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innovations

Techniques – Markets – Trends

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Auxiliary Forces

Battenfeld

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Editorial

Michael Wittmann

Dear Reader,

Only some months ago, the year 2017 seemed to have the same potential for our industry as the years that followed on from the great 2009 recession: it seemed to be forecastable and amenable to continuity. And we were not expecting big surprises. But then one event occurred that resounded throughout the globe, grabbing the everyday headline and depriving us of some foresight, at least for the short term. Of course I am talking about Donald Trump's somewhat unorthodox U.S. presidency, only established for some weeks now, but highly contentious. Even though at least one of his recent decrees has been declared unconstitutional, these decrees obviously turn matters towards a direction that we – as a group of companies – have to deal with in detail. Our globally active customers may have even more to contend with. What, for example, would the world's economy look like, if trade barriers were created once more? If there would be punitive tariffs, for example for the automotive industry? And how long would it take until this would lead to a noticeable change in investment behavior?

As a manufacturer of machines and auxiliary equipment for the plastics industry, we don't feel that we are directly concerned. But indirectly we are much affected, because we depend on developments in the automotive, electrical, and white goods industries. These globally-networked sectors now are showing at least some uncertainty that may affect a readiness to invest. However, at these early stages we can say that all is clear and well. Currently, our customers are investing at a higher level than in the course of the last few years. We naturally hope for this pleasing trend to continue.

All the more so as the WITTMANN Group of companies is determined to pursue our planned investment programme for the coming year. In April 2017, for example, the expansion work on our Vienna robot production facility will be completed, thus enabling us to expand our annual global capacity to 4,800 robots output. At the same time we will once again undertake a massive extension of our Kottingbrunn injection molding machine production facility. The measures that will be conducted there will more than double our capacity with regard to the *MacroPower* series of large machines, expanding our medium-scale machine output by 35%. This construction activity will be completed at the end of 2017.

I wish you a pleasant reading experience with this issue of *innovations* that once more references the detailed and worldwide activities of the WITTMANN Group, containing up numerous pieces of news, user reports and technology updates.

Yours cordially, Michael Wittmann

Content

Flexible and compact: W837 IML system with camera control for the production of lids

Under the motto „be smart" – and for the first time –, WITTMANN presented the new W837 IML system at the K 2016 exhibition. The production cell manufactures packaging lids and camera control is included. The system was exhibited with the new EcoPower Xpress molding machine from WITTMANN BATTENFELD.

Andreas Klackl

Picture left: Delivery system of the IML working cell.
Picture right: EcoPower Xpress with the respective IML mold.

The new W837 IML system is the culmination of WITTMANN's latest high-speed thinking for compact IML systems. The WITTMANN IML range is being continuously optimized with regard to factory footprint, as well as enabling production flexibility, reliability, and low energy usage.

The system's requirement profile, based on many years of WITTMANN design and production experience – allows for the extensive consideration and inclusion of these factors – essential to profitable manufacturing practice.

The basic concept of the W837 IML system is rooted in the application of a highly dynamic horizontal axis that allows for the fastest insertion and removal movements, and for the highest control accuracy. In addition, new concepts of product handling and of placing of finished parts lead to the maximum possible compactness. The new W837 IML systems are geared to high productivity and optimal use of energy, contributing significantly to sustainable production in plastics processing.

IML with camera control

The W837 IML system was shown at the K show together with an injection molding machine from WITTMANN BATTENFELD – the *EcoPower* Xpress 400/1000+. The production cell made polypropylene (PP) lids at a cycle time of 4.7 seconds, using an 8-cavity-mold from Greiner Packaging (Austria). The W837 IML system inserted the IML foils into the mold, and simultaneously removed the finished decorated lids.

The system allows for a concentrated delivery of the parts onto a synchronized conveyor belt. The finished parts are then guided through the integrated camera station in perfect alignment. The camera examines every single lid; checks the positioning of the label on the molded part, and also checks the decoration on the label itself. The positively checked parts are then stacked on the output belt. Parts that did not meet the production criteria are further conveyed by the synchronized conveyor belt, and are finally dropped into the reject parts bin.

Parts that are needed for the quality inspection routine are ejected through a separate outlet from within the working cell on request.

All system travel drives are extreme high-performance servo drives. It is therefore possible to coordinate the most dynamic movements in an optimal way, resulting in the shortest running-in and cycle times. Using these drives leads, moreover, to very low energy consumption.

In addition, the integrated vacuum pump system reduces the entire system's need for compressed air to a few ltr./min. The new system also allows the production of lids that are of different dimensions. It can be adjusted in this way with a few simple hand movements. ◆

***Andreas Klackl** is Division Manager Robots and Automation at WITTMANN Kunststoffgeräte GmbH in Vienna, Austria.*

Compact injection molding cells that use half the space

With high flexibility and top-quality products, LMB Kunststofftechnik (LMBK) based in Leer, Germany has made a name for itself among automotive suppliers. The important criteria for this processor include complex processes that are implemented in compact cells with a high degree of automation.

Arne Grävemeyer, K-ZEITUNG (©)

Space-saving technology: a total of six compact Insider injection molding cells with clamping forces ranging from 900 to 1,800 kN have been accommodated on 220 m².

