

Wittmann

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innovations

Techniques – Markets – Trends

Volume 11 – 3/2017

*All the building blocks
for your entire system*



Battenfeld

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Editorial

Content



Michael Wittmann

Dear Reader,

Again, the topic of cyber attacks has been to the forefront of the news. The WannaCry ransomware achieved worldwide fame within a few hours, even though for inglorious reasons. Household names like Telefónica, FedEx, Renaults, Nissan, and many other companies and governmental institutions were affected, and had to temporarily suspend their services and production runs. One thing is for sure: this particular attack will not be the last one. WannaCry, like many other kinds of malware, was based on an exploitation of Windows™ security vulnerabilities. The basic rule of computer security is to regularly execute updates of the core operating system. These updates can counter the currently known attacks, but not the ones that are being drafted at the moment. The complexity of today's operating systems will always bring about security vulnerabilities, and consequently, no end of cyber attacks is in sight.

This relates to the topic of *Industry 4.0* in a significant way, especially with regard to our plastics industry. The developments taking place in our industry clearly point towards Ethernet connections. In the future not only injection molding machines will be involved, but also automation, peripherals and quality control systems. In other words, Our industry is set to realize the industrial *Internet of Things*. Consequently, these *things* have to face up to the relentless world of the cyber criminals, and – unsurprisingly – are not really that well-prepared to do so. The difficulty starts with the software updates. For industry products, these cannot be done automatically, because any update could cause unforeseeable consequences in regard to the functionality of the connected machine or the particular device. This means that industrial devices, only very shortly after they have been delivered, are not using the most up-to-date version of their operating system. In this respect, industrial facilities are keeping company with many consumer goods, such as cameras and refrigerators, for which some updates are available but only, at best, with a big delay.

Around WITTMANN 4.0, we have kept ourselves intensely busy with the security topic. A WITTMANN 4.0 working cell (machine/robot/peripherals) always also incorporates a specifically developed router with a restrictive firewall. Only via this router can outward communication (company network/Internet) be made possible. Therefore only the router needs updating. The other devices function exclusively within the entirely secure WITTMANN 4.0 subnet. Needless to say the security benefits are significant. More on this topic will follow in one of the next issues of our magazine. – I wish you a great reading experience with the *innovations* issue at hand!

Yours cordially, Michael Wittmann

Injection Molding

Successful insert molding



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PLASTIKA BEVC: insert-molded parts with WITTMANN Group machinery

From concept to delivery – this is the motto and the competitive advantage of PLASTIKA BEVC d.o.o., a family owned company, located in Šentjernej in the south-east of Slovenia that provides customized injection molding services, including insert molding. The company offers services for everything including the design and engineering phase, feasibility evaluation, project management, mold building, and material selection support. PLASTIKA BEVC relies on a wide range of WITTMANN BATTENFELD products.

Peter Zajc



PLASTIKA BEVC produces a wide range of injection molded plastic parts, not least many different high-class insert molded parts.

The PLASTIKA BEVC company was founded in 1980, and since then they have been working in the field of plastics processing. All along, their production was developing, undergoing constant upgrading and extension, adopting a wide range of technologically advanced production methods. For more than 30 years, they have focused all of their efforts towards the continued modernization of technology, and the constant improvement of production processes.

It is obvious that the PLASTIKA BEVC management is aware of the importance of up-to-date technology, as well as of a continuous improvement process. That's the reason why all plastic material is processed using only the best and most advanced injection molding machines. All process sections are monitored, which ensures absolute, precise repeatability. To guarantee the best product quality, the existing injection molding machinery and auxiliary equipment are renewed and upgraded all the time.

PLASTIKA BEVC has a vast production program consisting of more than 1,000 different products, covering a wide variety: ferrules, caps, inserts, adjustment parts, levelers, and all kinds of end pieces. The company supplies products to many important customers from Slovenia ranging from the electronics sector, medical and sports equipment, to



the furniture and metal industry. In addition to providing finished goods from their production program, PLASTIKA BEVC offers support for the development of new plastic parts based on the customers' demands. They also provide technical innovations and full

technical support. With more than three decades of know-how and experience in the fields of state-of-the-art technology and production, PLASTIKA BEVC is known to be able to quickly adapt to special market demands – even when it involves manufacturing the most demanding parts.

In recent years, the company experienced an annual growth of about 10–15%, and according to this, PLASTIKA BEVC invested vastly in new machinery and equipment almost every year.

Lasting cooperation with WITTMANN BATTENFELD

PLASTIKA BEVC has been cooperating with BATTENFELD, and the WITTMANN Group respectively, for almost 30 years now. In the course of the past few years, they ordered different WITTMANN BATTENFELD machines, such as of the HM type, and recently, some *SmartPower* models (ranging from 60 to 150 tons of clamping force) –

Injection Molding



Picture left: Matjaž Bevc (left), Managing Director of PLASTIKA BEVC d.o.o., and Peter Zajc, Managing Director of ROBOS d.o.o., in front of a new SmartPower 60/210 injection molding machine from WITTMANN BATTENFELD with the new WITTMANN WP80 sprue picker. Picture right: Matjaž Bevc (left) and the Šentjernej PLASTIKA BEVC team.



but also different WITTMANN auxiliary equipment, such as TEMPRO primus C90 and TEMPRO basic C140 temperature controllers, MINOR 1 and MINOR 2 granulators, DRYMAX E30 and DRYMAX E60 material dryers, FEEDMAX S 3 and FEEDMAX S 3-net material loaders, as well as the latest sprue picker model WP80, to ensure an optimal production environment for their growing business.

Last year, PLASTIKA BEVC acquired a new SmartPower 60/210 B6^p injection molding machine, as well as a SmartPower 120/525 B6^p, two of the first in the Slovenian market.

