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WITTMANN innovations (Volume 3 – 4/2009)
Dear Reader,

EcoPower to the People: With great pride, we are pleased to introduce our fourth generation of electric machines. This new machine series has received the name EcoPower. A name expressing ideally what the machine represents: the optimum combination of energy efficiency and high performance. That the EcoPower is the brain-child of the highest engineering goals and impressively underlined with unmatched technical data: belt-free injection unit, clamping unit with direct drive, lowest energy consumption by internal conversion of brake energy, sealed toggle bushings and mechanical integration of peripheral molding auxiliaries equipment. Further unique features of the fully-electric machine have been unveiled, during the inauguration of our new plant in Meinerzhagen from September 10th to 11th and officially during the Fakuma 2009 opening its doors on October 13th.

The conception that robots are stupid and brainless machines, just able to perform pre-programmed sequences, is the single most effective sales argument by itself and explains their immense popularity in production plants around the world. Because what else is a plastics processor after, than a reliable and quick robot, which fulfils all required tasks with the highest precision and perseverance. Equally perseverant is the technical evolution in the development of robots. In addition to the high availability and velocity the functionality of the robot is enlarged by widening interaction with the environment. Our powerful robot control R8 offers via its real time ability multiple interfaces, allowing the adaptation of the sequence depending on external parameters. The current real time functions SmartRemoval and EcoMode are joined by the functions SmartTorque and PartTrack. These new functions will be presented on the Fakuma 2009 as part of an interactive presentation with several robots.

The year is already pretty much closing in. And if no major changes will take place, we can record for 2009, that the automotive industry has not made a significant impact in revenue. This traditional economic booster still refuses to gain momentum. The show went especially to the packaging industry. With our high-speed TM Xpress, horizontal robots, packaging molds and chillers we hit the bull’s eye. Still we hope to soon see a revival of the important automotive market.

Our tour through the WITTMANN BATTENFELD companies leads us first to the Czech Republic and afterwards with a giant leap onwards to Taiwan.

The team of innovations wishes you an interesting reading experience.

Sincerely, Michael Wittmann
Mass Production of Toy Wheels

*Bruder Spielwaren of Fürth-Burgfarmbach, Germany, is a traditional Franconian manufacturer of quality goods, and produces its complex toys entirely in-house – from the wheels to the fully assembled and printed vehicle. Production automation is one basic element of the site concept.*

Walter Klaus

Without dedicated cost management, Bruder Spielwaren GmbH & Co. KG would not be able to realize its strategy of producing its entire range of faithfully detailed scale-model cars in its own German factory. This includes their decision to automate the production of all parts and assemblies as far as possible.

One element in this chain of cost-reducing measures is the automated production of the rims and wheels for the various series of trucks, tractors and construction vehicles, which have a firm place in many children's bedrooms and sand pits. The purpose of setting up the manufacturing cell was to allow all wheels for the individual vehicle groups to be manufactured on this one production line. This was achieved by the production solution described below, which Bruder has since supplemented with a second, identical system.

*Flexible automation means a wide product variety*

Production of rims and wheels for all the models in the Bruder product range covers eight different sizes, profiles and colors – 80 variants in all. All these series were to be produced by a fully automated injection molding line. This was the target with which WITTMANN Robot Systeme GmbH, Germany, started its project work to develop a flexible automation solution in 2006.

The “Brain” of the Bruder system: WITTMANN R7.2 control with color touch-screen and TeachBox.
as bulk goods and conveyed to the separator by screw and ascending conveyors. The bunker can hold up to 1,500 parts depending on the rim size. It can therefore operate for two-and-a-half hours before recharging. The polypropylene (PP) wheel rims are then placed in molds with four, six or eight cavities and overmolded with thermoplastic elastomers (TPE) to produce the complete wheels.

**Rapid type exchange**

The core of the storage and separation unit are the interchangeable parts for retooling the line to a different wheel type within the 30 min required in the specification. This time span is also required for the mold exchange and retooling with the appropriate gripper. Standardized modules ensure that gripper exchange takes place rapidly and reproducibly.

Other main items of the specification are rapid and accurate positioning of the separated wheel rims and minimum retooling work for product exchange. This is achieved by using a fourth servo axis integrated into the robot control. This axis consists of the drive motor of WITTMANN standard X-axis and is actuated by the W-Drive module from WITTMANN. The stored programs of the different wheel types contain all parameters for moving to the positions corresponding to the respective product type and controlling the module for separating the rims. The WITTMANN servo technology ensures that, after product change, the system can be made to move to the new positions at the push of a button. The parameters of all automation settings are programmed and monitored from one point, namely the intelligent TeachBox.