Automation

The main business area of LMB Kunststofftechnik GmbH in Leer/East Frisia is the automobile industry. "Our customers are located worldwide. The portfolio of vehicles with components from LMBK ranges from Fiat to Porsche", says Dieter Diekmann, the company's Plant Manager.

For example, the injection molder makes various accessory parts for tank systems, but also visible parts and coated parts such as radiator grilles including the emblem fixture, as well as decorative covers, even though the processor does not operate an in-house paint shop.

LMBK also produces parts for other sectors, such as wind energy technology, or hospital supplies, parts for sports and leisure products and components for the electrical industry.

The range of materials processed is wide; it includes PP and PE as well as PA6, PC and ABS. "We process far more than 200 basic materials, without counting the various colour blends and additives", Diekmann explains. The degree of automation is high, all injection molding machines are equipped with handling systems at least for parts removal; metal inserts are also often placed by robots. In cooperation with Plan B Automatisierung GmbH based in Bremen, the company regularly investigates areas where automation can be further developed. Following inserts, the main focus is now shifting to in-line quality checks and assembly processes directly on the production line.

LMBK production floor space almost fully exploited

At LMB Kunststofftechnik, the production floor space available at the facility in Leer is almost completely taken up. In the production halls, 31 injection molding machines are operating, with clamping forces ranging from 350 to 9,000 kN. Even for the six recently acquired new machines, there was originally no space available. Only when it was decided to build a roof over a passage between the main manufacturing hall and the mold making shop and to remodel that area as well, could 220 m² of additional production floor space be created. >>

The LMBK Managing Director Maren Schön and Plant Manager Dieter Diekmann (center) cooperate with Frank Siegers from WITTMANN BATTENFELD in a close partnership based on mutual trust.

The WITTMANN HM 180 with an integrated WITTMANN robot and a conveyor belt as cooling zone produces fuel tank caps made of POM.

The complete technical equipment for the machine cell, including the robot and conveyor belt, plus temperature controllers, dryers and material loading technology, comes from WITTMANN.

Increasing degree of automation to meet higher quality standards: screw insertion monitored by a camera for fixed bearings directly on the production line.

"But in order to place six machines plus peripherals there, we really needed compact solutions", is how Diekmann describes the situation. The East Frisian company therefore chose production cells of extremely compact design from WITTMANN BATTENFELD, complete with injection molding machines, handling equipment, conveyor belts, sorting units, and of course also with temperature control, material drying and metering technologies.

"Two years ago, we had already ordered two 650 kN machines from WITTMANN BATTENFELD as complete production cells and were positively surprised by these extremely compact solutions." Diekmann reports that these production cells, delivered complete with perfectly matching components and without additional safety guards, take up just about half the space which would be required by solutions put together by the customer.

Creating a "ghost production hall"

The six new WITTMANN BATTENFELD machines in Leer are from the HM series, machines in space-saving, three-platen design with a short footprint. The three HM 90s, two HM 150s and one HM 180 were installed in October 2015, as soon as the new hall adjacent to the mold making shop had been completed.

The machines have been operating in continuous and full production ever since. They mold approximately 20 different complex accessories for fuel tank systems, such as filler tubes, fixing clips and welding brackets, tank caps and anti-surge baffles in various forms in order to control fuel flow movement.

The batch sizes for parts produced on the six new machines are all over 500,000 units per annum, the contracts with customers are concluded on a long-term basis for periods of seven to eight years. "In this way, we operate more or less with 'ghost shifts'", Diekmann reports. In the "ghost hall", the light is rarely switched on; staff members need to enter it only for regular quality checks and for collection of parts.

Compact production cell: process integration

WITTMANN BATTENFELD offers its Insider configuration as particularly saving on space. In Insider solutions, the automation system is included in the delivery, together with the injection molding machine. Through the integration of a WITTMANN robot for parts removal, a conveyor belt and other upstream and downstream peripherals into the production cell, the Insider offers a number of extra benefits. The Insider solutions typically require up to 50% less space than normally needed through conventional automation solutions. Moreover, the material flow can be improved byhaving all molded parts removed at the end of the clamping unit. This also facilitates positioning of several machines in a row. Reductions in robot cycle times resulting from shorter travel paths and the direct depositing of finished parts on the conveyor belt can also have an additional positive effect on the total system cycle. Separate safety barriers can also be dispensed with in this type of configuration. The occupational safety regulations are fully complied with, and for every Insider, the CE label for certified safety is included in the delivery for all components.

Dieter Diekmann checks anti-surge baffles. Picture left: This anti-surge baffle with flow-relevant naps is made of flexible material to facilitate insertion into the fuel tank. Picture right: In virtual "ghost shifts", hundreds of thousands of these automotive parts are produced from modified HDPE.

Picture left: Liesa Feikes, third-year trainee mold maker, selects a graphite electrode. The processor based in Leer manufactures these eroding components itself. Picture right: Two-component technology in different colors for electrical appliances: Holger Meyer, Deputy Plant Manager, presenting two handles for flashlights made of LDPE and colored TPE.

Commitment to training and automation

LMBK generally operates round the clock in three shift and trains its own staff members very successfully. It is able to retain some 90% of the young people in the company even after completion of their training – a success rate to be proud of in a region where the business must compete with international players such as VW Emden and the huge Meyer Werft shipyard in Papenburg. LMBK, however, is able to offer a very broad-based skills training package, and benefits from the fact that everything – from product design to mold making and to fixture construction – is produced in-house.