PLASTIKA BEVC have their own mold construction department.



This was one further step taken towards a significant reduction in energy consumption, because in previous years, the company had already ordered HM 150 and HM 90 injection molding machines equipped with servo-hydraulic drives.

All these machines are equipped with the special option of cycle start combined with semi-automatic closing of the safety gate, to ensure the optimal manual insertion of a great variety of different metal parts – which enables PLASTIKA BEVC to produce even a very small quantity of products for just-in-time deliveries. This has proved to be an advantage, especially in the furniture and metal industry, where a fast response to small quantity orders is of great importance.

Matjaž Bevc in front of a WITTMANN BATTENFELD HM 150/750 injection molding machine.

Discharging of finished parts.



The WITTMANN Group, with its wide portfolio of machines and peripheral equipment, has been well-known on the Slovenian market for many years now, and therefore is present in the entire plastics processing industry. ♦

Peter Zajc is Managing Director of ROBOS d.o.o. in Ljubljana-Črnuče, Slovenia, the WITTMANN Group agent for Slovenia, Croatia, and Bosnia-Herzegovina.

New ground broken and conquered

Only some years ago, it was not possible to produce injection molded parts from polyvinylalcohol (PVAL). This changed, however, with the solutions discovered by the Austro-Polish injection molding company Buzek Plastic, which developed over a period of 10 years and in several evolutionary steps a mass production technology for making water-soluble, multi-chamber laundry detergent containers, of which it is now producing 1.3 billion units per year. The machinery and automation technology for this purpose was supplied by WITTMANN BATTENFELD.

Reinhard Bauer

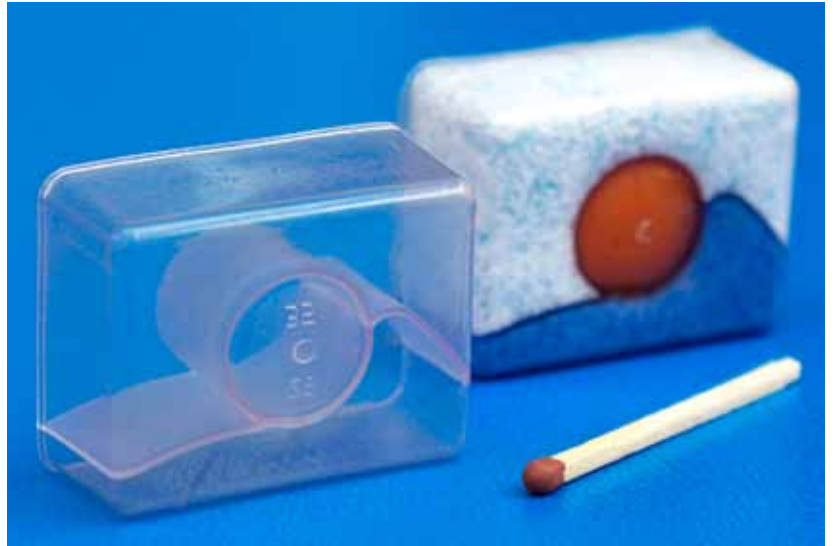
Polyvinylalcohol containers, resistant against acids and alkaline compounds, but soluble in water, are used in large numbers for laundry detergent applications.

*(Fotos:
Reinhard Bauer)*

Polyvinylalcohol (PVAL) is a plastic material little known so far. It offers the outstanding attribute of solubility in water with simultaneous high resistance to most contact chemicals. Moreover, PVAL is an excellent film formation agent with good wetting properties. Consequently, watery solutions are processed as ingredients for glues or adhesives and for thickeners in hair sprays or shampoos. They are also used as additives in paper processing, or as mold release agents in the production of fiber composite parts, which can subsequently be rinsed off. In PET bottle production, PVAL is used as a CO₂ barrier layer. It is also quite common in film production, for example for packaging bags intended to be dissolved. Throughout its history of almost a century, polyvinyl alcohol melt has hardly ever or never been processed by injection molding. The main reasons were a lack of product ideas as well as fluctuations in material key figures by up to ± 20%.

This was the starting point in 2003, when a multi-national chemical company made an enquiry at Buzek Kunststoffverarbeitung in Austria about production equipment to manufacture injection-molded single portion packages for dishwashing granulate.

Andreas Huber, Managing Director and CEO of Buzek Holding GmbH in Austria and Buzek Plastic Poland, recalls: "New technical challenges in terms of injection molding processes have always fascinated me. Here, the foundation was laid while I was still Product Manager for Special Materials at BATTENFELD. I could hardly believe that nobody had yet succeeded in manufacturing mass-produced parts from polyvinyl alcohol. This only became clear to me after the first plasticizing tests, for the results were very similar to wallpaper paste. So the material stuck firmly to the mold. Now I knew that the road to series production would be a long one. But on the other hand, I also suspected that if we succeeded, the product would have an enormous potential. So today, I am very glad that my business partner Günter Buzek and I were also able to gain the cooperation of the BATTENFELD management for this project. Their giving it the green light meant that we were jointly able to start the systematic development of an appropriate application technology."



A low-viscosity type of PVAL emerged as the basis for an injection-moldable type of feedstock. With this, the thin-walled 30 × 40 × 15 mm container was produced with a single-cavity mold, then a 4-cavity and finally a 12-cavity mold. Tests at the BATTENFELD technical lab on the all-electric injection molding machine models BA 1000/500 CDK-SE and EM 1600/350 revealed that fast injection and high-precision injection pressure control would bring about the break-through, even though reject rates of about 15 to 20% still had to be accepted, due to batch-related fluctuations in material data.

