



Hans J. Michael GmbH



Conversion to ErP-compliant EC fans

Extracting emissions – high performance for clean air

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Every employee has a right to breathe clean air. That is also the case in the metalworking industry, where the cooling lubricants used for cutting and non-cutting machining are a source of aerosols, oil mist and vapors that pollute the air in production facilities (see Fig. 1), which is detrimental to the environment and can endanger the health of employees. As a result, statutory limits apply. To ensure that these limits are not exceeded, machine tools and machining centers are usually equipped with centralized or decentralized air purification units. As ErP-compliant drives for their fans, modern EC motors are well suited for a number of reasons.



Fig. 1: Modern CNC cutting machines increase the amount of contaminants in the air in factory buildings; this can be remedied by air purifiers. (Photo: ISI-Industrieprodukte GmbH)

Air purification units generally make use of a multistage filtering and separation process. Fans ensure that the contaminated air extracted from metalworking machines passes through the various filter systems (see Fig. 2), safely extracting emissions such as oil and emulsion mist and suspended particulate matter. This process calls for fans that generate relatively high pressure from a low air flow. The high pressure is needed to overcome the resistance from the filters. The fans should also be as easy to control as possible. The extraction flow can then be adjusted to the actual need, enabling energy-saving partial-load operation that also extends the service life of the filters. At the same time, the extraction performance can be kept constant in spite of increasingly clogged filters by appropriately adjusting the motor speed, and performance reserves can be made available for future sys-

tem expansion as the speed and air performance can be adjusted as needed later.

AC motors reach their limits

Until recently, AC motors with variable frequency drives had been considered suitable for operating fans. That has changed, since such motors often fail to comply with the current requirements of the European Union's Ecodesign (ErP) Directive. Now modern EC fans often present an ErP-compliant alternative in many cases (see Fig. 3). An example is the innovative GreenTech EC technology developed by ebm-papst, which can play out all its strengths in air purifiers. EC motors are basically permanent-magnet synchronous motors in which a magnetic rotor synchronously follows an electronically generated rotating field. Their

Extracting emissions ...

control electronics allow operation at any speed, even above the 3,000 rpm limit imposed on asynchronous motors by the line frequency.

High efficiency, smooth operation and connectivity

EC fans work at much higher efficiency levels than asynchronous motors. Their optimized commutation allows partial-load operation down to 1:10 without a loss of efficiency, while their air flow can be adjusted as needed with a 0-10 V linear or PWM input. A PID controller is integrated in their motor electronics. Multiple fans can be conveniently networked via MODBUS and then controlled with a centrally connected air-monitoring system, and of course diagnostic and warning functions can also be used via the bus at the same time.

The high efficiency of the EC motors not only saves energy and lowers operating costs, but also generates less waste heat so that factory buildings are not additionally heated by the air purifiers during the summer. Commutation and the motor design also ensure very smooth operation. The high cycle frequencies are acoustically imperceptible, reducing noise emissions and making these "stealth fans" ideal for applications in which noise protection regulations must be observed; in some cases, manufacturers can then use less insulation.

But it is also possible to go a step further. Moving air is always accompanied by a certain amount of noise. If the EC fans are now combined with air-inlet guards (see Fig. 4) on the intake side, a drastic reduction in noise emission results and turbulence and annoying low-frequency sounds are minimized. This reduces the frictions that can otherwise arise when people and machines share the same space.

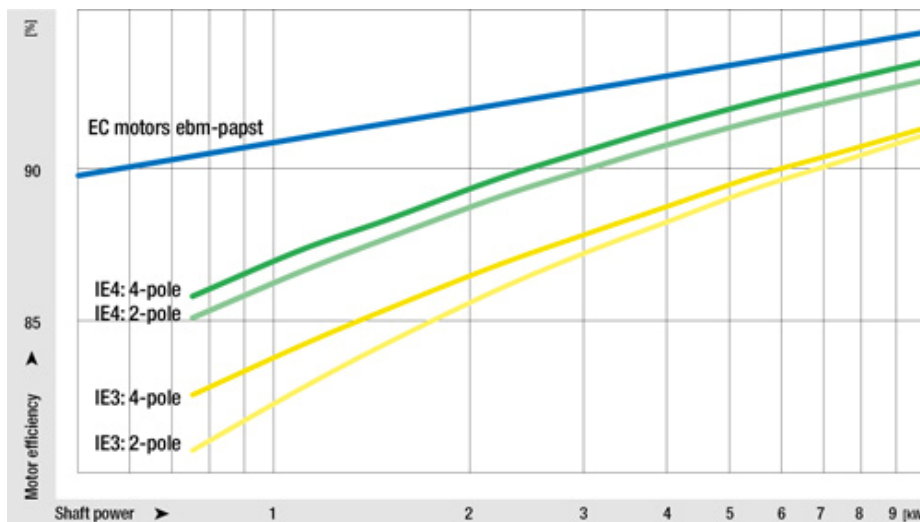


Fig. 3: EC motors from ebm-papst significantly exceed the efficiency level called for by the ErP Directive. (Photo: ebm-papst)

Easy installation and commissioning

The fans from ebm-papst with backward-curved, aerodynamically optimized aluminum impellers for use in air purifiers are available in sizes 250 and 310 (see Fig. 5). They cover a range of drive powers between 250 watts and 12 kW. Flexible options for installation include short delivery times and mounting with vertical or horizontal motor shaft orientation. With their compact dimensions, they are also suitable for retrofits, as when energy-saving replacements are called for or increased air performance is needed in a limited space. Such retrofits usually require minimal adaptations, if any.

Since the electronics and motors in the EC fans are combined in a single unit, installation is simplified and requires less space. Since the motor and the electronics in the motor system are already perfectly matched, there is no need for additional electronic filters and shielded cables. Nor is an external motor protection switch required. Costly

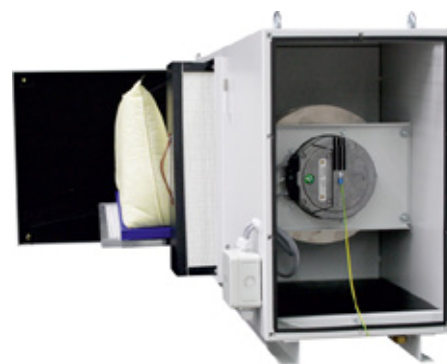


Fig. 2: Fans ensure that the contaminated air extracted from metalworking machines passes through the various filter systems. (Photo: ISI-Industrieprodukte GmbH)

adaptations during commissioning in the air purification units can be dispensed with, as can grounding and shielding. All these characteristics make the energy-efficient and ErP-compliant EC fans a worthwhile alternative for centralized or decentralized air purification units.

ebm-papst Mulfingen GmbH & Co. KG
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Dear subscribers,

first of all, we want to remind you to apply for the Fraunhofer Clean Technology Prize CLEAN! Don't miss it.

It's summertime and you're probably heading for your holiday, changing from cleanroom garment to swimming dress. Before you leave, you should cast an eye on the list of upcoming events, though: You will find exhibitions on page 16 and events on page 52 in the German part. Hurry to register, save the date and off you go!

If it's not your turn yet, you can find a great deal of interesting reading material here.

Yours sincerely,
Reinhold Schuster
Reinhold Schuster

International cleanroom specialist launches ambitious growth bid



Award-winning cleanroom specialist, Connect 2 Cleanrooms, has set an ambitious target to more than double its turnover in the next three years.

The UK-based firm is the European leader in supply of bespoke modular cleanrooms, and supplies validation services worldwide and consumables to drive efficiencies. Now in its 15th year, the company is aiming for a £20million turnover by 2020.

The past 18 months has seen the business put the foundations in place to achieve its financial targets.

Launched in 1992 by managing director Joe Govier and wife Lizzie, who is HR director, Connect 2 Cleanrooms has relied solely on inward investment for growth, never taking on any loans or credit.

Joe and Lizzie used £15,000 from the sale of a previous injection moulding business to establish Connect 2 Cleanrooms.

“Over the past 15 years we have built a pedigree in the sector and are now internationally renowned for the quality of our designs, manufacturing, installations, customer service and integrity,” Joe said.

“We have gained blue chip clients whose work has created some of the most innovative technologies and processes of recent years, and it is wonderful to know our products have played a part in these developments. Our years of experience and the level at which we work have helped enhance our reputation and give our customers confidence.

“The work we have completed over the last couple of years has set strong foundations for our rapid growth targets. This has included a bespoke e-commerce platform which is fully integrated with our customer relationship management software, expansion of our operations team and the creation of a territory-based sales team. Also key to our growth plans was the development of our company values, which all our staff played a part in. It shows our customers that we understand their needs and we are able to help achieve them.”

Connect 2 Cleanrooms was a first mover in the sector in terms of its online focus and the firm has continued to constantly inno-



vate and focus on growth. Its concentration on SEO from a very early stage gained it a strong foothold in the online space, enhanced by the launch of its e-commerce consumables site – Cleanroomshop.com. The company is still number one in Google natural listings for the term ‘cleanrooms’.

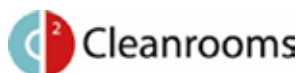
Growth has been enhanced by the acquisition and interpretation of customer and product data streams, which are followed up with targeted responses and campaigns, including bespoke territory-based sales information. This has benefits for new and existing customers, through product development and proactive problem solving via remote systems monitoring, and the business itself can make informed marketing decisions based on facts. The newly integrated e-commerce, accounts and CRM systems will form a key element of future data capture.