**The shortest mold-open time**

The complete wheels are removed from the stationary mold half and the wheel rims inserted into the moving half by the total of seven insertion and removal grippers. Because the removal and insertion operation take up as much as 5 s of the overall cycle, this not only requires a dynamic drive technology but it must also be possible to traverse to precise positions in the mold. The robot finally places the parts systematically on a conveyor belt with a storage capacity of between five and eight shots and including a zone for controlled cooling of the wheels.

Where the line operates four shifts, i.e. also weekends, maintenance work on the automation systems must be kept to a minimum. Only low-wear parts are used in the system. Nevertheless, the plant still requires twice-yearly preventive maintenance, which Bruder has subcontracted to the WITTMANN service department. The efficiency and reliability of the automation solution are certainly the reasons why the toy manufacturer has since purchased another identical system, which came on stream only a few months ago.

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Walter Klaus was Technical Director of WITTMANN Robot Systeme GmbH in Schwaig, Germany. He retired in 2008.
wolfcraft Has The Proper Grip

wolfcraft, leading manufacturer of do-it-yourself tools, and WITTMANN BATTENFELD have maintained close business relations for many years. To manufacture a manual plasterboard sanding tool, wolfcraft added a multi-component machine to its equipment consisting exclusively of WITTMANN BATTENFELD machines. WITTMANN BATTENFELD assisted wolfcraft from the idea to the finished part.

Susanne Binner – Edmund Kirsch

Five years have now passed since wolfcraft GmbH, based in Kempenich/Eifel (Germany), decided to relocate its plastics processing sector from the “extended workbench” to in-house manufacturing. This has made it possible for the company to manufacture its extensive product range “all of one piece” in the true sense of the word.

Against the current

With insourcing instead of outsourcing, wolfcraft is swimming successfully against the current: they have been able to achieve substantial cost cuts through in-house plastics processing. Consequently, wolfcraft has become a cost leader in the highly competitive do-it-yourself market, in a position to offer its products with an excellent price/performance ratio. The company, established by Robert Wolff in 1949, has developed into a leading manufacturer of do-it-yourself tools. More than 480 people are employed at its two production plants in Germany and Slovakia and nine subsidiaries worldwide. “Our employees are our most important assets. A policy of open communication and profit-sharing for our staff are characteristics of Wolfcraft’s corporate philosophy”, explains Thorsten Bauseler, Head of Industrial Engineering of the Dunajska Stredá facility in Slovakia. The company’s annual turnover exceeds 100 million EUR.

The wolfcraft product portfolio is extensive. Everything that facilitates working with wood, metal, plastics, stone or glass is available. The range includes some 3,500 items, from sanding paper and wire brushes to complete workbenches. 18.5 million individual parts are manufactured on WITTMANN BATTENFELD machines. The proportion of plastics components is continuously increasing. Customers demand easy-to-handle, attractive, light and low-cost hand tools, but don’t want to compromise on quality and safety. Designers and product developers are constantly engaged in product development. The outcome is attractive tools with excellent ergonomics and functionality. ‘Tools that “lie comfortably in the worker’s hand”.

wolfcraft relies on WITTMANN BATTENFELD

“We are absolutely certain of the high quality and precision of WITTMANN BATTENFELD machines. Their engineers have extensive know-how in process and mold technology and many years of experience in multi-component technology. Our decision to acquire yet another WITTMANN BATTENFELD machine was based on the past experience we have had”, Bauseler emphasizes.

wolfcraft currently has more than 12 machines with clamping forces ranging from 60 to 160 tons, all from WITTMANN BATTENFELD. The third multi-component machine was delivered recently, an HM MK 160/750H/130V with an integrated servo-electric rotary unit and AIRMOULD® equipment for gas injection technology.

The ergonomically designed two-component handles for the new manual sanding tool, which are manufactured on it, are suitable for all areas of application, making it possible to work fast and without fatigue. Notably, this ergonomic requirement presents a considerable challenge in manufacturing the handle, which must also be light and have the desired soft-touch effect.