Application technology becoming a project in its own right

In the course of testing, it became obvious that PVAL processing required significantly more expert knowledge than could be expected from a newcomer to injection molding production such as the chemical company which had made the enquiry. Consequently, Andreas Huber decided jointly with Günter Buzek to present their offer to the chemical company for handling the production as a sub-supplier. They still maintained this offer, even when the negotiations were no longer about delivering supplies from Austria, but about the construction of an "in-house" production facility at the company's Polish filling plant, and they established Buzek Plastic Poland Sp.z.o.o. in May 2005. Using three hydraulic HM 270/1330 machines from BATTENFELD with rechargeable injection batteries, the leap from

a 12-cavity test mold to 32-cavity hot-runner molds was made, and series production was started. The key factor was a situation-related production method, which consisted of manual parameter adjustment based on continuous observation of the material's behavior and included 100% visual part inspection by operating staff.

32- and 64-cavity production cells become standard

After about another year, the process technology and the compound had been stabilized to the point where a further increase in capacity could be considered. As the product design was not altered, the cycle time remained unchanged



at 28 sec, with a scrap rate of about 15 per cent. But the method of visual parts inspection had to be improved. Instead of separate inspection on every machine, a multi-track parts transfer system was installed, to which several machines were connected, and which transported the parts to a central inspection station. In 2008, the production routine had been stabilized to the extent that the number of

cavities could be doubled once more, this time from 32 to 64. Also the cycle time was to reduce. The molded part was re-designed in close cooperation with the customer's engineers, with a selective reduction of wall thicknesses which led to a 15% decrease in part weight and cycle time. But this required larger and faster machines.

Because of positive past experience, BATTENFELD was again selected as equipment supplier, and the hydraulic models chosen were HM 400/2250 machines, again with rechargeable injection batteries, including WITTMANN robots and parts transfer systems. The result of this was impressive: within three years from start-up, the production output had increased by 300% and simultaneously reduced

the scrap rate from 15 to 9%. The high output volume forced to create a new concept for quality inspection of the finished parts. This was no longer feasible using human staff. To solve this problem, the Buzek team installed a supporting visual inspection system with automatic separation of rejects. This system was able to recognize only the parts' general completeness, but not every defect in minor details.

New plant according to Industry 4.0 concept

In 2012, when the space available at the in-house production facility was fully utilized by 19 production units and further growth rates were



planned, Buzek Plastic decided to build a new, additional production facility outside the customer's plant. The latest production methods were to be implemented, unencumbered by existing structures.

The guiding principle was the desire for complete networking of data across all production steps, with an additional facility for automatic control within pre-set quality tolerances, as described in *Industry 4.0* concepts. The central idea was to create an automatic zero-reject system by automated interaction between the various production steps.

The Managing Director of Buzek Plastic, Andreas Huber, explains: "After we had communicated our ideas to several machine manufacturers, we finally found again the right partners in the WITTMANN Group team, which is open for innovation.

Thanks to their extensive production centered around injection molding machines and their pioneering work with interface technology (WITTMANN 4.0 system), our concept of a production plant regulating itself within certain limits was not dismissed as a kind of utopia, but realized step by step together with us" >>

The production plant of Buzek Plastic Poland in Plonsk, which was built following the principle of data networking according to an Internet 4.0 concept.

(Foto: Buzek)

Picture left: Production cells around a WITTMANN BATTENFELD MacroPower E 450/2100 are used in production. Their high-speed injection capacity combined with high positioning accuracy offers the necessary prerequisites for injection molding of polyvinylalcohol. Picture right: Andreas Huber, Managing Director of Buzek Plastic.

64-cavity hot-runner molds are used in production.

Parallel to the plant design, a re-design process was initiated in cooperation with the customer, whose agenda included a cost cut by way of a further weight reduction and significant shortening of the cycle. These targets were reached in the form of 10% less weight and an expected 25%

Every workpiece carrier passes through a vision control station (shown at the bottom on the left) for automatic scanning of every molded part from 5 directions.



The quality management system is able to analyze 5 pictures of every part. 12 cameras plus a mirror system are used. The system shoots 64 x 5 pictures within the cycle time! The analysis system has been set to identify 23 different potential defects.



Pick & place handling devices subsequently sort out all parts identified as scrap and replace them with good parts (see good parts buffer at the center above the handling station).



The parts are deposited in transport trays inside shipping boxes and then passed on to the filling machine.



Reinhard Bauer is a freelance journalist and communications consultant specializing in plastics technology.

cycle time shortening. But the capacity of the hydraulic machines was stretched to the limit. Consequently, a change-over to servo-electric technology was the only alternative. However, such aggregates were not yet available in the required size. Therefore, some additional development work had to be done. In a lively dialog between Andreas Huber and the BATTENFELD engineers, the development of the performance specifications was addressed, which were then realized for the first time in the form of the hybrid machine model *MacroPower E 450/2100*, with a hydraulic 2-platen clamping unit with 450 tons clamping force and a servo-electric size 2100 injection aggregate.

Each machine was transformed into a production cell by adding a linear robot and a revolving pallet transfer system with integrated parts inspection and handling stations. Of special significance is the vision system for part quality assessment, adapted to the drastically increased production quantities and quality requirements. Now, equipped with 12 cameras and a mirror system, it takes photos of every one of the 64 parts from five directions and passes these on to the downstream analysis system. This system detects 23 different kinds of defects. Faulty parts are sorted out by a pick-and-place handling device and replaced by good parts from a parts buffer. This ensures that only 100% good parts are passed on to the packaging station. Within the peripheral handling system, all finishing stations communicate with each other according to a specially developed logistics algorithm to compensate capacity fluctuations.

The performance level achieved at the new plant is something to be proud of. Not only was the output per injection molding cell increased by more than 400% within eight years, but the scrap rate was reduced from originally 15% to now less than 3 per cent as well.