Joe, 45, qualified engineer, says he has ‘always’ had a passion for business. He was inspired at age 17 when he bought and restored a 1972 VW Beetle that was on its way to the scrapyard. His hard work got it through its MOT and the car took him all round the country, even meeting his future wife.

He continued: “Standing still is how you get left behind, so we are always looking at ways to move forwards and our horizon is always changing.

“The whole team has worked incredibly hard, investing time and money into laying our foundations, and we are now ready to push ahead with our growth. Our staff are the core strength of our business and we ensure we constantly motivate them and help them develop, which makes for a focused and successful business.”

The firm plans to keep its headquarters close to Lancaster, UK, but aims to secure a space four times the size of its existing premises. It has a southern office and an office in Utrecht, Netherlands, and plans to expand further into Europe next year, as well as heavily focusing on the rest of the world and maximising export opportunities.



Joe Govier, managing director of Connect 2 Cleanrooms

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Medical silicone component manufacturer constructs 1,900 m² clean room and adds extrusion processes to the company portfolio

New company headquarters

Thanks to its biocompatibility, silicone rubber is more and more frequently used in medical implants, such as defibrillators, heart pumps or components for reconstructive surgery. As these implants must not contain any contaminations which could endanger the health of patients, some extremely stringent requirements are in place concerning the minimized particle content of these products. In order to satisfy these requirements and to respond to the increasing demand for components with high standards of cleanliness, the company FMI, a specialist in complex silicone parts based in Chicago, has constructed Class 7 clean-room production facilities with a surface area of 1,900 m² at new premises. At the new company headquarters, state-of-the-art extrusion processes will be applied to manufacture silicone tubing for medical devices.

“Silicone rubber is suitable for medical devices thanks to its electrical insulation properties, its flexibility and durability as well as its high thermal resistance, among other things,” Werner Karau, European Commercial Leader at Flexan, explains. Compliance with the required cleanliness standards is critical in the manufacture of the components, in many cases requiring production in a clean room: generally, a Class 7 clean room is required for parts used to build Class 2 and 3 medical devices. To date, FMI Chicago has manufactured various silicone components for Class 2 short-term implants, single-use products and Class 3 long-term implants in clean rooms with a surface area of about 850 m² in total.

To meet the challenges of the market and to increase its own production capacity, the subsidiary of U.S. contract manufacturer Flexan has decided to use additional facilities for clean-room production. Hence the company moved into new 6,500 m² headquarters close to the former production site in Chicago and constructed an ISO Class 7 clean room with a surface area of approx. 1,900 m² there. Consequently, FMI can now produce four times the components for Class 2 and 3 medical devices. “As it is our intention to add extrusion to our portfolio, these new facilities were initially equipped with three production lines,” Karau reports. The extruders feature a proprietary design which not only facilitates access to the silicone feed section, but also makes cleaning and adjusting the scraper blades easier. “We can use these installations for highly diverse processes, e.g. micro-lumen or multi-layer extrusion,” Karau explains. “This ensures FMI’s manufacturing capacities are extremely flexible.” Initially, the focus is on various catheter products as well as other medical devices combined with a tube, which are also assembled with other components at MEDRON’s own factories.

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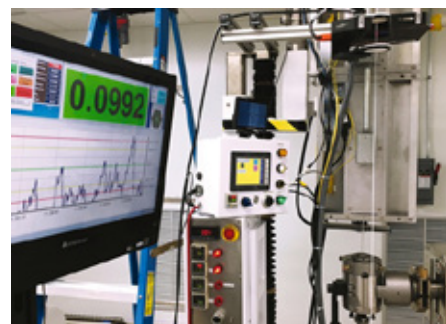
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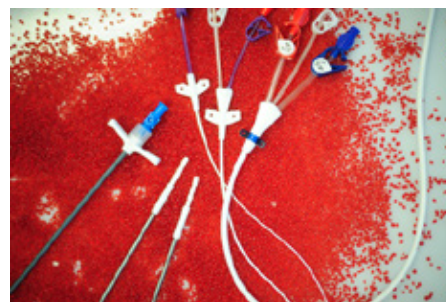
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FMI can now produce four times the components for Class 2 and 3 medical devices. (Source: Flexan)



The Class 7 clean room is equipped with state-of-the-art production technology. (Source: Flexan)



Initially, the focus at the new production site is on various catheter products as well as other medical devices combined with a tube. (Source: Flexan)



A glance into the new clean room production. (Source: Flexan)

Must-attend summit: Guangzhou International Cleanroom Technology Summit 2017



Guangzhou International Cleanroom Technology Summit will be taking place at the China Import and Export Fair Complex, Guangzhou, on August 16-17 in parallel with 2017 China(Guangzhou) International Cleanroom Technology and Equipment Exhibition (Cleanroom Guangzhou 2017). The summit and the exhibition are both sponsored by Guangdong Association of Cleanroom Technology, an authorized organization with over 200 members from all over China.

The summit, which has been held in parallel with the Cleanroom Guangzhou Exhibition for the past several years, has gained a very good reputation and is well supported by our professionals.

The summit puts together cleanroom technicians, academic professors, cleanroom operators, and sterile manufacturing experts for ground-breaking informative seminars.

In past years the summit has played a significant role in driving the development of cleanroom technology by exchanging ideas and research achievements.

This year, our eminent national expert speakers look forward very much to seeing you at the summit.

Attendance is free via the link -
www.clcte.com/order/order.php?id=46



**16th - 18th August 2017: Cleanroom Guangzhou,
Guangzhou (China)**

Guangdong Grandeur International Exhibition Group
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Partners



Particle Measuring Systems has been providing contamination monitoring solutions for 45 years.

Particle Measuring Systems Celebrates 45th Anniversary

Founded in 1972, Particle Measuring Systems (PMS) celebrated its 45 year anniversary in June 2017. Dr. Robert Knollenberg founded the company shortly after inventing the world's first laser particle counter. Since then, PMS has continued the course of being first when it comes to engineering new particle counters, including the recent Chem20™ – the world's only 20 nm chemical particle counter.

PMS started building instrumentation that flew on the wings of aircraft to study the atmosphere, than applied its technology to cleanroom applications, first focused largely on micro-electronic manufacturing. The sensitivity leading products enabled industry advances in cleanliness and smaller feature sizes. In 2000 the company made the decision to expand into life sciences, which is now a very significant part of the business. While the name "Particle Measuring Systems" is a nod to its start as a particle counting company, PMS now also provides microbial and molecular monitors as well as complete services including consulting, GMP, and training.

"We started out as a small business in a garage and have expanded to several hundreds of employees, with almost two thirds outside the U.S., over 35 distributors, and local sales and services in more than 70 countries, with over 60 patents", said John Mitchell, President of PMS. He continued, "While our growth has been both organic and through acquisitions, what has set us apart is our commitment to adding value to our customers and improving their performance. Our values of absolute integrity, restless innovation, empowerment, customer focus and high performance enable our success".



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New in-house application laboratory at the AP&S headquarters

In 2016 AP&S International GmbH made significant investments in the expansion and modernization of its in-house laboratory. The size of the laboratory has almost tripled - originally 23 m³, now after the renovation it occupies an area of 66 m³. Since reopening in 2017 the new, modified laboratory, called Demo Center, welcomes customers from all over the world and offers them a variety of single wafer process demonstrations.

The purchase of a wet process application is a significant decision, in which many important aspects and complex contexts have to be considered. AP&S sees it as a mission to support customers efficiently during the decision making process to ensure they receive the perfect wet process solution, that meets their specific requirements. This happens in the Demo Center, where customers can test the wet process application, in which they are interested in and get all crucial information such as a comprehensive test report containing complete parameters of the process set-up, a recommendation for the process recipe due to test results and further important system configuration details.

The Demo Center plays a significant role not only before the booking, but also during the production of the ordered application. Prior to the tool delivery, the Demo Center prepares all relevant steps for a quick tool commissioning and optimal production start-up. The range of services includes an in-house process evaluation with a definition of process parameters, a calculation of the throughput and chemical consumption as well as trainings for customer's staff.

Available process demonstrations in the Demo Center are: advanced metal lift-off, metal etching, mask cleaning, photoresist develop-



ment and strip as well as various cleaning processes. The following wafer sizes can be handled: Diameter (round substrates) up to 300 mm; Side length (square substrates) up to 9"; Thickness up to 10 mm. Possible chuck variations are low contact chucks, various vacuum chucks as well as back- or frontside protection chucks. Different wafer materials with various thicknesses can be processed like Si, SiC, GaN, GaAg, Sapphire, Glass, etc. as well as Taiko wafers – other materials and substrate types are possible.

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ESA and the European Commission awarding OHB System AG a contract for a further eight navigation satellites

OHB System AG was awarded a contract to produce additional eight navigation satellites for the Galileo programme.

Signed today, the contract is worth EUR 324 million. This will increase the number of Galileo FOC satellites supplied by OHB to a total of 30, of which the first 14 are already in orbit.

"This procurement from OHB will enable to complete the Galileo constellation and have reserves both in-orbit and on-ground. The 30 satellites added to the 4 IOV satellites now bring the necessary infrastructure robustness that is essential for the provision of Galileo services world-wide. We are looking forward to work once more with OHB in the next phase" stated Paul Verhoef, ESA's Director of Satellite Navigation.