Therefore, the manufacturing possibilities were already discussed at an early stage in the product development process by a team of experts consisting of mold makers, product developers, designers, injection molding operators and application engineers from wolfcraft and WITTMANN BATTENFELD. After extensive tests carried out at WITTMANN BATTENFELD’s technical lab, a combined process solution was chosen, integrating WITTMANN BATTENFELD’s COMBIMOULD multi-component technology with the patented AIRMOULD® gas injection technology, also developed by WITTMANN BATTENFELD.
The combination of COMBIMOULD with AIRMould® is the process which makes it possible to form hollow parts and then mold on a soft component. The handle is produced with the help of rotary technology.

At the first station the basic PP body is molded. Via an AIRMould® injection unit incorporated in the mold, gas is injected into the melt to form the cavity inside the part and keep the previously injected melt in contact with the cavity wall. Components from the AIRMould® modular system are used for this: a DE 12 compressor unit and a monomodule with a manual programming device. After the hollow part has been formed, the mold is opened.

A rotary unit then turns the preform into the second position, and the mold is once again closed. Now the second component is injected onto the hollow part. Here, deformation of the hollow part must be avoided. This is achieved by optimal positioning of the injection points and a special mold technology in combination with AIRMould®.

**Functionality, quality of design, performance**

Wolfcraft’s new production cell features all necessary equipment for multi-component and AIRMould® technology. For instance, the HM MK 160/750H/130V is equipped with an adjustable, servo-electric rotary unit offering the advantages of fast, precise rotations and low height. This rotary unit, which can be adapted to match the size of the machine, is available in sizes from 460 to 1,300 mm and for 2-, 3-, and 4-station systems. The adjustable rotary unit can also be retrofitted on any HM MK. On the wolfcraft machine, the second injection unit for the soft component is arranged in a vertical position next to the standard horizontal aggregate. This allows injection of the second component into the mold parting line.

With the use of hot runner systems, injection points in different positions are also possible. In order to target such injection points, the vertical unit can be freely moved along its linear guides and thus adjusted to the individual requirements of the mold. It can be completely moved back behind the fixed platen for unobstructed mold change.

Where parts removal by a robot is desired, a robot can be mounted above the moving platen. Based on the standard HM series with its high-precision machine technology, the HM.MK (available with clamping forces from 45 to 650 tons) with its extensive range of options is the right package deal for any multi-component technology.

Multi-component technology plays a prominent part in the tooling sector, opening up a wide range of design options. Thus wolfcraft is well prepared for future projects.

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**Process Data Acquisition: Wille System As a Partner**

**The wolfcraft production plant at Dunajcka Streša (Slovakia) is equipped with 12 injection molding machines, all from WITTMANN BATTENFELD.**

Susanne Binner is Head of the Marketing and Communications Department at WITTMANN BATTENFELD in Kottingbrunn; Edmund Kirsch is Regional Sales Manager for Scandinavia and Middle East.

Reiner Conradi, Director of Wille System GmbH, says: “The innovative competence and the leading control solutions of WITTMANN BATTENFELD were essential for our decision to cooperate.

Together we are offering a flexible and competitive module system of coordinated customized products that meet the very special demands of our customers. Thus we are providing our shared customers the possibility of comprehensive operating data overview by using any UNILOG B6 control – by request via the entire machinery with complete independence from machine type and machine manufacturer. I think it’s not an overstatement to say that this means the marriage of company processes and process data. As the motto: connecting worlds.”

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**WITTMANN innovations – 4/2009**
Energy-saving, Clean, Compact: Premiere for the New All-Electric WITTMANN BATTENFELD EcoPower Series

With its new EcoPower machine series, WITTMANN BATTENFELD proves its extensive know-how of more than 20 years in engineering all-electric injection molding machines. Now in its fourth generation, it is setting new benchmarks in user-friendliness and accuracy. It also offers an enormous energy-saving potential. Additional important features: cleanliness, compact design and modularity. The new energy-saving champion will celebrate its world premiere at this year’s Fakuma show in Germany.

Susanne Binner

It is happening now: from October 13th to 17th, WITTMANN BATTENFELD will be presenting its new EcoPower all-electric machine series for the first time. The new generation is the result of many years of experience combined with innovations designed for customer benefit. The all-electric EcoPower series is available with clamping forces ranging from 55–300 tons, starting with the entry-level model EcoPower 110.

Georg Tinschert, Managing Director of WITTMANN BATTENFELD, is pleased with the new series: “The new EcoPower comes with a modular system for optimal adaptation of the machine to any conceivable customer application. Our customers get what they need, and they have a choice – ranging from standard high-precision injection molding to high-speed, clean room applications.”