This also includes the specialist ultrasound and mirror welding expertise the company has built up and the fact that, for example, graphite electrodes are also machined at its own facility. "We even have some Chamber of Industry and Commerce prize winners among our trainees", Maren Schön, the company's Managing Director, reports with pride.

The main purpose of automation at LMBK is to meet the demand for rising quality standard. It also aims to make the best possible use of its production floor space. And now that LMSK company has apparently reached capacity the management team is also investigating expansion opportunities nearby. ◆

Rise to strategic partnership

LMB Kunststofftechnik was established in 1984 as a subsidiary of Logaer Maschinenbau GmbH. In 1999, it separated from the parent company and became independent. The injection molder operates its own engineering department with three design engineers and two trainees. It also operates an in-house mold-making shop with about 20 employees that caters almost exclusively to its own needs. "This enables us to respond fast and flexibly, and we supply everything from a single source", explains Maren Schön, Managing Director and daughter of the company's founder. At the beginning, LMB Kunststofftechnik looked for niche markets and regularly supplied batch sizes of about 20 to 30,000 units per year. This often involved high expenses for machine setting; normally every machine had to be retooled once or twice a day. Now that the processor has firmly established itself among its customers, typical order volumes range from 500,000 to 1.8 million units per year. The degree of automation on the machines has also risen accordingly. "LMBK has grown in terms of company size, but also in terms of quality standards and performance – and our delivery schedules are absolutely reliable", plant manager Dieter Diekmann emphasizes. The company is EN ISO 9001 certified and has been audited by customers in accordance with ISO TS 16949. The Leer-based processor has also grown its long-term customer relations. "Today, we are a strategic partner of one of our largest customers", Diekmann says.

***Arne Grävemeyer** is the Deputy Chief Editor of K-ZEITUNG, published by Giesel Verlag in Hanover, Germany.*
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Precision Teflon parts, manufactured o

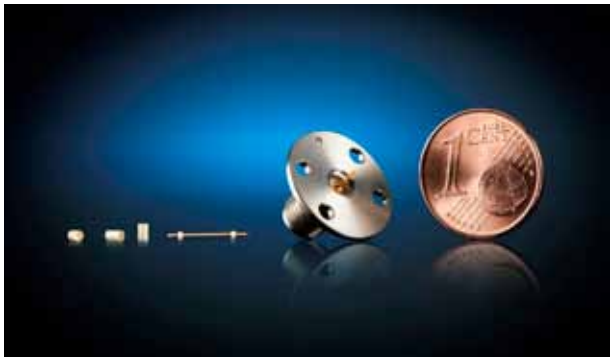
In the production of Teflon micro parts, Rohde & Schwarz plays a pioneer role. These high-frequency technology components – until recently still produced as turned parts – are now manufactured on WITTMANN BATTENFELD machines, specially designed for the injection molding of small and micro parts.

Gabriele Hopf

The family-owned company Rohde & Schwarz, established in 1933 and based in Munich, has been known for their high-quality standards, precision and innovation in all areas of wireless communication technology for more than 80 years. The electronics group, with a workforce of just under 10,000 employees, is a leading global player in its primary business areas of measurement technology, radio and media technology, safe communication and cyber safety, and radio monitoring and radio orientation technology. In the fields of mobile radio, EMC measurement technology and broadcasting, and measurement technology for digital terrestrial television, Rohde & Schwarz is the global market leader.

The company's facility in Teisnach was opened in 1969. The Teisnach plant, where more than 1,400 workers are employed, is a system supplier and competence center for mechanical and electronic manufacturing in Rohde & Schwarz's network. The product portfolio supplied by the Teisnach plant includes high-precision and surface engineering, housing technology, manufacturing of circuit boards and the assembly of electro-mechanical components, and even testing and automation solutions. For high-precision mechanical engineering, Rohde & Schwarz in Teisnach offers both non-cutting machining processes and cutting production technologies such as turning, milling and drilling combined with the appropriate high-precision surface engineering.

Examples for micro parts produced at Rohde & Schwarz. (Photos: Rohde & Schwarz)



High-precision Teflon parts to be built into high-frequency components.

Micro-machines from WITTMANN BATTENFELD

To produce high-precision plastic parts with tolerances down to ±7 µm, Rohde & Schwarz has been using WITTMANN BATTENFELD micro injection molding machines since the end of 2012. In November 2012, the Microsystem 50 machine model designed for injection molding of micro parts was commissioned. In November 2014, this was followed by a *MicroPower* 15/7.5, a latest generation micro machine from WITTMANN BATTENFELD. As a fully integrated production cell, the *MicroPower* is equipped with a W8VS2 SCARA robot from WITTMANN and an integrated TEMPRO plus D Micro temperature controller that is also specially developed for micro applications.