"I am very pleased that after delivering 22 satellites under the first two contracts OHB has now also retained the confidence of ESA and the European Commission in the third bid. We are proud of being able to make such a crucial contribution to this major European project that will be providing so many people around the world with valuable services," said Marco Fuchs, CEO of OHB-System AG, after signing the contract in Paris on June 22nd, 2017.

Continuation of the proven satellite design

"Our modular satellite design is outstanding and has proven itself with superb results. A large part of the satellites that we have already assembled have demonstrated their full functional capability in space. For this reason, the-

re will be no major changes to the design of the eight new satellites. At this stage, we are working on the basis of a first launch date in 2020," says Dr. Wolfgang Paetsch, director of navigation at OHB System AG, who previously oversaw the development of the first and second satellite batch.

In its capacity as the producer of the satellite platform and the system manager, OHB is responsible for the satellite design and platform, integration and verification. In addition, it will be providing support during the launch preparations and in-orbit verification.

Successful partnerships to be continued

OHB will be able to rely on proven partnerships and subcontractors. As with the previous two contracts, the OHB UK partner Surrey Satellite Technology Ltd. (SSTL) has contributed also to this successful offer with the navigation payloads.

Management Board member Dr. Ingo Engeln, who is responsible for OHB System AG's institutional space projects, is pleased to be able to continue production of the satellites. "Our proven processes and structures, the seven assembly islands in Bremen, the corresponding facilities at the other integration and testing sites and, not least of all, the highly trained teams at participating companies provide an ideal basis for expanding the satellite constellation swiftly." This together with the modular design of the satellites will ensure that a pair of two satellites can be delivered within three months after the pair of satellites delivered before.



Shaping the future

Obviously, OHB wants to continue contributing to this beneficial project in the future. In Bremen, it is already working on designs for the next-generation Galileo satellites. In various studies for ESA, the engineers are exploring new materials and components and further services to be provided by the next generation. Needless to say, they are incorporating the experience gained from engineering and producing the previous navigation satellites. In this way, OHB can contribute proposals for the design of the next-generation satellites and offer the customer the benefits of the unique experience that it has gained from the successful first series.

About the Galileo European navigation system

The Galileo* European navigation system has its roots in a resolution by the European Union to create a new type of infrastructure for Europe. In its final configuration, the system will comprise 24 operational navigation satellites located on three planes as well as various ground stations, together with a number of spares.

The constellation will permit global positioning and navigation as well as support an international search and rescue service (COSPAS-SARSAT). Navigation signals will be broadcast in two frequency bands: The Open Service (OS) will be free for anyone to access with a corresponding receiver. The encrypted Commercial Service (CS) will be available for a fee and offer an enhanced accuracy via additional signals. The encrypted Public Regulated Service (PRS) offers heightened integrity and robustness against jamming and is targeted primarily at security authorities (police, military, etc.) and safety-critical transport applications.

*) The FOC (full operational capability) phase of the Galileo program is being funded by the European Union. The European Commission and the European Space Agency ESA have signed a contract under which ESA acts as the development and sourcing agency on behalf of the Commission. The views expressed here do not necessarily constitute the positions of the European Union and ESA. „Galileo“ is a registered trademark owned by the EU and ESA under the HABM application number 002742237..



Galileo FOC satellites undergoing testing at a cleanroom at the space center in Kourou, French-Guyana. (© ESA/CNES/ARIANESPACE)



Four Galileo FOC satellites developed and built by OHB were successfully placed in orbit on board an Ariane 5 ES launcher on November 17, 2016. (© ESA-Stephane Corvaja)

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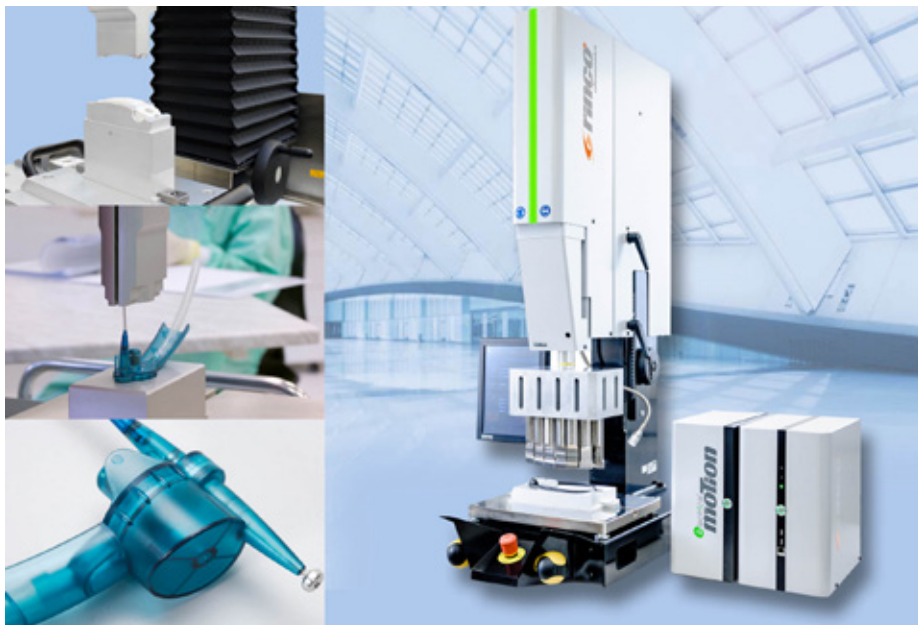
Rinco Ultrasonics' Electrical Motion welding machine meets the most stringent requirements for precision, traceability and cleanliness

Ultrasonic welding in medical technology

The Electrical Motion ultrasonic welding machine (working frequency 20 kHz) from Rinco Ultrasonics, the Swiss ultrasonic welding specialist, meets the demanding requirements for tight tolerances, traceability and hygiene which are typical of medical technology. Its electrical drive and control by means of an ultrasonic generator with built-in industrial PC ensure particularly accurate sonotrode control, while welding force and rate are also accurately adjustable. This results in consistency and reproducibility of the welding, punching, cutting and sealing operations carried out on thermoplastic mouldings and films, nonwovens and synthetic textiles.

Thanks to its electrical drive, the Electrical Motion's welding force, rate and speed are very much more accurately controllable than on a conventional, pneumatically driven machine. Distance mode, for instance, permits positioning with an accuracy of 0.01 mm. It is also possible to set limit values on the machine which trigger an alarm or stop the machine in order to ensure reproducibility and thus quality. The defined welding parameter data records and welding results can be exported from the machine's internal storage to an external data storage medium to enable compliance with the medical technology sector's audit and documentation requirements. In addition, a non-erasable audit trail records all events, for example maintenance operations and changes to parameters, for quality improvement and traceability purposes. Different hierarchical levels of authorisation can be set, so ensuring that only authorised persons can change parameters or acknowledge events. The Electrical Motion has ISO Class 6 certification for clean room manufacture.

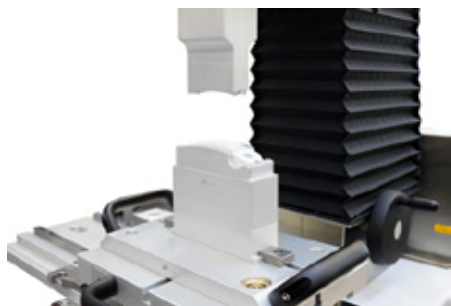
The machine's electrical drive also means that the sonotrode's starting position can be freely selected. As a result, unlike with a pneumatic drive, the sonotrode does



The Electrical Motion ultrasonic welding machine's electrical drive means it is capable of meeting the high quality requirements applicable in medical technology. (Photo: Rinco Ultrasonics AG)

not have to be returned to zero position for each welding cycle. Depending on the geometry of the object being welded, this can result in distinctly shorter cycle times. The integrated quick-change system means that tools can be swapped within a few minutes, so minimising downtime. The possibility of using existing tools on both the tried and trusted Dynamic 3000 series and the Electrical Motion is a further benefit for many users. To ensure still higher availability of what is already a highly reliable machine, the Electrical Motion can also be installed for remote access service from Rinco headquarters. When required, a service technician can be on site within 48 hours.

RINCO ULTRASONICS AG
D 8590 Romanshorn 1



CWS-boco and Initial launch joint venture

Stronger together



30th June 2017 marks the official merging of CWS-boco and Initial. Both companies are leading international service providers in the fields of workwear, washroom care and cleanroom solutions. The aim of the joint venture is to become the market leader across Europe.

The EU Commission has granted its approval for the joint venture between CWS-boco and Initial on the European markets. The merger will create a company operating in 16 European countries with a workforce of around 10,800 employees and generating approximately € 1.1 billion in turnover. CWS-boco is bringing its complete business in 16 countries to this venture and Initial its business in 10 Central European countries. The joint venture comprises the following countries: Austria, Belgium, Bulgaria, Croatia, the Czech Republic, Germany, Hungary, Ireland, Luxembourg, the Netherlands, Poland, Romania, Sweden, Switzerland, Slovakia and Slovenia. Until further notice, CWS-boco and Initial will continue business as normal within their organisation.



CEO Thomas Schmidt

About CWS-boco

The CWS-boco Group is one of the leading international service providers of professional textile services and washroom hygiene solutions. This includes the familiar CWS towel, soap and fragrance dispensers as well as dust control mats, workwear and protective clothing. All the services are offered in a flexible rental service.