The next evolutionary stage is in view

Now all fully automatic production cells at the new plant are once again utilized to 100%. The next evolutionary step is replacing the older equipment on the in-house production floor by additional production cells at the new plant. Again this not only involves another increase in capacity, but also another rise in efficiency. Thanks to latest innovative design adjustments which will enable a further reduction in product weight, there are realistic prospects of another 300% increase in productivity. ♦

Buzek Plastic Poland Sp. z o.o.

Buzek Plastic Poland based in Warsaw is a member of the Buzek-Huber Group. The company was established in 2005 and is currently the world market leader in processing water-soluble plastics by injection molding. The company's origin is an in-house production facility inside the Polish plant of an international chemical company. In cooperation with this company, methods of injection molding water-soluble plastics were developed and patented, and used by Buzek Plastic exclusively for parts production. In 2013, a new production plant according to Industry 4.0 standards was opened in Plonsk Buzek Plastic Poland's second business area is the development of new fields of application for water-soluble plastics for other industrial purposes.

PT. WIK Far East Batam raising the bar with the WITTMANN Group

The Indonesian branch of the German WIK Group decided to install an entire central material drying and conveying system from the WITTMANN Group. In addition, PT. WIK Far East Batam also uses WITTMANN robots and temperature controllers. – The outcome is a true success story.

James Kang

WIK was founded in the early 1950s, and is a privately held contract designer and OEM for electrical appliances. Since then, they have created and developed hundreds of system solutions, and they have produced millions of devices.

The company has a production facility in Shenzhen in China, where hair care and body care products are manufactured that originally were designed in Germany, as well as kitchen appliances, water distillers, and power tools.

In order to meet their global customer's requirements for innovation in a highly competitive market, the WIK Group added a new factory on Batam Island in Indonesia to their existing facilities in Germany, Hong Kong, and China.

PT. WIK Far East Batam, located at Panbil Industrial Estate, is only 15 km away from the Batam Centre International Ferry Terminal. The company is one of the most influential injection molders of plastic parts, and one of the most innovative industrial leaders in the entire region, currently operating 30 conventional injection molding machines. By 2019, WIK Batam is expecting to have increased capacity to a total of 120 injection molding machines.

Equipment from WITTMANN BATTENFELD

In March 2016, WIK Batam invested in a complete centralized material handling system from WITTMANN BATTENFELD Singapore that is able to manage a throughput of up to 400 kg of plastics material per hour. The system consists exclusively of WITTMANN auxiliary equipment:

- FEEDMAX material loaders.
- DRYMAX E1200 battery dryer.
- SILMAX material hoppers.
- CODEMAX coupling station.
- GRAVIMAX material blender.
- GM 29 pump system.
- XMB filter station.
- M7.3 IPC control.
- LS-B30T Line Server.

"I am very enthusiastic about the WITTMANN M7.3 IPC touch-screen control. It allows my team to monitor and adjust everything using only this single tool: vacuum blowers, hopper loaders, valves, blenders, and so on", says



From left to right: Jimmy Teo, Managing Director of WITTMANN BATTENFELD Singapore; Dr. Werner Wittmann, President WITTMANN Group; Gary Krompaszky, Head of Molding, Alfons Haeusler, Molding Technical Adviser, Stefan Roll, Plant Manager (all WIK Far East Batam).



DRYMAX E1200 battery dryer with SILMAX drying hoppers.



GRAVIMAX blenders on pedestals, right behind filter stations and vacuum pumps.

WIK Plant Manager Stefan Roll. Apart from the centralized material drying and conveying system, working with the WITTMANN W8 series robots has been an entirely positive experience for WIK Batam. In addition, the company also uses WITTMANN TEMPRO water temperature controllers of an operable temperature range of up to 180 °C.

"We really want to expand our operation again in the near future, and as a result, we are already thinking of the upcoming acquisition of the equipment we will need— and this will possibly also come from the WITTMANN Group", says Harvey Ashley Fletcher, WIK General Operations Manager. ♦



James Kang is the Sales Manager of WITTMANN BATTENFELD (Singapore) Pte. Ltd., the Singapore based sales branch of the WITTMANN Group.

The ARaymond company and their G-Max 33 experience

Today, industrialists are aware of the impact of the plastics industry on the environment. To answer the growing demand in the field of recycling, WITTMANN is offering the new G-Max 33 conventional blade granulator for considerable energy savings (- 30 % compared to similar other model ranges in the market), as well as a reduction in noise. The G-Max is the quietest granulator of all.

Julie Filliere

Before the G-Max 33 granulator was launched and merchandized, WITTMANN BATTENFELD France wanted to ask one of their customers to test the new product. The ARaymond company was chosen, being a globally active industry group.

Founded in Grenoble in 1865, ARaymond can be proud of the progress they have made. Today, the company is present in 21 countries with 35 enterprises, and generates an annual turnover of more than 860 million Euros, 86% of which are generated outside of France.

Pierre Monvoisin (left), Technical Manager of the granulator range, WITTMANN BATTENFELD France, and François Marthely, ARaymond Maintenance Technician.



At ARaymond's French site in Saint-Égrève, with its metal and plastics processing workshops, mainly automotive, industrial, and animal health parts are produced. It's an impressive production site with more than 700 employees working in a 24,000 m² space.

Production site of ARaymond in Saint-Égrève, France.

The injection molding division, counting more than 130 injection molding machines, is managed by Jean-François Wilquin who, on inquiry, willingly talks about the specific test results the G-Max 33 could achieve.

Testing the new G-Max 33

At ARaymond, the G-Max 33 granulator was capacity-tested 24/7, processing about 400 kg of cores and parts made of EPDM, PA, PE and PP every day – sometimes



running more than eight tons of granulated material during the course of one month.