Apart from their high cost-efficiency and productivity, the machines from the *MicroPower* series stand out primarily due to their extremely high precision, which is partly achieved using a two-step screw-and-plunger injection aggregate with shot volumes ranging from 0.05 to 4 cm^3. This high standard of precision is exactly what Rohde & Schwarz needs to produce its micro parts, which are primarily built into the high-frequency components that are also assembled at Rohde & Schwarz. The company produces 100% of the hardened steel molds in-house. Its mold-making shop is equipped with high-precision eroding machines, which allow mold components to be manufactured primarily by wire-cut EDM within tolerances down to ±3 µm. The equipment is also designed in-house at Rohde & Schwarz. This feature not only enables the company to manufacture molds with the accuracy required for the production of its high-precision parts, but also offers the advantage of short lead times in mold production for a highly flexible response to market demands and the needs of its customers.

Changing over to micro molding

Typical micro parts made by Rohde & Schwarz in Teisnach are, for example, power plugs with a tolerance margin around ±12 µm between the internal and external conductors. The company's latest product, newly developed in the area of high-precision micro injection molding, is a Teflon spacer that is used in high-frequency components. This part, originally manufactured as a turned part, can now be produced by micro injection molding at significantly lower cost than before. The complex and challenging preparatory work necessary to achieve the changeover of this originally turned part made of Teflon to production by micro injection molding was

on WITTMANN BATTENFELD machines

due primarily to the specific characteristics of Teflon. Since certain gases and/or fluorine compounds, which are detrimental to health, can be released at high temperatures in hot processing of Teflon, several analyses had to be carried out to ascertain which decomposition products may be formed, in which quantities these would be released, and whether they could create any health hazards for the workers. The quantities of the decomposition products depend on the plastic material processed as such and on the additives contained in it, the hot processing method used and the temperatures involved. The micro-machines from WITTMANN BATTENFELD operating at a temperature of about 350 °C are completely encased and equipped with an extraction unit.

Picture left: Storage of the material in the air-conditioned room next to the machines. Picture right: High-precision micro injection molding in an air-conditioned room at Rohde & Schwarz GmbH & Co. KG in Teisnach, Germany.

Picture left: Mold for the injection molding of Teflon micro parts. Picture right: Gottfried Hausladen, WITTMANN BATTENFELD Sales Department; Johann Haimerl, Rohde & Schwarz High-precision Technology Department; Martin Philipp-Pichler, WITTMANN BATTENFELD MicroPower Sales Department (from left to right).

Process analysis and tests

To identify the gases released, a thermo microbalance combined with an infrared spectrometer was used. An analysis of the changes in mass and outgassing substances was carried out. The changes in mass were measured with the thermo balance. Integrated flow controllers ensured precisely regulated flow quantities for two flushing gases and one shielding gas. The gases released from the samples by the thermal analysis were passed directly into the Fourier-Transform infrared spectrometer, which covers a spectral range from 500 cm-1 up to 6,000 cm-1. The data were then transferred online during the measurements. With this method, Rohde & Schwarz was able to prove beyond doubt that processing Teflon with their method does not involve any health or safety hazard for the workers.

Next, a trial mold was produced to examine how Teflon could be processed on a micro injection molding machine. Following a positive outcome and a calculation of the shrinkage behavior, Rohde & Schwarz undertook the construction of a mold for series production, which was manufactured on a high-precision eroding machine in the company's own mold making shop. After sampling and adjustment of the mold and an analysis of process capability, the approval for series production could be granted.

Successful with the right equipment

In producing micro parts made of Teflon using high-precision micro injection molding, Rohde & Schwarz is truly a pioneer in the market. These elements, originally manufactured as turned parts, are now produced on two micro machines from WITTMANN BATTENFELD which, due to their specific design, offer a high level of process reliability and precision. Consequently, they are also ideally suited for the continuous production of parts whose tolerances are in the magnitude of one thousandth. To achieve these extremely low tolerance margins, the micro machines stand in an air-conditioned room where both temperature and humidity are kept constant. The molds and the material are also stored in this room for the same reasons.

Since the parts produced with the micro machines do not have to be deburred, the downstream finishing that was previously required for turned parts is eliminated, which makes for a significantly more cost-efficient production of the elements. Apart from the positive results that Rohde & Schwarz has achieved with the micro machines from WITTMANN BATTENFELD in the production of Teflon parts, the company particularly appreciates the machines' modest space requirements. This is due to the design of the machines as well as the complete integration of the robots and peripheral appliances specially developed for them, as well as the integrated image processing device. Moreover, the micro machines from WITTMANN BATTENFELD come equipped with rotary disks that perfectly fit the mold concept of Rohde & Schwarz, and are therefore quickly upgradable. Rohde & Schwarz also appreciates the possibility of purchasing both machines and peripherals from a single source within the WITTMANN Group. Johann Haimerl, responsible for high-precision technology in the company, puts it in a nutshell: "At WITTMANN BATTENFELD we have just one contact partner for the entire package. That facilitates negotiations enormously."

The micro injection molding segment at Rohde & Schwarz has seen rapid growth since its introduction in 2012 and is expected to grow further. For reasons of precision and cost-effectiveness it plans to gradually introduce the production of other parts by micro injection molding instead of turning and milling. ◆

***Gabriele Hopf** is the Marketing Manager of WITTMANN BATTENFELD in Kottingbrunn, Lower Austria.*

HIDROTEN: 20 years of success with WITTMANN BATTENFELD

HIDROTEN S.A. was founded in 1995 by the Ten Sanchez family, and is located in Alicante, Spain. The company's history goes back more than 50 years, when Ginás Ten's father co-founded the Jimten company, being acquired by Etex in the 1990s, and today a part of the Aliaxis Group. Consequently, a new family company was founded, and HIDROTEN has been operating ever since.