The CWS-boco Group and Initial concluded a joint venture in Central Europe in June 2017. The company has 16 national subsidiaries and employs some 10,800 employees around the globe. Franz Haniel & Cie. GmbH holds 82 per cent of the shares in the new joint venture and Rentokil Initial plc 18 per cent.

New CEO

The two companies will be united under the umbrella of the CWS-boco Group headed by CEO Thomas Schmidt. He will assume the role of Max Teichner, who announced his decision in April to leave the company after the start of the joint venture. Thomas Schmidt is member of executive board of the shareholder Haniel. In the future he will also lead the joint venture at the same time.

The company also uses modern UHF technology in its laundries, which results in more transparent processes and, in turn, a further increase in service quality for customers.

The formation of the joint venture was announced by CWS-boco's shareholder Haniel and Rentokil Initial back in December 2016. Following the granting of approval by the European monopoly authority, Haniel will hold 82% of the shares in the joint venture and Rentokil Initial 18%. The company headquarters will be in Duisburg, Germany.



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Innovation leadership and advantages for customers

The declared goals are to be closer to the customer, address different customer requirements more closely and drive forward innovations. As a result of the merger, the joint venture will have an even more consolidated service network of laundries and service drivers in the future, allowing it to supply customers more flexibly and quickly. "We are delighted that we can now start setting up the joint venture. One thing is certain: Our customers will now benefit from the bundled expertise and experience of both companies," explained Thomas Schmidt, CEO of the CWS-boco Group.

Thanks to this merger, the joint venture will be able to enhance its innovative strength in the future. For example, the wireless technology which is already in use in washroom dispenser systems is to be further developed together. This system notifies cleaning personnel about fill levels, provides information on consumption and thus improves the efficiency of working processes.



Service drivers

Predicting Antibiotic Resistances with Genetic Data“ Succeeds in Competition „Landmarks in the Land of Ideas

„GEAR“

Ares Genetics GmbH, a wholly-owned subsidiary of Curetis GmbH and a developer of pioneering solutions for the detection of genetic resistances in pathogens, today announced that the project „GEAR - Predicting Antibiotic Resistances with Genetic Data“ has been awarded in the competition „Landmarks in the Land of Ideas“. The project is run by the Center for Bioinformatics at Saarland University, an academic partner of Curetis and Ares Genetics. The innovation contest has been organized by the initiative “Germany - Land of Ideas” and Deutsche Bank for the past twelve years.

The GEAR (GENetic Antibiotic Resistance and Susceptibility) database covers an unparalleled warehouse of genetic resistance data, among others the full DNA sequences of more than 11,000 bacterial strains, which have been collected at more than 200 sites worldwide in over 30 years. In addition, GEAR provides sensitivity data of these pathogens to 21 antibiotics. Ares Genetics has exclusive access to GEAR for commercial purposes. The database was originally developed by the Working Group for Clinical Bioinformatics run by Prof. Dr. Andreas Keller at Saarland University and the Institute for Clinical Molecular Biology (IKMB) at Kiel University in close collaboration with Siemens.

Ares Genetics uses GEAR as a biomarker generator for the fast identification of potential novel biomarkers, biomarker combinations and algorithms, which are able to predict antibiotic resistances. In addition, the Company leverages GEAR to identify potential novel targets for antimicrobial drugs. Further potential application areas include the generation of fully genetic antibiograms. Moreover, Ares Genetics pursues a comprehensive scientific publication strategy to-

gether with leading scientists of the Working Group for Clinical Bioinformatics at Saarland University in order to share novel findings based on GEAR with academia.

„The number of resistant bacteria is on the rise worldwide, as antibiotics are increasingly used inappropriately or unnecessarily. In addition, new antibiotics have become a scarce commodity over the past decades,“ said Prof. Dr. Andreas Keller, Head of the Working Group for Clinical Bioinformatics at Saarland University. „Our big data-based approach offers new chances to solve this problem: By decoding the genetic data of pathogens, we can detect and treat resistant germs much more quickly.“

“We are delighted about the award for GEAR in the innovation contest ‚Landmarks in the Land of Ideas‘ as it underlines the value of the database for the research and diagnosis of antibiotic resistances in pathogens,“ said Dr. Achim Plum, CCO of Curetis and one of Ares Genetics’ Managing Directors. „Our goal is to establish a broad and effective alliance against the further spread of antibiotic resistances.“

„To achieve this goal, we offer GEAR as a collaborative research platform for academic and translational research purposes and for partners in the public health sector and the biopharmaceutical industry. We are convinced that GEAR will play a key role in fighting antibiotic resistances,“ added Dr. Andreas Posch, also a Managing Director of Ares Genetics.

Curetis AG
D 71088 Holzgerlingen

Dürr Ecoclean uses Virtual Reality on an industrial level

Service training and instruction in virtual space

As one of the first manufacturers of industrial part cleaning equipment, Dürr Ecoclean uses Virtual Reality in training its global service staff to carry out maintenance support on its complex manipulators.

Virtual Reality (VR) is a term currently associated mainly with computer games. However, the rendering and simultaneous perception of reality – and its physical properties – in a real-time computer generated, interactive virtual environment also offers plenty of opportunities in industry. Dürr Ecoclean, as a producer of forward-looking machinery, systems and services for industrial part cleaning and surface treatment in the automotive manufacturing and supplier industries in addition to a host of other industrial market sectors, relies on virtual space in training its service technicians all around the globe. More specifically, this first VR application was developed by Tema Technologie Marketing AG to conduct maintenance training on the Scara manipulator developed by Dürr Ecoclean Monschau for its EcoCFlex 3 flexible cleaning cell. In this scenario, the instructor and the trainee may be located thousands of kilometers apart.

For a realistic rendering of all maintenance operations and workflows, a VR model of the manipulator was created from CAD data. This model can be moved in all directions of freedom via slider bars. Every bolt can be slackened and re-tightened in this manner, yet the individual jobs are logically structured and interdependent. For instance, in performing an oil change in the virtual system, the transmission cover can only be re-closed after oil has actually been added. This approach ensures that the various steps will be trained in their correct and full sequence, thus becoming „ingrained“. In order to achieve this, each service operative can move freely on a defined surface area in virtual space, e.g., by walking around the manipulator. „This development is an important step in ensuring that our global service technicians will be perfectly familiar with their tasks and can provide excellent support to our customers in minimum time“, comments



Service staff train the various maintenance operations for Scara manipulators with the aid of Virtual Reality (Courtesy of: TEMA Technologie Marketing AG)

Michael Förster, Chief Executive Officer at Dürr Ecoclean, in explaining his company’s decision in favour of the use of VR.

Dürr Ecoclean GmbH
D 70794 Filderstadt

In future, there will be a larger selection of versions of the world's first controllable single-use diaphragm valve – GEMÜ SUMONDO.

Single-use diaphragm valve established on the market

GEMÜ, the leading manufacturer of valve designs for the pharmaceutical industry, has established the first controllable single-use diaphragm valve on the market – the GEMÜ SUMONDO. In addition to a pneumatically operated version, the product range also includes a version with a handwheel for manual operation.

Due to increasing customer demand, the range has been expanded in the area of associated valve bodies. With a third diaphragm size, another high-performance member has been added to the product range: The largest valve of its type to-date, with up to 1". This means that applications can be handled for which higher medium flows and precise controllability are indispensable.

Produced and packaged in the cleanroom, the single-use valves comply with all requirements for pharmaceutical processes. Yet the application possibilities do not stop there. In other areas too, such as



SUMONDO manually operated

in research centres and laboratory facilities, the valves become a cost-efficient and, above all, safe solution. The risk of cross contamination is considerably reduced, cleaning costs are significantly reduced, and plant downtimes are reduced to a minimum. Even with smaller batches and more frequent changes of media, the advantages of the SUMONDO valve quickly become apparent and prove themselves in terms of cost.

The GEMÜ single-use solution outperforms conventional pinch valve systems in a large number of cases. The controllability becomes considerably more precise, and the flow rates remain constant even with intensive use. With GEMÜ SUMONDO, it becomes possible to implement entirely new process functions in single-use applications – functions that could not be implemented with conventional systems. This includes processes for mixing, dosing and distributing media or controlling the transmembrane pressure in a plant. And this is always precise, reproducible and, if required, also automated – thanks to a pneumatic actuator. Alternatively, the manual actuator is of course retained and, with a robust plastic handwheel and definable stroke, it guarantees reliable opening, closing and precise setting of the volumetric flow.

The underlying idea of the SUMONDO valve can be summarized as follows: A valve body for single use and an actuator for repeated use. With this combination, the foundation is laid for cost-effective processes of the highest quality. The optional instrumentation completes this valve solution and makes it intelligent. This means that, thanks to GEMÜ's modular system, various positioners and process controllers can be easily integrated.

If you look at the outside of the valve, you notice that some new connection sizes with various connection types are available. These range from 1/4" to 1", from the clamp connection to the hose barb. Both for new and existing systems, this offers the operator completely new opportunities: A more flexible system design and a wider scope of controllability – with flow rates of 0,5 m³/h to 12 m³/h.

However, it is not just the outside of the valve that has changed – innovative developments inside the valve have produced something from which the user can benefit: The optimized seat contour and the modified diaphragm material will, in future, guarantee the usual perfect fit, maximum tightness and an even longer useful life for the valve body.