ARaymond needed a granulator that allowed for a smooth re-use of the grinded material. Until they used the G-Max 33, their granulator had produced too much dust, making the use of regrind more complicated. Asked about the advantages of

the G-Max 33, Jean-François Wilquin states: "First, we appreciated the quality of the regrind. We wanted a granulator that produced less dust. In this regard, the G-Max 33 facilitated our inline-recycling process, and kept our installations clean. In my point of view, these two aspects are the most striking advantages of the G-Max 33. In addition, we also liked how easy it was to clean the device, and we liked the design in general, and its visual status display."

The positioning of the staggered knives on the hybrid rotor ensures a progressive cutting of the material, producing uniform regrind and minimizing dust formation. The G-Max 33 is easy to clean, due to both its large hopper opening and its easily accessible screen.

The possibility of removing the front plate of the cutting chamber gives easy access for the replacement of the blades, and results in significant time savings in case of a thorough chamber cleaning.

Jean-François Wilquin continues: "To us, another important aspect of the G-Max 33 is its very quiet operation. Again, this makes a real difference to our other granulators." The low noise level is due to the use of so-called "silentblocks", which absorb vibration, but also to the completely sound-proofed material hopper.



"Finally", says Jean-François Wilquin, "we were surprised by its strength compared to its size; and also, the granulator needs little space." The 3 kW Premium Efficiency motor and the high-inertia pulley contribute to lowering the installed power while providing optimum performance. This means additional energy savings compared to other granulators that are using 5 kW motors for similar operations.

Additional intelligent features

Another special feature of the new G-Max 33 is its detachable remote control. With the remote control, the granulator can be placed inside a safety guard and still be operated from the outside. The direct communication between the injection molding machine (or the robot, respectively) and the granu-

lator again reduces the energy consumption, because when the machine and/or the robot stop, the granulator stops too. Although the configuration of the ARaymond workshop did not allow them to use one hundred percent of the control's functions, the teams appreciated its easy handling, the display of process information, the multicolored status display, and the audible alarm.

The ARaymond Production Department liked very much the 16-liter regrind collection bin. This high capacity avoids requiring an additional container for the storage of regrind. This could be the case if the weight of the sprue were significant in comparison to the weight of the parts, or if there were very few defective parts thrown into the granulator during the start-up of the production, or if the customer would heavily increase the regrind percentage at the injection molding machine's material loader.

Another significant aspect represents the special antistatic capacitive sensor allowing detection of when the regrind reaches a high level. This function is also very highly appreciated by the ARaymond production team.

ARaymond and the WITTMANN Group

When asking Jean-François Wilquin about choosing WITTMANN BATTENFELD as a partner, he refers to such important things as proximity, responsiveness, availability, listening to the customer, and good relationships between teams – especially technicians and sales people.

This feeling of companionship during the product development phase was seen as a new experience, a sign of mutual trust, and once more was deeply appreciated. WITTMANN BATTENFELD France SAS, playing a prominent role within the WITTMANN Group, always waits in the wings to completely satisfy their customers. And the company is grateful that ARaymond shared their very positive experience they have had using the new G-Max 33 granulator from WITTMANN. ♦

Joris Dei Negri (left), ARaymond Maintenance Manager, and Jean-François Wilquin, ARaymond Head of Injection Molding Division.

The latest WITTMANN development in the field of recycling: the new G-Max 33 conventional blade granulator.

Julie Filliere is the Assistant to the Management, and is in charge of the marketing activities at WITTMANN BATTENFELD France SAS in Moirans.



Highest reliability through temperature controllers from WITTMANN

The Rejlek Metal & Plastics Group – www.rejlek.at – is widely known for high-class injection molded parts that are ordered by the most demanding purchasers. For many years now, the company has relied on WITTMANN temperature controllers. The tempering precision and durability of these devices lives up to all expectations.

Bernhard Grabner

The Vienna production site, located in the 23rd municipal district, is equipped with 70 injection molding machines. Premium-quality products for the automotive industry are produced there, amongst other parts as well. The Rejlek Group has another injection molding plant in Hungary housing 40 injection molding machines with robot-aided enameling lines including imprinting and assembly equipment. All of the Rejlek Group companies operate independently, but exist under one umbrella.

Manufacturing of a rear flap handle at Rejlek Metal & Plastics Group in Vienna.

*Picture above: Removal gripper.
Picture below: Part stacking on the conveyor belt.*

The production at the Vienna plant is run in three-shift operation. The Rejlek Metal & Plastics Group manufactures injection molded parts using processing machines with clamping forces ranging from 30 to 1,500 tons, and has in-house tool making capacities for molding and punching tools in Vienna and in Slovakia.

The production of automotive components – in the first instance of plug connection components – is of particular importance to the companies of the Rejlek Metal & Plastics Group. Here, the spectrum of products ranges from single-pole to 102-pole connector casings. In addition, the automotive sector is supplied with parts from the 2-components production and with punched metal parts.

Further production emphasis is laid upon fuse and relay boxes, parts for the consumer electronics and the appliance industries (cases for SieMatic), as well as for the medical-technical sector.

WITTMANN temperature controllers at the Rejlek Metal & Plastics Group in Vienna

In the matter of tempering technology, the Vienna production plant has used WITTMANN temperature controllers for many years now. Initially, this involved TEMPRO temperature controllers that were equipped with mechanical seals. For quite some time now however, temperature controllers with magnetically coupled pumps have been in



use, with currently some 50 TEMPRO plus D160 single and dual zone units equipped in this manner. As is sometimes the case, mechanical seals can be exposed to a higher stress level that may lead to leakage depending on the water quality, the pressure conditions, and the conditions within the mold, for example when the cooling channels are relatively tight. Temperature controllers with magnetically coupled pumps have no mechanical seals, and thus not only have increased ease of servicing, but also a much longer lifetime. All the pressure devices of the TEMPRO plus D series (140–



ing water flow and the water return flow. Altogether, this bypass serves as a special safety measure. In case of very high process temperatures, the cooling water passing the return flow is also much hotter.

