are as follows:

Cleanroom construction and planning (basic)
- Regulations and guidelines
- From the production process to the cleanroom concept
- Air handling systems / cleanroom technology
- Classification

Cleanroom construction and planning (advanced)
- Future requirements and industries
- Modular cleanroom systems
- Energy efficiency
- New materials

Operation of cleanrooms (basic)
- Cleaning and disinfection
- Cleanroom clothing
- Training cleanroom personnel
- Cleanroom monitoring

Operation of cleanrooms (advanced)
- Innovative decontamination procedures
- Future cleanroom clothing and materials
- The green cleanroom: energy and material efficiency
- Facility management

Cleanzone – trade fair and congress

Cleanzone – the international trade fair and congress for cleanroom technology – is aimed at all sectors where production, assembly, packaging or work is carried out under cleanroom conditions. In 2013 more than 800 participants from 44 countries were brought together with 50 exhibitors and a host of prominent international experts at the Cleanzone trade fair and congress.

Messe Frankfurt
D 60327 Frankfurt am Main

How safe is our food? This is a volatile issue for many consumers and a major challenge for the food-analysis sector. The only way to perform quality and origin analyses is with state-of-the-art equipment and techniques. That is why the topic of food analysis is an interdisciplinary focal point at analytica 2014 in Munich from April 1–4.

Food safety at analytica 2014: Trace analysis for our health

01st - 04th April 2014: analytica Munich (D)

The comprehensive range of exhibits at analytica makes it easy for trade visitors to get the right answers to their specific questions. More than 1,100 international exhibitors will present their latest analysis devices there—including those for food analysis. In addition, the latest techniques and methods will be presented at the analytica Conference. „Food is required to meet stringent safety and quality standards. Raw materials and final products must be strictly and carefully monitored," explains Exhibition Director Susanne Grödl. „analytica gives trade visitors an overview of the latest developments and methods in quality control in the industry and for the consumer."

New developments for classic food analysis

In the field of classic food analysis, for example, Axel Semrau will present a new chromatography system that simplifies the identification of sterines, which play an important role in olive oils. Bruker will present an NMR spectrometer for rapid and time-resolved analyses to detect solid fats in chocolate or determine the total fat, oil and moisture content of foods.

Trend toward molecular biology methods

Modern molecular biology methods continue to increase in significance in food analysis. For example, DNA analyses can now be used to detect allergens, unwanted animal or vegetable ingredients and genetically modified organisms. For example, the foodproof RoboPrep HT robot system from BIOTECON can conduct automated quick tests on pathogens, genetically modified organisms, allergens or animal species. The system combines fully automated processing of food samples and the subsequent PCR in a single device.

New microbiological systems

In the sector for microbiological analysis, BioLumix will be at the stand of IUL Systems to present a system that simplifies microbiological analyses in food and cosmetics production. The results are ready within hours and are automatically forwarded to product approval. Analysis techniques for testing the quality of drinking water are becoming faster and more precise. The PAMAS WaterViewer, an automatic particle counter, can detect the size and number of all particles in water. The system quickly recognizes certain bacteria, which makes it more meaningful than measuring turbidity.

analytica Conference with food analysis highlights

Food analysts can use increasingly specific methods and techniques in their work. Internationally renowned scientists will present their latest research findings in this field at the analytica Conference. New methods for analyzing water will be the focus of a symposium titled „The New Challenge in Water Analysis: Metabolites, Transformation Products and Non-Target Analysis" under the direction of Professor Thorsten C. Schmidt from Duisburg-Essen University on April 1 (11:00–3:30 in Room 3). Visitors should also be sure not to miss the symposium on „Modern Analytical Tools to Ensure Safety and Authenticity of Food" on April 3 (13:30–16:30 in Room 3). It features five lectures that explain how to detect hidden mycotoxins in food and what problems still exist, for example. The analytica Conference takes place at the ICM – Internationales Congress Center München and is free of charge for visitors attending the fair.

Experience trace analysis up close in the Food Analysis Live Lab

Those who participate in the Live Lab for Food Analysis in Hall B2 will get a concrete look at trace analysis. It features 30-minute presentations at 11:00, 13:00 and 15:00 on Tuesday and Thursday and at 11:00 and 13:00 on Friday. They focus on techniques for identifying pathogenic germs or analyzing hazardous residues such as pesticides or heavy metals. Experts will demonstrate methods for analyzing the origin of raw materials and detecting antibiotics and other pharmaceuticals. Visitors will also learn how to identify endocrine disrupters and discover new approaches in PCR analysis, mycotoxin analysis and quality control.

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