The requirements and demands placed on the plant design will also increase in the future. With GEMÜ SUMONDO, the operators of single-use systems already have a future-proof solution at their disposal – one that impresses thanks to its safety, quality and efficiency.



SUMONDO with pneumatic actuator and GEMÜ 1434 controller

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

The GEMÜ 567 BioStar control valve is the new, safe solution for media controls from 0.08 to 4.1 m³/h.

The big specialist for small quantities – GEMÜ 567 BioStar control

The sealing takes place via a PTFE diaphragm with PD technology (plug diaphragm), which combines the advantages of a diaphragm valve with those of a globe valve. This valve is available with linear control characteristics and with equal-percentage control characteristics.

Aseptic diaphragm valves are frequently used as control valves for sterile applications. This means that small volumes can only be controlled with an inadequate level of accuracy, or not at all. The new 2/2-way diaphragm globe valve with regulating needle or regulating cone fills these gaps. The actuator is sealed by an FDA-compliant and USP Class VI compliant PTFE diaphragm. In combination with a spring washer, this ensures that the seal is permanently temperature-resistant, meaning that the diaphragm need not be re-tightened. In comparison with bellows valves, cleaning the valve is significantly improved by the hygienic construction.

Further special features include the optional integration of a bypass function and the potential installation of the diaphragm globe valve in a multi-port valve block (GEMÜ M-block). In the bypass version, the

angle valve body can be designed with a manually operated bypass or with a pneumatically operated bypass. Both versions allow for easier cleaning and greater flows.

If the GEMÜ 567 BioStar control is integrated into an M-block®, several functions can be implemented in the smallest of spaces. In addition, the space requirement is reduced considerably, and the installation and welding effort are reduced.

The valve is also optimally equipped when it comes to hygienic safety: It meets both the standards of the EHEDG cleaning test and the standards in accordance with the American 3A definition. The control valve is used, for example, for dosing small quantities in the beverage industry for in-line mixers (for example, for vitamins, dyes and other additives), for controlling sterile steam and air (for example, for DIP processes) or for controlling the inflow and outflow of bioreactors in the pharmaceutical industry

The GEMÜ 567 BioStar control is available in the nominal sizes DN 8 to DN 20. The body is manufactured, as standard, from block material with a grade of surface finish of Ra 0.4 µm. In addition to the PTFE



diaphragm, another seal made from FKM is used. One exception here is the 3A version, for which the complete sealing and control element consists of one piece or material (PTFE).

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

In April 2017, Dr. Reiner Lindner became head of the LIMO Lissotschenko Mikrooptik GmbH sales department as the company's new CSO. His areas of responsibility include the further orientation of the company towards customers and markets as well as the optimization of international sales and service processes.

Dr. Reiner Lindner new CSO at LIMO

Dr. Lindner holds a master's degree in physics and a PhD in physical chemistry, both of which he earned from the Technical University of Munich. Dr. Lindner has over 20 years of experience in capital equipment sales and marketing in the semiconductor industry, and has served in key commercial management capacities, including the position of European Sales Manager at Lambda Physik AG (now Coherent GmbH) and Director of Sales and Marketing at veonis Technologies GmbH. Most recently he managed

his own sales and distribution company and served as consultant and project manager on the development of advanced equipment used to manufacture displays for mobile devices. LIMO is delighted that Dr. Reiner Lindner has joined the LIMO team as Chief Sales Officer and wishes him a warm welcome to Dortmund.

LIMO Lissotschenko Mikrooptik GmbH
D 44319 Dortmund



New CSO at LIMO: In April 2017, Dr. Reiner Lindner joined the Dortmund-based specialist for laser beam shaping as Chief Sales Officer. (Image: LIMO)

CleanCell 4.0 – Intelligent and efficient clean room system

The new CleanCell4.0® clean room system combines low-particle production with state-of-the-art information technology. The smart system links air conditioning, monitoring and customer-side process systems. Regulation of components such as particle count, temperature, humidity and air pressure in the rooms can be adjusted and monitored by means of sensor data. Smart devices allow the settings to be made from any location or via remote service.

The improved system from SCHILLING ENGINEERING uses highly energy-efficient clean room technology and, with an 'A+' rating, exhibits a significantly lower energy consumption than that of comparable clean room systems. The interplay between innovative air circulation technology, high-quality seals and low-maintenance components makes the clean rooms extremely safe and efficient. The recirculation process feeds the cooled and filtered air back into the air exchange circuit. This allows filters and

air conditioning equipment to be operated much more economically. The state-of-the-art clean room system is now equipped with integrated heat recovery for an additional drastic reduction in energy consumption. Another innovation from the clean room experts from Baden-Württemberg is a GMP-compliant LED lighting system which is flush-mounted in the aluminium profiles on the ceiling. The lighting is dimmable and offers flexible and balanced illumination of the entire room.

The CleanCell4.0® clean room system has a modular design. The wall elements of the clean room are connected using a patented silicone-free GMP sealing clip system. Now as well the ceiling panels with integrated high-performance U15 ULPA filters can be installed and connected using the silicone-free clip system. This guarantees an extremely high clean room tightness and low particle emissions and offers the advantage of flexible extension or reduction.



Cleanroom System CleanCell4.0®, ISO Cleanroom Class 5



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The LiQuilaz® II builds on the trusted efficiency of the original LiQuilaz configuration, but has expanded features, and RoHS compliancy.

Particle Measuring Systems Releases New LiQuilaz® II Particle Counter

Particle Measuring Systems has just announced the release of the new LiQuilaz® II particle counter for DI water and chemicals. This will replace the long-standing LiQuilaz, an industry stalwart for over 25 years. The new LiQuilaz II particle counter produces essentially identical particle concentration numbers as its predecessor, but now has added features and is RoHS (Reduction of Hazardous Substances) compliant.

This volumetric particle counter comes with a variety of sizing sensitivities as low as 0.2 µm. It provides high-precision analysis for most process chemicals, including hydrofluoric acid and hot corrosive chemicals up to 306 °F (150 °C). Volumetric particle counters offer the highest precision possible by measuring 100% sample volumes (up to 80 ml/min) so that short sampling intervals can be utilized without sacrificing statistical significance.

The new LiQuilaz II counter features both RS-485 and Ethernet network communications. The new Ethernet capability increases product flexibility and makes installation significantly easier.



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CIM med GmbH launches a new S-Series on the medical market

Robust, ergonomic functionality through design and engineering

Munich based CIM med GmbH is releasing its latest generation of ergonomic medical mounting solutions to the market in Q1 of 2017. This optimised design features: A maximum load bearing capacity of 22 kg. Reduced product weight. A customisable internal rotation stop system. Greater integrated cabling capacity. The S-Series is CIM med's response to modern market demands.

The maximum load bearing capacity of 22 kg is a response to the medical markets' ever increasing desire to mount heavier products. The maximum capacity is based on a 4- to 6-times safety factor, in line with current EN 60601-1, 3rd edition standards.

The overall product weight has been significantly reduced through the use of the latest aluminium alloys. This is a particular advantage when mounting products to mobile devices, such as anaesthesia carts, which must be tip tested for safety.

The new internalised rotation stop system can be customised to limit the rotation of each individual bearing joint of the arm. This allows the arms to be tailored to match the requirements of the surrounding in which they are mounted, preventing the arm and the product it is holding from colliding with other equipment around it or ensuring the stability of mobile equipment.

The S-Series' modern design and greater internal capacity for cabling makes it quicker and easier to install, whilst allowing larger cables to pass through it.



The integrated cable routing within the support arm, developed by CIM med® protects cables from being damaged, ensures an optimal power supply and also provides the invaluable advantage with regard to hygienic infection prevention, as germs are prevented from settling on exposed cables.

The support arm can be smoothly and ergonomically adjusted in height, 45° above and 45° below the horizontal. This ensures an optimal viewing position with minimal effort.

As a class 1 medical product, the new S-Series naturally meets the high quality standards of the manufacturer and industry requirements. As with all CIM med® products the S-Series generation provides a 4-times and/ or 6-times safety standard with a maximum load bearing capacity of 22 kilograms. It is covered by a 5-year total warranty and is CE marked. It conforms to the current EN 60601-1, 3rd edition standards.

CIM med GmbH D 80939 München

OWIS® ultra-high vacuum: the next level

By autumn of this year, OWIS® reaches the next level in vacuum: with vacuum-prepared positioners and optical components for vacuum applications in pressure ranges up to 10⁻⁹ mbar. So far, OWIS® vacuum products have been designed for ranges up to 10⁻⁶ mbar. The new ultra-high vacuum products implicate a considerable expansion of the application possibilities.

In the manufacturing process of the ultra-high vacuum products, maximum care is taken to the compliance with highest standards. All 10⁻⁹ mbar products are produced without brass alloys. In addition, only blank materials are used, this means without any coating. Furthermore, to prevent virtual leaks, all blind holes are vented. The parts are thoroughly cleaned beforehand and then assembled, measured and packaged in the OWIS® clean room of ISO class 5. This ensures that the products are not contaminated by dirt molecules.

In order to strengthen the ultra-high vacuum line as well as to create optimal conditions, the clean room area, which was built in 2016, has been doubled this year in the course of extensive renovations. A total of more than 40 sqm of clean room space is now available, equipped with innovative technology and according to the latest standards.