Carla Bayona – Cristina Delgado

Some high-quality products from HIDROTEN: 3-way ball valve and fittings.

The family-owned HIDROTEN company, with over 50 years of experience in the plastics processing sector, is positioned as an exemplary European company in the development, manufacturing, and distribution of systems for the transport of fluids, serving several sectors including the manufacturing industry, agriculture, pool building, public construction, and more.

This outstanding Spanish company closed the year 2015 with a revenue of 14.5 million Euros and achieved an even higher goal for remarkable growth 2016 by realizing more than 16 million Euros. HIDROTEN is a worldwide company, present in more than 80 countries on five continents, providing custom-made solutions to its customers. In manufacturing, their own in-house developed technology is applied, ensuring the highest quality in production processes.

The company operates impressive facilities with over 15,000 m² altogether, including more than 3,500 m² dedicated to production. The manufacturing space is split among three large industrial buildings, perfectly equipped to accommodate more than 50 cutting-edge injection molding machines with clamping forces that range from 45 up to 1,000 tons. HIDROTEN is one of the leading companies in a very competitive industry, and can produce and supply the best product quality. This is confirmed by their continuous growth and success.

Very special products

The HIDROTEN trademark owns 20 patents in different fields, including patents for inventions, design patents, and utility patents. All of this was achieved thanks to a massive investment in R&D. One of the products that really characterizes the innovative ability of this company is the so-called "Netvitc System®" of fittings. It is a modular union system, designed, patented and manufactured by HIDROTEN, which provides the ability to unite different product lines. This system consists of a flange, two screws and a joint

of stainless steel that uses compression as its functional principle. The perfect mechanical union of the "Netvitc System®" ensures a completely leak-proof piping system for any installation, and thanks to the modularity of the system, any broken parts can be replaced very easily and in a cost-effective way. It is also a very flexible system that allows for the changing of the configuration of the installation any time it is required.

HIDROTEN and the WITTMANN Group

HIDROTEN had always relied on the BATTENFELD technology, both in injection of rigid PVC and the production of parts in PP. This continuous trust goes back to the year of the partnership's beginning in 1995. This was the year HIDROTEN acquired their first injection molding machine, specifically a BK 1800/1000 with a clamping force of 180 tons. From that moment on, the company purchased more BATTENFELD and WITTMANN BATTENFELD machines of different sizes including, amongst others, TM, HM, and *MacroPower* machines. This clearly shows HIDROTENs preference for the Austrian machine builder. Currently the WITTMANN Group continues to be a real ally of HIDROTEN.

All the different models of WITTMANN BATTENFELD injection molding machines are of great efficiency and productivity. Recently, HIDROTEN purchased two hybrid injection molding machines with clamping forces of 110 and 180 tons. Both are equipped with the *ServoPower* drive for achieving maximum energy savings. HIDROTEN also acquired a large WITTMANN BATTENFELD machine of the *MacroPower* series with a 2-platen clamping unit. This is a *MacroPower* 500T/8800 injection molding machine to produce large-dimensioned PVC parts, and it is equipped with a WITTMANN servo robot from the latest generation. Finally, in 2016, a *SmartPower* 180T/1000 injection molding machine, as well as an HM 180T/1330 machine from WITTMANN BATTENFELD have been successfully installed.

View of the HIDROTEN S.A. production plant in Alicante, Spain.

Damián Hernández (left), the Sales Manager of WITTMANN BATTENFELD SPAIN, with Ginás Ten, the General Manager of HIDROTEN.

At HIDROTEN, the WITTMANN Group also installed different automation systems in a number of work cells. The Ten family always tries to adopt the best automated production processes, thus they select the cutting-edge WITTMANN automation technology. One of the major goals of HIDROTEN is to keep the company positioned as one of the leading enterprises in their several market segments – and to improve the company's control and analysis system. Ultimately, HIDROTEN tries to ensure the quality of their service and strengthen the company in all respects. This can only be achieved when working with the best partners – which WITTMANN BATTENFELD has proved to be. ◆

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WITTMANN conveying equipment in REINERT's new Romanian facility

The German company REINERT Kunststofftechnik GmbH & Co. KG, in Bissingen in Baden-Württemberg, has more than 50 years of experience in injection molding, and opened a new production facility in Oradea, Romania in September 2016. The new premises has an available production area of 10,000 m², and it is equipped with a central material drying and conveying system from WITTMANN.

Bogdan Nestor

Drying system at REINERT KUNSTSTOFFTECHNIK SRL consisting of DRYMAX battery dryers and SILMAX drying hoppers with FEEDMAX material loaders.

View of the new production facility at REINERT KUNSTSTOFFTECHNIK SRL in Oradea, Romania.

REINERT KUNSTSTOFFTECHNIK SRL in Oradea offers its customers the manufacturing of injection molded parts together with many additional services, including part design, technical analysis, project management, and serial production in concordance with the ISO/TS 16949 standard. The company operates 11 brand-new injection molding machines with clamping forces from 50 to 2,000 tons. REINERT KUNSTSTOFFTECHNIK SRL produces all sorts of parts for the automotive industry, as well as other customers, covering the entire injection molding process, including multi-component techniques, gas injection, and overmolding. The company is also active in the fields of organic sheets, manufacturing of assemblies, surface refinements (pad printing, painting, chrome plating), and welding processes. This important Romanian investment was done to meet customers' needs for high-quality parts at competitive prices.