If the piping of a production facility also happens to be made of plastics, the high temperatures could affect the return pipes. This could even lead to a leaking piping system, amongst other possible damage. Here, the temperature-controlled cooling water bypass produces the appropriate remedy. When the return flow temperature reaches 80 °C, the bypass opens and intermixes cold water from the cooling water flow into the hot return flow, thus lowering the return flow temperature correspondingly.

Connector casings made of PBT, stacked on the conveyor belt.



Demanding parts for demanding customers

The production of one very unique automotive part that is manufactured at the Rejlek Metal & Plastics Group in Vienna poses a serious challenge. It is about a handling element, a camera carrier, mounted in the rear flap of a vehicle from a well-known automobile manufacturer. In this case, it is not only precision that is an essential requirement, but also tightness.

Three of the 50 WITTMANN TEMPRO plus D160 temperature controllers that are installed here.



This part is produced through injection molding around two inserted screws, and in addition, a circumferential seal is molded onto it. The technique executed here is multi-component injection molding, in which different processing temperatures are needed for the different components.

The hard component consists of PA 66 and needs a temperature of about 70–80 °C. The soft component consist of TPE, allowing a maximum temperature of only 40 °C. The individual sectors of the mold therefore are insulated conveniently from each other. As far as it concerns the process parameters, only a narrow range with very small tolerances is made available. Here, the highest tempering precision is absolutely crucial. Another

TEMPRO plus D160 temperature controllers are equipped with a generously dimensioned color touch-display.

180 °C) are equipped with magnetically coupled pumps as a standard feature. These devices are an essential contribution to the reliability of the production process due to the fact that they are capable of being integrated seamlessly into existing systems, and also due to their high tempering accuracy, and to the flow measurement and pressure monitoring possibilities they offer.

The WITTMANN temperature controllers that are installed at the Rejlek Metal & Plastics Group are equipped with a cooling water bypass. It is located between the cool-

molded automotive component manufactured at Rejlek Metal & Plastics Group is a 102-pole connector casing made from PBT (Polybutylenterephthalat). In this case as well, high tempering precision is needed because the mold temperature exerts some influence on the part quality and on the cycle time.

On the whole, the precision and consistency of the installed WITTMANN temperature controllers make an important contribution to the reliability of the production process – and subsequently, also to quality assurance. ♦

Bernhard Grabner is Head of the Graphic Design Department and the Editorial Office at WITTMANN Kunststoffgeräte GmbH in Vienna, Austria.

Automation from WITTMANN is the winning solution for RenyMed

RenyMed, with production plant in Baldwin Park, California, is an industry leader in the molding of specialty products for the medical market. Automation systems from the WITTMANN Group fit their needs and helped them improve their process.

Jason Cornell



View of the RenyMed automation system: WITTMANN robots working on the RenyMed injection molding machines at their plant in Baldwin Park, California, USA.

RenyMed began in the mid-1980s as a one-man operation on borrowed equipment in rented space in California. Today they are one of the premier molders of medical products in the world, doing work for Fortune 100 medical device companies across the globe. In 2009 they moved to a new state-of-the-art facility in Baldwin Park, California, which is certified ISO 13485. They have over 50 employees working on 17 injection molding machines in a 20,000 square foot facility that includes a 4,000 square foot cleanroom. How did RenyMed go from a side project for Steve Raiken to an industry leader? According to Raiken, RenyMed President, “We have always been innovative. I think we are attracted to the jobs that other companies can’t or won’t do.”

RenyMed prides itself on its capabilities. They are a fully integrated molding shop, building molds and then molding the parts. Many of the jobs that they get are ones that were

attempted at other molding shops and failed. The customer needs someone who can get it done. Combine that with their specialty in the medical market, which is oftentimes “high mix and low volume”, and the company has developed an ability to rapidly change the parts in production.

The need is to be flexible and adaptive, which means they also need production equipment that can move as quickly as they do. And that’s the point where the WITTMANN Group comes in.

“We first became aware of the WITTMANN Group at the K Show in Düsseldorf, Germany, where we saw an integration of one of the WITTMANN robots on a WITTMANN BATTENFELD 40-ton injection molding machine”, says Raiken. “Our engineers were impressed, and had a vision of using the robots to improve not just our process but our employee safety. We went for it and have been using their robots ever since.”

The right fit

Another major reason for the purchase of these robots was that it simply made the most sense with RenyMed's space and the application they needed them for. Being in California, real estate and labor are expensive resources. Because of this, RenyMed has a necessary awareness of space utilization. They fit as much molding power as they could into their cleanrooms, and they wanted a robot that would be equally space-conscious. WITTMANN's robots were the only robots that RenyMed tested with a low enough ceiling height to execute a full stroke inside of their cleanroom. And WITTMANN Group also provided

it is a full compliant part. This quality control feature was custom designed and built, and has performed as designed, with RenyMed molding over a half million shots without a single complaint.

"It's been a real pleasure working with RenyMed to integrate their process to our robots," says Jason Cornell, West Coast Regional Manager for WITTMANN BATTENFELD. "When we can help our customers be more innovative by supporting their vision for how to use our robots, it gets exciting for us because we can not only test the limits of our own company's impressive technology, but we can see firsthand the benefits that it can result in for the customers who get to use it every day."



A view of the RenyMed inspection system.

its world-renowned support from day one. "WITTMANN BATTENFELD was very helpful with solutions when we presented problems," says Raiken. "They modified the robot to better fit in the room. We told them what we needed and where it needed to reach, and they trimmed the rack and positioned it to fit perfectly. Today it's running 24/7."