The offer to manufacture products for ultra-high vacuum includes almost the entire OWIS® product range, starting from beam handling systems, such as system rails and optic holders, to manual and motorised positioners. To comply with the limits, special UHV motors are used for the motorised versions. The standard products for 10⁻⁹ mbar are supplied without end respectively reference switches, but can be equipped with UHV compatible switches if required. As all OWIS® products, the 10⁻⁹ mbar products are of highest quality and of course „Made in Germany“.



Photo: OWIS® clean room now expanded.

OWIS GmbH
D 79219 Staufen i. Br.

Medical mounting solutions from CIM med® receive accolade

The height-adjustable S-series mounting solutions from CIM med® have been rated as the best in the category of medical technology by the INDUSTRIEPREIS 2017 AWARD TEAM – and are now entitled to carry the corresponding certificate and logo. This award recognises especially advanced products that have a considerable level of economic, social, technological and ecological benefit.

The new S-series won over the judges with its optimised design, its user-friendly installation as well as the Cable Integration System (CIS). The CIS, was developed by CIM med® and raises the standard of bedside care by protecting the cables supplying power and data to the patient monitor. It ensures a flawless connections, and also offers huge advantages in terms of hygiene and infection prevention. Germs are unable to settle on exposed sections of cable and the sleek design of the arms allows gives large one-wipe surface areas for ease of cleaning. All CIM med® products, this generation is EN60601 compliant and benefits from a maximum carrying capacity of 22 kilos.

The arms boast a customisable internal rotation stop at every pivot point, making it possible to limit the arms range to suit its use and environment. It is particularly useful when used in anaesthesia, to assist in stability.

The use of the most modern aluminium alloy also reduces the weight of the arms considerably. This also helps with the stability testing of mounts placed on carts as well as reducing transportation costs for delivery. It all adds to the “green thinking” behind the product.

Managing Director Manuela Deverill is very pleased about having been awarded the prize, “Because the INDUSTRIEPREIS 2017



AWARD rewards products that offer maximum customer benefit and reflects our high aspirations regarding quality and innovation. We consistently aim to align the development of our products to the requirements of the customer and the market. We are absolutely dedicated to raising the clinical standards of medical mounting solutions. It's fantastic to have this recognised by such a prestigious body”.

This means that this year, CIM med GmbH is already able to boast two significant awards. In January the international renowned Munich-based company was awarded the latest ISO 13485:2016 accreditation making them one of the first to have implemented the strict requirements of the new standard in its management system.

CIM med GmbH D 80939 München

ISO 13485:2016 successfully implemented by CIM med GmbH

CIM med® certified according to the latest standards

Now it is official: CIM med GmbH fulfils the requirements of the new ISO 13485:2016. This makes the internationally operating manufacturer of medical-grade mounting solutions one of the first suppliers on the market who has consistently translated the stringent requirements of the new standard into their management system.

The changes of the new standard versus the previous version dated 2003 primarily affect risk management, which now includes all processes of the management system.

Also, the focus is now increasingly directed towards feedback mechanisms and the more intensive monitoring of suppliers as well as outsourced processes. Furthermore, design and development requirements were refined (plans and proof of verification, validation and design transfer). Altogether, the new ISO norm takes the requirements of the 21 CFR (Code of Federal Regulations) part 820 into account to a much higher extent.

Managing Director Manuela Deverill regards the successful certification as an important quality feature for the sustainability of her company: “Currently we are a major step ahead of other suppliers on the market. We now permanently demonstrate our performance and our awareness for quality by complying with the latest standards in the development and production of our modern advanced carrier systems as well as through

our highly efficient documented processes.”

In principal, all mounting solutions are inspected by CIM med® for quality and functionality from development to delivery. They comply with the Medical Devices Directive 93/42/EEC and, naturally, bear the CE marking. With regard to material resistance they meet the requirements of DIN EN 60068-2-74 as well as DIN EN ISO 2409:2013 and therefore are long-term resistant to disinfectants against multi-resistant pathogens. Furthermore, the Fraunhofer Institute attests that the support arms by CIM med® can be cleaned and disinfected with wipes by “simple wipe cleaning”. As a medical product risk class 1, all solutions are conform with EN 60601-1, 3rd edition.

CIM med GmbH
D 80939 München



There is no shortage of scanners suitable for use in clean rooms. But what about the charging and base stations that go with them? In addition to being difficult to clean, their inadequate IP rating and design-related edges often make them inappropriate for clean room zones.

Wondering what to do with your scanners, printers and so on in clean rooms?



Scanner box (Image Rights: Systec & Solutions GmbH)



Printer box (Image Rights: Systec & Solutions GmbH)



Printer Box built-in version (Image Rights: Systec & Solutions GmbH)

Every flat battery means having to move the scanner to a less sensitive area and then returning it to the clean room through an airlock again afterwards. The same applies to label printers. The hygiene regulations and inadequate IP rating again mean that these cannot necessarily be used in a clean room environment.

To solve this problem, Systec & Solutions have developed IP65 stainless steel casings specially for clean rooms. The SCANNER BOX (outer dimensions: W 470/ H 260/ D 265) for example provides space and protection for up to four scanner or two multi-charging stations. Inside there is an opening for feeding-in cables as well as an additional

partition for integrating the power supply units. The door of the easy-clean SCANNER BOX features a toggle lock and a viewing window. The back wall is screwed on and can quickly be detached for performing service work.

The Systec & Solutions PRINTER BOX also ensures reliable and convenient operation in clean rooms. The stainless steel casing is available in different sizes (outer dimensions: W 400 /H 400/ D 600 or W 450/ H 540/ D 600) and is ideal for storing and working with a label printer in a clean room. The door is provided with an additional flap for removing labels and is fastened with a toggle lock. The inside of the PRINTER BOX is of prac-

tical design with a multiple-socket outlet for connection of the printer. The printer can be pulled out on a shelf for easy paper replacement. Connections on the back for power, USB, RS232 or Ethernet provide flexibility for clean room applications.



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components parallel again

The dates for interpack 2020 have been set



07th. - 13th May 2020: interpack 2020, Duesseldorf (D)

Following the Düsseldorf trade fair cycle, the next interpack at the Düsseldorf Exhibition Centre will be held in three years' time, from 7 to 13 May 2020. The last interpack, which took place in May this year and attracted 2,865 exhibitors and 170,500 visitors, met with a highly positive response among the companies that came. Exhibitors praised, above all, the quality of the German and international visitors and their strikingly high willingness to place orders. A number of firms said they had never received so many specific orders during a trade fair before.

By the year 2030 Messe Düsseldorf will have invested a total of EUR 636 million from its own funds in the expansion and modernisation of the exhibition centre. One milestone to welcome exhibitors and visitors at interpack 2020 will be the completely redesigned South Entrance and a new Hall 1. The new building will replace the former Halls 1 and 2 in summer 2019, buildings whose basic substance dates back to the 1970s. The new Hall 1 will have a capacity of 12,025

square metres, so that interpack 2020 will have just over 550 additional square metres of hall space compared with the previous facilities. In addition to a new Hall 1, the new complex will have a foyer directly outside, about 2,100 square metres in size, with a 17-metre (56-foot) steeply pointed canopy made from translucent glass fibre fabric with integrated LED lighting. It will have six meeting rooms and direct access to Congress Centre Süd.

The suppliers' trade fair components – special trade fair by interpack will run completely in parallel with interpack again in 2020 and will be held at a central location within the exhibition centre. This idea met with a highly positive response among this year's exhibitors, so that expansion options are now being explored for 2020.

Any companies wanting to exhibit at either interpack or components in 2020, can register at a much earlier stage this time – at the end of 2017. The official closing date will be sometime in spring 2019, and the precise details will be announced by Messe Düsseldorf in due course.

Messe Düsseldorf GmbH D 40001 Düsseldorf

Cleanzone Congress 2017: The speakers and themes are now set

Cleanzone - Digitisation and space exploration: Two keynote speakers look at the future of cleanroom production



Kongress / Messe Frankfurt / Sandra Gätke

How will cleanroom production change over the next few years, and what role will be played by digitisation and the increasingly strict requirements resulting from systems growing ever more complex, compact and smaller? Participants will be able to get answers to these questions at the Cleanzone congress and trade fair on 17 and 18 October 2017 in Frankfurt am Main. Distinguished representatives from science, industry and associations will be on hand to present the latest technologies, processes and research findings especially for users and experts.

This year marks the first time that the Cleanzone Congress will feature two keynote speakers: on 17 October, Dr. Marc Thom from Sony will take a look at our digital future, while on 18 October Dr. Axel Müller from the aerospace company OHB will review the importance of cleanroom technology for the high-tech systems that are expected to provide ever better data for space exploration. Both keynote speeches tackle the top themes for Cleanzone 2017: digitisation and space exploration.

Dr. Marc Thom is convinced that the increasing degree of digitisation will change our world in a variety of ways, and offers a glimpse of what congress participants can expect from his presentation: "The way we are living and working is changing even faster than before. This is leading to a significant change of business models for the different industrial areas, new kind of semiconductors and new kind of connectivity will influence the refoundation of new business and will also make some established business models obsolete."

The "Optics & Science" OHB Space Center near Munich is involved in numerous ESA and DLR missions, including earth observation, science, astronomical space travel, astronomy and planetary exploration.