REINERT serves many customers from the automotive industry, one of the most demanding sectors for molders. In order to fulfill the requirements of the old ISO/TS 16949:2009 standard and the new IATF 16949:2016 automotive industry standard, REINERT decided to invest in the best production equipment in the market. They contacted WITTMANN BATTENFELD S.R.L., the Romanian subsidiary of the WITTMANN Group that had already built 27 central material handling systems in Romania before, and thus had become the number one company in this field.

As always, WITTMANN BATTENFELD S.R.L. tried to find the best technical solution for the new REINERT central drying and conveying system that was projected by Eduard Lazea, the Sales Manager of the Romanian WITTMANN Group branch. To do this, he worked in close cooperation with the customer, represented by Octavian Petru from REINERT. The objective was to get to a highly developed system that included all possible safety features, and that was durable enough to work perfectly for many years to come.

The central material drying and conveying system from WITTMANN that was installed at REINERT KUNSTSTOFFTECHNIK SRL in Oradea, is equipped with many advanced technical features that amplify the traceability, safety, and reliability of the entire process.

Traceability

Choosing the wrong material for a drying hopper in the course of a material change procedure not only leads to weak drying results, but can also have fatal consequences for the production of the parts. To minimize this risk, the WITTMANN M7.3 IPC network control, after having activated a license, can monitor the process. The plastic material arrives at the production plant either in 25 kg bags

or octabins. These bags or bins are equipped with bar code labels, and every material storage area is equipped with a bar code reader that is connected to the central system's control unit. For the clearance of the conveying process, the operator has to define the material change at the control device and then confirm the material source and the suction lance via barcode scan. If this is done correctly, the changing process starts. If not, an error message is displayed, and the changing process (with the wrong material) is not executed. Thus, conveying the wrong material to the drying hoppers is avoided.

A coded coupling station is one of the most important elements a central system must be equipped with. Each injection molding machine is linked to the coupling station via a material conveying hose. On the other hand, the coupling station's connectors are linked to the different material drying hoppers. The coded coupling station CODEMAX from WITTMANN avoids any erroneous connection of the wrong material to the processing machine. Again, the system does this by avoiding any possible incorrect operator decisions.

Some of the couplings of the CODEMAX coded coupling station from WITTMANN. Each single coupling is equipped with an RFID transponder.

WITTMANN M7.3 IPC network control touch-screen. To the right of screen, mounted on the wall, a bar code scanner.

A virtually indestructible RFID transponder (Radio Frequency Identification) is attached to each coupling. These transponders permit remote recognition of a 64-bit identifier. By means of this technology, electrostatic charges that are inherent to the material conveying process cannot cause damage to the electrical components.

Safety

A central drying and conveying system could be defined as the bloodstream of a plastics processing plant. Therefore, production safety is one of the WITTMANN Group's foremost objectives when implementing such a system. For safety reasons, the REINERT central system features four vacuum pumps, one of which is always on standby, ready to stand in for any of the other three pumps in case a pump breakdown should occur. Above that, this additional pump can be set to automatically empty the drying hoppers when needed.

The REINERT production uses two of the largest WITTMANN dryers – two DRYMAX E1200 battery dryers with a drying capacity of 1,200 m^3 of dry air per hour each. In case any problem should occur with one of the units, the drying system would still be working at half-capacity until maintenance could take place.

A question that plastics processors are frequently asked – particularly in the course of automotive industry audits – is whether the material processed will always be dry enough. With WITTMANN dryers, REINERT has no problem whatsoever answering such questions – not even when asked by the most demanding customers. To ensure that the material is always thoroughly dried, WITTMANN dryers are equipped with a dew point sensor.

The dew point is an absolute measure of the surrounding humidity. It indicates at what temperature the humidity in the air will precipitate. In other words, the sensor ensures that the air is always dry enough, and it indicates the moment of desiccant bed changes through visualization combined with an alarm function.

Of course, the dew point sensor is calibrated, and a calibration certificate comes with it. Beyond that, the residence time of the material within the drying hoppers is controlled continuously. Only after the appropriate residence time has expired will the system allow the conveying of the material to the injection molding machine.

Another additional safety feature of the WITTMANN central system is the possibility of comprehensive remote control via VNC (Virtual Network Computing).

Reliability

The piping of the entire system at REINERT is made from stainless steel, and all the bended elements are made from glass, thus resisting abrasive materials – like materials that are reinforced with glass fiber. In Romania, there are some plastics processors who are extending their production facilities for the third time these days, and some who are turning to WITTMANN BATTENFELD S.R.L. for the third time in succession. This is the best proof for the quality and reliability of the WITTMANN Group's products and service. ◆

Bogdan Nestor is the General Manager of WITTMANN BATTENFELD S.R.L. based in Bucharest, Romania.

WITTMANN France: new corporate structure

WITTMANN BATTENFELD France SAS has been based in Moirans since 2013 and occupies a strategic position within the WITTMANN Group, producing and marketing granulators – and is growing constantly.