Flexible design with a vision for quality

In addition to the robot's ability to fit the room, RenyMed also worked with WITTMANN BATTENFELD to integrate vision into the robots. After connecting with a camera supplier to get the right operating system, they designed and built a custom end-of-arm tool for their robots to be able to pick the part out, take a photo when the robot has the part, allows the mold to close, and then takes two more photos on each end to inspect the part dimensionally and make sure

The open architecture design of the controllers in particular was what helped make this vision integration possible. "WITTMANN was okay with us doing what we wanted to their robots, including adding the cameras, and they were helpful with integrating our changes," says Raiken. "They gave us the ease of integrating the robot with the freedom to utilize it how we wanted. Boiling water with nuclear power is overkill – WITTMANN BATTENFELD gets that and its one of the reasons we've been able to work so well with them."

The WITTMANN BATTENFELD robots have allowed RenyMed to inspect 100% of their parts, and have also resulted in other benefits that come with automation (repeatability, increased safety). This, plus the controls that allow for easy handling, has helped RenyMed move even more quickly with each changing project and continue to succeed at the "hard stuff" that keeps coming their way when it's too much for everyone else. ♦

Jason Cornell
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Regional Manager
for Robots
and Automation
at WITTMANN
BATTENFELD, Inc.,
USA, based at the
company's West
Coast Technical
Center in Corona,
California.

WITTMANN BATTENFELD UK is satisfying a variety of markets



Barry Hill (far left) with a selection of the WITTMANN BATTENFELD UK team.

Barry Hill, WITTMANN BATTENFELD UK Managing Director, reflects on UK molding today and the challenges that lie ahead.

For nearly 30 years Wellingborough has been the location for WITTMANN Group sales and activities in the UK and Ireland. Led from the start by respected plastics industry figure, Barry Hill, the UK branch smoothly incorporated the BATTENFELD side of the business from April 2008 and has steadily increased its sales and market share since.

Ablly assisted in sales by Paul Dummer, Daniel Williams and Stuart Spicer, and in service and administration by Adrian Walters and Tracy Cadman, Barry's approach to the company's growth has been to promote the growing revival of the BATTENFELD brand and also to ensure that UK customer service reaches excellence in every department.

"We currently maintain a total of twelve service engineers on the road and this factor – coupled with our Web-Service 24/7 from Vienna serves to keep our customers fully satisfied and fully operational", he says. WITTMANN BATTENFELD UK programs

of customer care via training programs delivered here in Wellingborough and also at Vienna Headquarters are now growing in popularity. "There is very much in this plastics processing business to learn and relearn and the UK team is fully committed to that process", Hill says.

With leading injection molding machine models such as *MicroPower*, *EcoPower*, *SmartPower* and *MacroPower* now on the market the BATTENFELD brand is fast winning new friends and gaining market share.

The coming year will see WITTMANN BATTENFELD UK seeking to further increase its sales of injection molding machines while also seeking to increase market share in regard to automation systems. "A one-stop shop means that we need to keep all our plates spinning in all categories", he says, "and we are confident of doing just that in the months leading up to Interplas 2017."

Hill says that "we are lucky to have WITTMANN product design supporting us every step of the way – since this is always based on very close attention to what the customer actually needs – whether saving time, effort, energy or money."

Brexit and future developments

As a company the UK branch posted years of successive growth from 2015 onwards – and intends to better the performance again through 2017.

Will Brexit play any part over the coming months? "From our perspective we expect a slow Brexit process over years rather than months. One has to look at the positives. For example, I see that UK trade-molding sector has an opportunity to re-market itself as a competitive global workshop – and we see many molders targeting export activity and doing just that." The Interplas 2017 exhibition in Birmingham is also expected to provide many positives. "We expect many processors to specify and spend at that point – and we shall be working closely with them to satisfy their requirements."

Since the UK last appeared in the *innovations* magazine WITTMANN BATTENFELD has become a leading global force in injection molding. "The WITTMANN Group", says Hill, "has revived the BATTENFELD brand and modeled it for a successful future. The UK branch feels very fortunate in tackling our markets with such quality resources at our disposal." ♦

Belgium: WITTMANN BATTENFELD Benelux

WITTMANN BATTENFELD Benelux NV has been known in the Belgian market for more than 30 years, and in the overall Benelux market for more than 13 years. The company is based in Holsbeek, Belgium, only 36 km away from Brussels.

At the moment, the team consists of three service engineers, of which two are based in Belgium and one in the Netherlands. In addition, the Benelux branch employs one person in the field of customer service, one administration employee, and one sales specialist.

WITTMANN BATTENFELD Benelux recently moved to a new facility to undergo further expansion, looking ahead to the installation of a new *SmartPower* injection molding machine with a clamping force of 60 tons and a WITTMANN W821 robot. As a result, the company will gain both a production facility for demonstration purposes and, in the same breath, also a local training facility.

In the mid-long run, the Benelux branch of the WITTMANN Group will strengthen the Service Department with an additional service engineer, and also an additional sales person will contribute to supporting the customers.

The Benelux market

Some years ago, Belgium had a very strong automotive industry of which most of the plants are closed today, many of them having moved to other countries. As a consequence, Belgium today is a trade molding industry region, much more so than the Netherlands are. Nevertheless, the Benelux market is a technical market with a lot of fresh innovations that are excitedly discussed between the end customers and the molding companies.

Since the production runs have become smaller, many more mold changes have to be executed at the molding machines. At best, only two changes per day are necessary, but some of the local companies need to

execute six or even eight laborious mold changes per day. Because of this, the Benelux WITTMANN BATTENFELD customers want to get most of their molding equipment, usually in a highly automated manner, and as a result the company's respective market share is growing year by year.