Dr. Axel Müller explains the demanding requirements for manufacturing instrumentation in cleanrooms: "Cameras and optical systems (from the visible spectrum to X-rays) play a significant role in almost all of these missions. In order to ensure the full functionality of these instruments, a wide range of things are necessary: purity requirements in the fields of engineering and design, process controls, cleanrooms and cleanroom procedures, even clean-

**17th. - 18th October 2017:
CLEANZONE 2017,
Frankfurt am Main (D)**

ing and detection methods – and all of these things must be developed, practised and optimised continually. These requirements must be satisfied throughout the entire European supplier chain, right up until deployment in space, across a project period of some six years."

The keynote speakers' presentations are included in the price of any congress module ticket. As in years past, the Cleanzone Congress is divided into four modules that can be booked separately. The programme kicks off on 17 October with the module: "Cleanrooms: People + Technology". Here, participants will find out more about how to improve personnel conduct, clothing, logistics and cleanroom cleaning. Process optimisation is the subject of the second module on Tuesday: "Processes: Project Management + Automation". In this module, topics include value-stream-oriented process management, facility management systems and monitoring operational quality. On Wednesday morning, the congress addresses "Construction: Components + Systems". Experts will be illuminating the topics of airlocks and transport systems, modular and flexible building systems, and the requirements for new cleanroom construction using microbiological quality control as an example. Modern measurement equipment, the identification of contamination and subsequent testing will be the focus for participants in the "Measurement Technology: Equipment + Project Validation/Qualification" module on Wednesday afternoon.

cleanzone

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Autonomous driving or space exploration: Optical systems place tremendous demands on cleanrooms

Cleanzone 2017 provides information on cleanrooms for modern optics



17th - 18th Oct. 2017: CLEANZONE 2017,
Frankfurt am Main (D)

Key drivers of change in our mobile lives come from the digital world and its imaging and image processing technologies. Be it autonomous driving, package delivery by drones or space exploration, a key requirement for future developments in these fields is high-resolution optical systems – and the necessary precision can only be provided when production takes place in cleanrooms. Manufacturers will be showing how to configure cleanrooms to satisfy the requirements of modern optics at the Cleanzone cleanroom trade fair on Tuesday and Wednesday, 17/18 October 2017, in Frankfurt am Main.

The aforementioned examples represent the fulfilment of long-standing dreams: cars will be rendered safer and more comfortable in a revolutionary way. Yet in order to mimic and exceed the performance of the human eye, it is necessary to have optics with a heretofore unheard of sensitivity and sharpness of detail – and this means that even the tiniest impurities can cause problems for the systems. This is already necessary for significant and everyday, and therefore presumably simpler, tasks such as in road traffic. The large number of moving objects results in a complexity that cannot be processed without precision optics. Another example is offered by the “European Extremely Large Telescope” (E-ELT) in Chile. One primary mirror and two corrective mirrors, not to mention the need to compensate for distortions that result when light from space passes through the Earth’s atmosphere by minimally bending the mirror surface – adjustments in the magnitude of a few ten-thousandths of a millimetre.

Challenge for the future: 7-nanometre technology

Holistic concepts are also growing in importance. Whereas optics were designed and produced separately in the past, today manufacturers must also solve the follow up-problem: each individual piece of optics has specific faults. For example, the individual rays comprising a beam may not converge on a single point after traversing an optical system, resulting in an aberration; other faults including various types of distortions and chromatic aberrations. Strictly speaking, the perfect depiction of an expansive object is only possible with flat mirrors (James Clerk Maxwell, 1858; Constantin Carathéodory, 1926). Taking into account the subsequently utilised hardware, it is now necessary to develop software that is suitable for compensating for these faults – and the overall system cannot be allowed to grow too large, because even a car has but limited space for electronics and optics.

There is one thing that is of the utmost importance for optics: both during the production of lenses and in the subsequent steps, painstaking care must be taken to avoid impurities. This includes the bonding of multiple lenses or of lenses and sensors, for example. In chip production, these requirements quickly render the latest 7-nanometre technology a necessity. It is a type of lithography, with the special distinction that wavelengths in the extreme ultraviolet spectral range are used, and the structures are created in a vacuum. Here, production may take place in cleanroom class 1 mini-environments of just eight cubic metres in size, for example. A seven-nanometre structure is equivalent to five carbon atoms in a row. For cleanroom technology, this means that impurities as small as a single molecule can be a concern. This includes not only airborne molecular contamination (AMC), but also surface molecular contamination (SMC).

Impurities in cleanrooms

In optics and electronics, one example of something that can seriously disrupt the manufacturing process is ammonia, which can be introduced by personnel or result from solvents containing isopropyl alcohol. Bonding and furnace processes are very sensitive to outgassing substances such as chlorine and silicon tetrabromide (SiBr₄). Other familiar “cleanroom impurities” include acetone (source: personnel), hydrogen bromide and hydrogen chloride, water and sulphuric acid (source: processes), the solvent PGMEA (propylene glycol methyl ether acetate), the silylation agent HMDS (bis(trimethylsilyl)amine) and TEOS (tetraethyl orthosilicate), a compound used in sol-gel processes.

Whereas these substances can be registered analytically, the monitoring of airborne hydrocarbons, epoxides and seemingly ubiquitous siloxanes are a focus of research in the fields of aerospace, microelectronics and optics.

New approaches for chemical-analytical monitoring systems

“Accurate measurement of these three types of substances – hydrocarbons, epoxides and siloxanes – has proven to be particularly difficult, and we still have not found a satisfactory solution,” says Markus Thamm, who is responsible for sales and marketing at cleanroom.de, Heidelberg. “Even so, there are a number of promising approaches that I believe might be ready for successful use sometime this year. For me, the key is to go beyond recording values at intervals, and to institute a system of continuous monitoring for these three types of substances.” important that quality controls are capable of detecting mechanical faults. Volker Knorz, KLA-Tencor, Weilburg: “To do this, we have to measure the surfaces of complex lens systems or wafers and be able to detect particles and scratches that are well under 100 nanometres in size. This is yet another prerequisite for optics that are suitable for use in autonomous vehicles or space exploration.”

A targeted tour of the Cleanzone trade fair in October 2017 will bring visitors up to date on the current state-of-the-art in cleanroom technology, something that is of vital importance for the booming optics industry. Perhaps some will even get a little bit closer to space travel during their trade fair visit.

cleanzone

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For the very first time, ILMAC is providing the chemical and life science community with a new platform in Lausanne on 4 and 5 October 2017 and thus closing a gap in the French-speaking Swiss market. "Research and Development", "Biotechnology" and "Speciality Chemicals" are regarded as holding a high potential in the industry in the western Swiss market.

ILMAC LAUSANNE: Booked out four months before its premiere



ILMAC LAUSANNE is booked out already, four months before it will be opening its doors. "We ourselves are surprised at the resonance", says exhibition director Michael Bonenberger, "given that we got off to a late start. We would like to reward the exhibitors' positive acceptance and are trying to squeeze up somewhat so as to give more exhibitors the opportunity to have a stand."

A new concept for Western Switzerland

ILMAC LAUSANNE is an optimum extension of ILMAC, which is staged in Basel every three years (24 to 27 September 2019). The central element of the platform is the exhibition, configured as a uniform complex with system stands and product presentations.

The Networking Zone as the centrepiece of the event

The latest knowledge is to be imparted in a relaxed and convivial atmosphere at the event, coupled with the presentation of high-quality product offerings. The open Networking Zone forms the centrepiece of the event, enabling visitors to exchange thoughts and ideas - with encounters and dialogue featuring at the forefront here. Admission tickets (CHF 40.-) include the Networking Lunch from 12:00 to 14:00.

Challenges in the life sciences and in the chemical and pharmaceutical industry

Over a period of two days, the industry associations BioAlps and SCG will be taking up this topic in the specialist papers presented at ILMAC LAUSANNE and thus addressing the very latest topics, including Operational Excellence (OpEx). The lectures are being held from 9:00 to 12:00 in the rooms sponsored by Containex, rounding off the event format.

MCH Messe Schweiz (Basel) AG
CH 4005 Basel



Quelle: «MCH Messe Schweiz (Basel) AG».

04th - 05th Oct. 2017: ILMAC LAUSANNE, Lausanne (CH)



Quelle: «MCH Messe Schweiz (Basel) AG».



Quelle: «MCH Messe Schweiz (Basel) AG».

2nd Trade Fair for Deburring Technology and Precision Surface Finishing, 10 to 12 October 2017 in Karlsruhe (Germany)

DeburringEXPO – Innovative Solutions for Deburring Tasks and Precision Surface Finishing



More and more attention is being focused on deburring, rounding and surface finishing due to highly demanding specifications with regard to tolerances and surface quality for the production of precision components. With exhibitor bookings already at the 125 mark as of 15 June 2017, DeburringEXPO will present the world's most comprehensive offerings in its respective field covering innovations, further developments and time-tested solutions. The 2nd trade fair for deburring technology and precision surface finishing will offer valuable know how, not least of all at the bilingual expert forum. The event will take place at the Karlsruhe Exhibition Centre (Germany) from the 10th through the 12th of October 2017.