Part of the team of WITTMANN BATTENFELD France SAS, the French subsidiary of the WITTMANN Group.

Picture left: Thierry Petra, head of the French branch since 2014. Picture right: Premises of WITTMANN BATTENFELD France SAS in Moirans.

Thierry Petra has headed up the French subsidiary since 2014. From that time on, the three French sites have been brought together in Moirans, and the French branch has undergone a complete restructuring, and all the teams have been reorganized towards growth and more efficiency. Back then, the company had 49 employees, and today there are 64.

Communication between sales representatives and technicians has been strengthened, and in 2016, also the peripheral equipment sales team was increased – with more customer visits as a result, and finally with sales figures never reached before in this field.

Granulators as a key product

In recent years WITTMANN Group France has brought about many changes with regard to granulator design. The idea was to offer a range of standard granulators that can easily be customized making use of optional kits, thus getting to products that are upgradeable. Over time the different granulators series have undergone a substantial redesign – and will do so further in the near future.

In 2015, and as the result of collaboration between various group subsidiaries, the new JUNIOR 3 Compact screenless granulator was launched. This model became a real success, not least due to the fact that it was intensely tested in different industrial environments in practice before its market launch. Following the same approach, the range of MAS granulators was also overworked. These units existed for more than 15 years and represented approximately 50% of all the granulators WITTMANN had sold worldwide.

This year, the MAS series was replaced by the new G-Max series. The G-Max 12 and G-Max 33 are the first granulators that are now equipped with a global electronic card allowing for real ease of use, energy saving, and exceptional efficiency. Soon, the range of screenless granulators will also be equipped with electronic cards. There also will be a new medium-sized granulator, somewhat larger than the now existing ML 33. And finally, the JUNIOR DOUBLE series models will get their new technical layout.

Working the French market

Last year, two agencies in the promising Maghreb area were added to the sphere of responsibility of WITTMANN BATTENFELD France: one located in Algeria, and the other in Morocco. The French market is rather competitive, but the WITTMANN Group's market share is growing every year. For example, last year 140 WITTMANN robots were sold in France, representing 35% of the French market.

The injection molding machine sector has made also a good progress. Today, the French customers see the WITTMANN Group as a supplier of complete solutions. Last year, not a single injection molding machine was sold in France without a robot or additional auxiliary equipment also provided.

Meawhile intensified efforts are being undertaken to improve and develop the training services that are offered to French customers. The French branch uses an up-to-date showroom to demonstrate its most different integrated solutions. This facility is also used by the group's nearby Swiss and Belgian subsidiaries for the training of their own French speaking customers.

The latest strategic development undertaken was the strengthening of activities in the field of automation: WITTMANN BATTENFELD France offers highly developed and fast-working automation systems for any application, including camera control of the finished parts and complex stacking solutions.

Today, WITTMANN BATTENFELD France is a dynamic company. Since 2014, the number of new orders has increased by 25%. The 2016 turnover nearly reached 20 million Euros. And also 2017 will turn out as a year of ambition and projects. This year, WITTMANN BATTENFELD France will take part in the FIP that is held in Lyon, being the most important event in France. There, the company will be present with a booth of 250 m² exhibition space, emphasizing its leading position on the French market. ◆

A strong team working the challenging Brazilian market

Looking back on a long history in Brazil, WITTMANN BATTENFELD do Brasil Ltda. in Campinas have navigated occasionally difficult surroundings with great success. The history of BATTENFELD in Brazil started a long time ago in 1966, when BATTENFELD entered the market. In these days, BATTENFELD operated a plant located in Osasco, manufacturing a great number of machines, including machines with 2,800 tons of clamping force – the biggest built in the Americas at that time and sold sold to the Volkswagen plant in São Paulo. In total, BATTENFELD sold more than 5,000 machines in the Brazilian market.

The WITTMANN Group started its Brazilian operations in the year 2000. The company's Brazilian subsidiary was located in Campinas, selling robots and material handling equipment.

In November 2013, WITTMANN BATTENFELD do Brasil Ltda. was created. The two companies were merged together at one site in October 2014.

Today, WITTMANN BATTENFELD do Brasil Ltda. is located in Campinas, headed by Cassio Saltori as the Managing Director. The company has 15 employees based in Campinas, and Sales and Service Agents working the different areas of the country.

Cassio Saltori, Managing Director of the Brazilian WITTMANN Group subsidiary (seventh from the left), and his Team.

The Brazilian market

The Brazilian market for advanced plastics processing machines is vast, and is capable of development in all sectors: automotive, infrastructure, electronics, white goods, medical, packaging, toys, telecommunication, and many others. Currently, the Brazilian economy faces a challenging situation with intricate political circumstances.

After a period of recent contraction the Brazilian economy now appears poised for an upswing and a sustainable recovery, growth having already started slowly.

Future perspectives

WITTMANN BATTENFELD enjoys a 1st class reputation in the Brazilian marketplace. Robots, injection molding machines, and material handling equipment from the WITTMANN Group are widely acclaimed, and are known as superior technology, providing absolute reliability

With its Campinas headquarters and a dedicated sales and service team as well as a comprehensive spare parts storage, WITTMANN BATTENFELD Brazil is very well positioned to take on the upcoming challenges of Brazilian growth. ◆

WITTMANN Group takes over the South Korean agency

In November last year, the WITTMANN Group took over Petra Corp., its former agency in Korea, integrating it into the group as a separate sales and service subsidiary trading as WITTMANN BATTENFELD Korea Ltd. In response to the positive development of the Korean market, the WITTMANN Group decided to cultivate this market more intensively than before. For this purpose, the former agency was taken over. Now, the subsidiary has an additional hall with 300 m² of floor space at its disposal for machine demonstrations, training courses, and equipment storage.