Future perspectives

For some of their customers, WITTMANN BATTENFELD Benelux provides all the services of a proper one-

stop shop. This is a development that has increased during the past few years. With the strengthening of the Service Department and the Sales Department, as well as the installation of the new demonstration machinery, the company will serve the market even better in the future. And – also most important – the WITTMANN Group's versatile range of injection molding machine models puts WITTMANN BATTENFELD Benelux in the position to serve many other market segments in the Benelux area. ♦



The team of the Belgian WITTMANN Group branch, headed by Managing Director Michel Van der Motten (right).



View of WITTMANN BATTENFELD Benelux NV premises in Holsbeek, Belgium.

Czech Republic: WITTMANN Group branch still growing

WITTMANN BATTENFELD CZ spol. s r.o. in Písek, the Czech branch of the WITTMANN Group, is undergoing the second stage of its extension. On April 28, 2017, the foundation stone ceremony for the annex took place.

Architectural model of the Czech WITTMANN Group branch in Písek, showing the new annex (red part of the building in the center of the picture and white parts on the left side and the right side of it).



The groundbreaking ceremony. From left to right: Stanislav Bočánek (General Manager Prima, construction work), Michal Slaba (General Manager WITTMANN BATTENFELD CZ spol. s r.o.), Jaroslava Strnadová (Mayor of Dobruška in the Písek District), Michael Wittmann (General Manager of the WITTMANN Group), Václav Hodan (Architect, planning).

The currently existing premises of WITTMANN BATTENFELD CZ have been used since the beginning of 2011, and are now adding two main new elements: a second two storied administrative building for the service and engineering department, and an additional workshop that will serve the manufacture and assembly of automation and safety guard systems after completion. The overall floor space will be increased up to 1,600 m².

Initially, WITTMANN BATTENFELD CZ had its principal office in rented premises, not foreseeing that the company's future developments would be quite so dynamic. Between the years of 2010 and 2015, annual turnover of the Czech branch quadrupled, and the number of employees rose from 18 to 38, necessitating the need to further enlarge the premises established by the company in 2011.

For both the range of peripheral equipment and injection molding machines, WITTMANN BATTENFELD CZ had managed to essentially increase its respective market shares in the Czech Republic and in Slovakia.

Michael Wittmann and Michal Slaba presenting the model with the annex. The branch extension will be finished in 2018.



Automation is pushing further development

The 2011 relocation led to the foundation of an in-house engineering department for special automation solutions that was expanded several times in the course of successive years. Today, the department employs eight persons, four of them working at 3D workstations. This department's automation projects alone resulted in a remarkable turnover of 1.5 million Euros in the accounting year 2015.

In view of ever-rising demand in this field, the automation department can be expected to grow intensely during the coming years. This circumstance, coupled with rising demand for manufacturing space and storing capacity, led to the decision to create the annex.

The premises' extension

The project scheduling work began in 2016, at the end of that year the location license was decreed, and in February 2017 the building

permission was issued. The construction work proper began in May 2017. The opening of the new premises is intended to happen in June 2018 also marking the 15th anniversary of the founding of WITTMANN BATTENFELD CZ spol. s r.o.

After the completion of the annex, the Písek building area will have increased to 1,367 m² from the current footprint of 745 m². In addition to the extension of the premises, more car parking space will be created. The entire building plot will nearly double to 1,601 m² from the existing 874 m². ♦

Atlantic crossing via self-construction

Kacper Kania, a Service Department Employee at WITTMANN BATTENFELD in Poland, is not only successful when repairing machines. Taking part in the Regatta SPA 2016, he sailed across the Atlantic Ocean, and finished second. A real adventure.

The fundamental requirement to take part in the Regatta SPA is to undertake the race across the pond in a self-constructed vessel. The hull of the "Nerwus" that was built by Kacper Kania is made of plywood. The sailboat has a length of five meters, and it is equipped with a variety of modern technical equipment. The construction time of the boat took two years.

In November 2016, the boat was carried overland to Sagres, the southwesternmost point on the European continent, located in Portugal – and the starting point of the regatta where the starting shot was given November 14.

Two stages had to be managed. The first ran from Sagres to Tenerife, and the second from Tenerife to Martinique.

During the first stage, Kacper Kania was accompanied by his father Zbigniew Kania. The crew covered the distance in six days, 21 hours, and one minute, taking only eleven minutes longer than the winner. For the overall intermediate result, they came in second, and as a pair, they finished first.

The second stage from Tenerife to Martinique was undertaken by Kacper Kania all alone. He spent more than 24 days (plus one hour and 58 minutes) at sea, without any contact with land. He

had to cope with wind forces that went up to an 8 on the Beaufort scale, and waves that reached heights of up to nine meters.

Due to the devilish conditions, additional problems with the electronics and the rudder occurred. The technical skill and the sailing mastery of Kacper Kania led to a second place finish, which was his overall final result. His performance was more than respectable! Kacper Kania hails from Łódź in central Poland, a city whose name means



Kacper Kania, employee of the WITTMANN BATTENFELD Polska Service Department, on his self-constructed boat "Nerwus".

"boat". Of all things, for him to hail from there, and crossing the Atlantic Ocean nonetheless, seems to be one more point towards his phenomenal story.

This also entailed all the more celebratory congratulations from the Polish colleagues at WITTMANN BATTENFELD. ♦

Hard to say goodbye to Zsolt Rápolti (†)

Deeply saddened, the management of the WITTMANN Group wants to inform you that the Managing Director of the WITTMANN Group's Sales Office in Hungary, Zsolt Rápolti, recently died unexpectedly.

Zsolt Rápolti has been a regional salesman for the WITTMANN Group in Hungary since 2012. In

2015 he took over the management of the newly established branch in Budaörs. In Zsolt Rápolti we have not only lost an excellent salesman, but above all also a valuable and valued colleague.

The management and all collaborators with the WITTMANN Group want to express their sincere condolences to his family.

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