Regardless of the fact that surface finishing requirements for precision components vary depending on product, application and industry sector, they're resulting in new challenges for manufacturing companies. For example, burr-free components and workpieces with defined edges and roundings have to be produced with ever greater levels of precision. Surface finishes which minimise friction, wear and noise, and which increase performance and extend service life, are also in demand. Manufacturing steps for precise shaping are required as well, and in this respect machining and surface finishing are converging to an ever greater extent. As the procurement and communication platform for deburring, rounding and the production of precision surface finishes, DeburringEXPO presents innovative and advanced products, processes and services, in order to be able to fulfil these growing requirements efficiently and reliably. "As of the 15th of June, 125 companies from 14 countries had already booked booth floor space for DeburringEXPO, including numerous market and technology leaders. We're expecting 150 exhibitors, many of whom will take advantage of the trade fair in order to unveil new solutions", reports Hartmut Herdin, managing director of event promoters fairXperts GmbH & Co. KG. The 2nd trade fair for deburring technology and precision surface finishing will thus be significantly larger and more international than the premiere event in 2015.

Cross-Industry and Cross-Technology Exhibition Portfolio

Whether the automotive industry, automation technology, drive and transmission technology, aerospace, machinery manufacturing, medical engineering, sanitary applications, the clock making industry or tool and mould making are concerned, the exhibition programme offered by DeburringEXPO covers the entire spectrum of deburring, rounding and the production of precision surface finishes. In addition to a representative overview of the various processes, equipment, and tooling as well as testing, measuring and analysis methods,



(Image Courtesy: EMAG ECM GmbH)

the trade fair also makes it possible to gather targeted information concerning trends and current developments. For example, barrel finishing solutions for individual part processing will be exhibited which can be easily integrated into automated production lines and permit highly accurate, reliable deburring, edge rounding, smoothing, grinding and polishing of high-quality, geometrically complex components, synchronised to manufacturing cycle time. In the field of ECM deburring, newly developed generators are making it possible to obtain Ra values of 0.1 µm and better, depending on initial condition. Beyond this, they also prevent so-called stray machining which may lead to worse machining results at peripheral areas. Furthermore, a new ECM process has been specially developed for, amongst other applications, surface finishing of 3D printed, metallic components. This makes it possible to improve both micro and macrostructures on internal and external surfaces in a single process. Defined surface characteristics can be achieved reproducibly within very short cycle times. In particular for demanding materials, the PECM process permits burr-free production of three-dimensional shapes, contours and structures with very high levels of precision and surface finishing quality. As compared with conventional processes, machining is more accurate with regard to component dimensions and tolerances, and it doesn't result in any thermal influences. Abrasive flow machining (AFM) is used primarily for processing difficult to access workpiece areas and internal surfaces of high-quality components made of metal and ceramics, for which conventional procedures do not provide the targeted results.

DeburringEXPO will also present various solutions for deburring and processing injection moulded, press formed and machined plastic parts. These include, for example, cryogenic deburring which is conducted with liquid nitrogen in combination with plastic pellets at temperatures of down to minus 150° C, as well as deburring with carbon dioxide ice (dry ice). The removal of internal and external burrs from parts made of thermoplastics – even at difficult to access locations – is made possible by special systems for thermal deburring.

The Expert Forum – Added Value for Visitors and Exhibitors

A three-day, integrated expert forum rounds out the offerings presented by DeburringEXPO. All presentations will be simultaneously interpreted (German <> English). The speakers will provide information on the fundamentals as well as expert knowledge concerning innovative deburring technologies and precision surface finishing with the help of practical examples and benchmark solutions.

10.10. - 12.10.2017: Deburring Expo, Karlsruhe (D)

fairXperts GmbH
D 72639 Neuffen

Ever-popular Expert Forum offers quality bilingual presentations on parts cleaning
– New special exhibition: Cleanroom Analysis Process Chain

Right on track with new special exhibition and high exhibitor numbers



This year, parts2clean will be held at the Stuttgart exhibition center in southern Germany from 24 to 26 October. That may still be about four months away, but already the leading international trade fair for industrial parts and surface cleaning 2017 is looking set for one of the strongest performances in its 14-year history. That's the picture emerging from the high level of exhibitor interest generated so far. Expectations are also riding high on "Cleanroom Analysis Processes", a new special exhibition that profiles the entire cleanroom analysis process chain. The winning formula also includes the ever-popular Expert Forum with its richly varied and informative lineup of simultaneously interpreted (German <-> English) presentations on various parts cleaning topics.

parts2clean 2017 has already notched up around 200 exhibitors with an exhibition space of some 6,800 square meters (over 73,000 sq. ft.). That's way ahead of the booking rates recorded at this stage of the preparations for parts2clean 2015 and 2016. "We are pleased to report a good number of new exhibitors as well as numerous repeat exhibitors who have booked even larger exhibition spaces for parts2clean 2017," commented Olaf Daebler, Global Director parts2clean at Deutsche Messe AG.

"Cleanroom Analysis Processes" special exhibition

Among the new features of the upcoming show is the "Cleanroom Analysis Processes" display, organized jointly by Germany's Cleaning Excellence Center (CEC) and Deutsche Messe AG. The special exhibition is a group event at which eight manufacturers will band together to present all the components needed for a fully functional cleanliness laboratory. The components will be staged as an integrated process chain. Trade visitors will be able to get a quick overview of the equipment and facilities needed to achieve their required cleanliness targets and the technologies and processes used to test and verify conformity with those targets. They will of course also get to know the providers of the technologies and services on show. In terms of process flow, visitors will be able to look on as real machine parts progress through deburring and cleaning in the cleanroom before being transferred in a sealed clean-cart to the test lab cleanroom for cleanliness verification. The lab will be an ISO7 or possibly even ISO8



**24th - 26th October 2017: parts2clean 2017,
Stuttgart (D)**

cleanroom facility in which the parts progress through flushing, filter drying, gravimetric analysis, microscopic analysis and documentation. The companies participating at the special exhibition are: Benseler, Dürr Ecoclean, Kögel, Nerling, Gläser, Binder, Sartorius, Jomesa and CleanControlling. Every morning and afternoon of the show, a team of technical cleanliness specialists will guide trade visitors through the entire process chain.

Expert Forum – world-class training in industrial parts cleaning

The parts2clean Expert Forum is a regular feature of the parts2clean lineup. Staged over three days and headed by the Fraunhofer Cleaning Technology Alliance, the Expert Forum is an internationally respected source of expertise and knowledge on cleaning solutions for industrial parts and surfaces. "The parts2clean Expert Forum effectively functions as a seminar and training event that all visitors can attend at no additional cost," explained Daebler. Its program is extensive, ranging from the basics to in-depth coverage of specific issues and challenges in multiple areas. It includes a series of lectures on Industry 4.0 in parts cleaning organized by the German Industrial Parts Cleaning Association (FiT). FiT is also organizing the parts2clean Innovations Forum – part of the Experts Forum that will feature new products and innovative solutions for chemicals and processes, plant engineering and equipment, measurement, testing and control systems, consulting, applications and services.

The Expert Forum's "Cleaning Processes" session comprises a series of lectures on processes and plant, fine and ultra-fine cleaning, as well as special processes and their applications. The Expert Forum also has a session on "Maintenance and operation of plant and process chains". It features a series of talks on topics such as drying, workpiece carriers, corrosion protection, packaging and logistics, cleaning bath maintenance, and cleaning agent handling, conditioning and disposal. Other topics include quality assurance and quality control, quality-related process optimization. Information on issues relating to scheduled servicing after commissioning of cleaning machines, rights, duties and operator models will complete this session. The "Sectors/Applications" session explores various parts cleaning challenges and industry sector-specific solutions. The lectures in this session will deal with such topics as cleaning in the optics industry, cleaning of electronic components and cleaning in the automotive industry. The session also includes a series of lectures on cleaning solutions for plastics prior to downstream processes such as coating and gluing which surely will trigger lively debate. And last but not least, there is a session on "Analytics". The lectures here will look at methods and processes for cleanliness analysis, products and solutions for technical cleanliness and ways of achieving maximum cleanliness by optimizing part designs and manufacturing processes.

Deutsche Messe AG D 30521 Hannover

The EE300Ex humidity and temperature transmitter features now also the Korean Certification Mark (KC)

Ex transmitter with KC certificate for Korea



The intrinsically safe EE300Ex humidity and temperature transmitter from E+E Elektronik now also bears the “Korean Certification Mark” (KC) required in Korea. The KC certification is comparable with the European ATEX, the American FM or the Japanese TIS approvals already available for EE300Ex.



Intrinsically safe EE300Ex transmitter with KC certificate for Korea
(Photo: E+E Elektronik GmbH)

The EE300Ex is dedicated for highly accurate humidity and temperature measurement in potentially explosive environment. The transmitter is available for wall mounting or with remote probe and can be mounted directly in both gas and dust hazardous areas of zone 0 / 20. The two-part enclosure facilitates easy installation and rapid replacement of the measurement unit for servicing or calibration.

The enclosure and the sensing probes are made of high-quality stainless steel, which makes the transmitter suitable for both demanding industrial applications and for clean rooms. Depending on the choice of sensing probe, the EE300Ex can be used for combined humidity and temperature measurement, for temperature measurement only, or for moisture measurement in oil. Accurate measurement in the range 0 to 100% RH (0 to 1 aw for moisture in oil) and -40 to 180°C (-40...356 °F) are possible at a pressure of up to 300 bar (4351 psi).

The E+E proprietary coating is a key feature when it comes to harsh working conditions. The coating protects the sensor from contamination and corrosion, thereby relevantly improving the long-term stability and the lifetime.

The measured humidity and temperature values, as well as calculated measurands like dew point, frost point, absolute humidity or mixing ratio are available on two analogue outputs and on the optional display.



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