WITTMANN BATTENFELD Korea Ltd. currently employs six workers. Recruitment of additional staff is planned for the immediate future. The management remains in the hands of the former agency's Managing Director, Mr. Chong Kim, who has already contributed substantially to the past success of the WITTMANN Group in the Korean market.

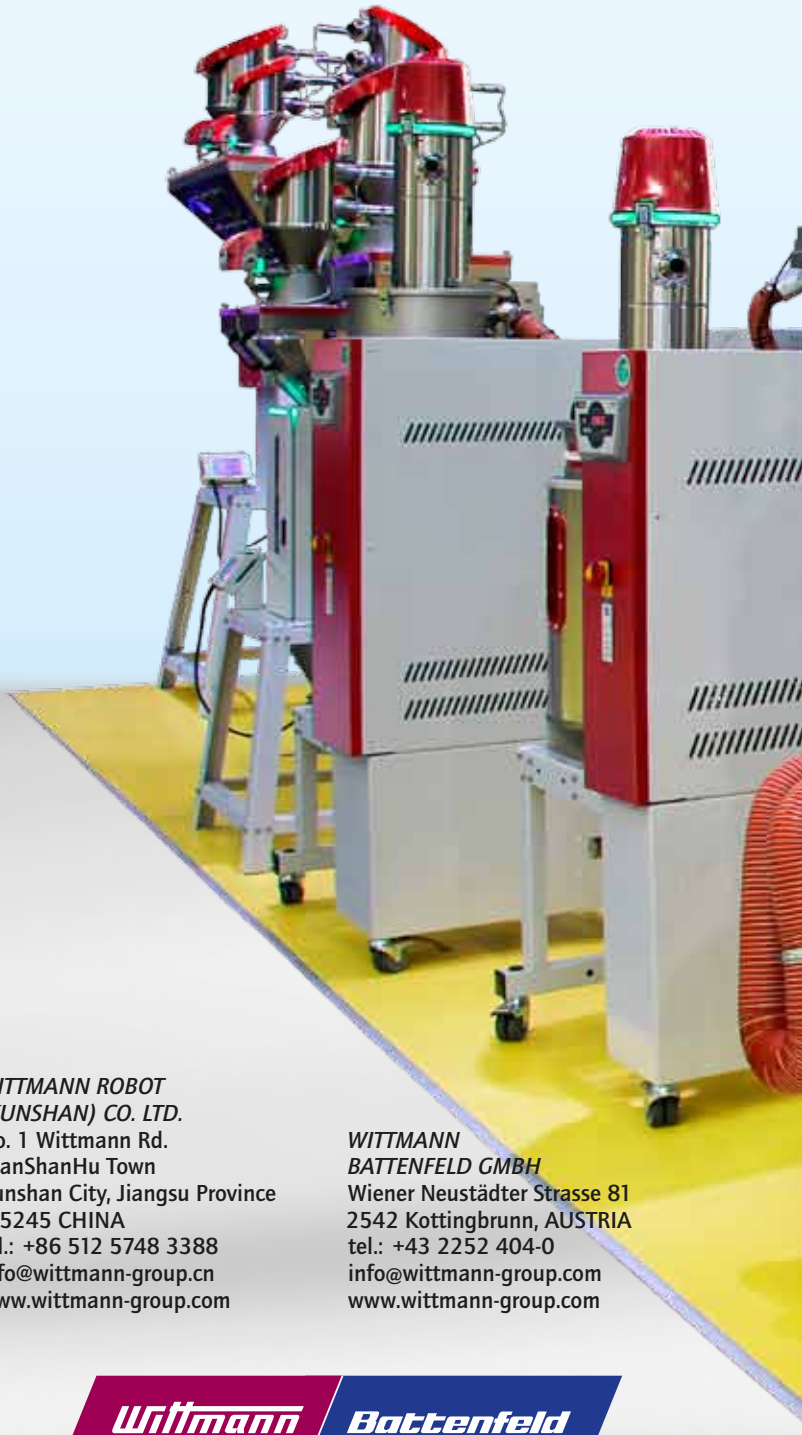
Chong Kim, the Managing Director of WITTMANN BATTENFELD Korea Ltd. based in Yongin.

The Korean market

Korea is primarily the home of a strong automobile and electronics industry, but the packaging and cosmetics sectors and the consumer goods industry also take up significant shares of the market.

The total market volume for injection molding machines amounts to roughly 2,000 machines per year, with about 30% of this volume delivered directly to Korea and the remaining 70% being required by Korean companies for their facilities outside Korea.

Michael Wittmann, Managing Director of WITTMANN Kunststoffgeräte GmbH, comments: "With WITTMANN BATTENFELD Korea, we are in a position to provide excellent service for the dynamic Korean domestic market. With its global sales network, our group is also in an optimal position to serve the companies outside Korea." ◆



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