Experience meets innovation

All-electric injection molding machine engineering has a long tradition at WITTMANN BATTENFELD. The first all-electric series was launched in the 1960s. Since the introduction of the first servo-electric machines at the end of the 1980s, BATTENFELD, as the European pioneer, has worked continuously on their further development. One significant proof of quality in machines is their durability. Many machines of the first generation are still running today at the facilities of well-known customers.

Energy-saving, clean and compact

The all-electric EcoPower combines efficiency with precision. It scores with a compact injection unit and the clean design of its clamping unit, featuring an efficient direct drive.

With EcoPower, the braking energy of the drives, normally wasted or recovered by an elaborate process, is utilized inside the machine. The new series also offers an extremely low noise level of less than 68 db. The machine’s outward appearance has not been neglected either: its new design meets the most stringent demands.

Particular attention has been paid to user- and service-friendly machine design. The machine has a very small footprint and is designed so that it is open both at the top and on the injection side. This allows mounting of robots without any alterations to the machine, and with access to the nozzle and the material feeding system remaining unobstructed.
**High-performance injection unit**

The injection unit is laid out for high injection speeds of up to 400 mm/s even under maximum injection pressure. The drive and the circulating ball spindle are at the heart of force transmission. The direct drive via the spindle minimizes force transmission loss and ensures accurate control and repeatability of the metering and injection process. Thanks to the newly developed, encapsulated drive system, it is extremely compact and easily accessible. The barrel can be exchanged quickly from above; it is also compatible with the traditional HM and TM series. Almost all of the motors used are extremely robust standard servo models perfectly suited to modular applications.

**Fast, clean clamping unit**

The highly efficient, high-precision BATTENFELD machine toggle drive stands out by its dynamic strength and high positioning accuracy and is extremely energy-efficient as well. The toggle lever bolts are sealed on the outside, thus ensuring a clean clamping unit. The self-locking cylinder system further enhances the machine’s energy-efficiency.

**One machine – many options**

To achieve maximum customer benefit, the EcoPower series has a modular design and is preconfigured. A great variety of machine concepts is available, depending on the application. The machine system consists of a basic platform which can be supplemented with comprehensive WITTMANN BATTENFELD extension packages, depending on the customer’s requirements. Thanks to its modularity, the machine can be equipped for standard high-precision injection molding and clean room technology as well as high-speed applications.

In the version equipped with a hydraulic ejector, nozzle stroke and optional core pull, the hydraulic aggregate with a speed-controlled servo motor is integrated into the frame of the machine. This ensures highly dynamic strokes of the driving axles, it is very energy-efficient and dispenses with additional space requirements.

**Saving space and cutting costs with an integrated solution**

Each model of the EcoPower injection molding machine series has been designed with particular attention to a compact footprint. Thanks to a special integrated solution concept, auxiliary equipment (e.g. temperature control devices and material dryers) can be built directly into the machine frame, which substantially reduces space requirements as well as energy costs.

Set-up, visualization and storage of settings of the entire peripheral equipment can also be integrated directly into the machine’s control system.

**WITTMANN BATTENFELD EcoPower at the Fakuma show 2009**

The first EcoPower model will be presented to international visitors at Fakuma show 2009 in Friedrichshafen, Germany. At the WITTMANN and WITTMANN BATTENFELD booth 1204 in hall B1 an EcoPower 110/350 will be shown manufacturing industrial parts. These parts will be removed and deposited on a conveyor belt by a WITTMANN high-speed robot from the W821 UHS series. The robot control will be fully integrated in the injection molding machine’s UNILOG B6 control system.

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Susanne Binner is Head of the Marketing and Communications Department at WITTMANN BATTENFELD in Kottingbrunn (Lower Austria).
Water Flow Regulators With Flow Measurement and Flow Control

To a growing extent, the industry is demanding adequate instruments for superior process control. This has led to a further step of development in regard to WITTMANNs water flow regulators. These now are also offered with a contact-free flow measurement. For the so-called WFC functionality (= Water Flow Control) WITTMANN has reverted to components of the TEMPRO plus C series of temperature control units that have succeeded since their introduction two years ago.

Zdravko Gavran

The injection molding process is demanding for cooling and respectively tempering of the molds. The connection of the heat carrier circuit to the mold can be done by using either serial or parallel circuitry. Each one of these two methods has its advantages and disadvantages.

Serial or Serpentine Circuitry

Serial circuitry is guaranteeing the same conditions for all mold channels and – applied in combination with flow measuring – is guaranteeing a high process security. Variant flow rates are registered in time, ensuring the constant quality of the molded parts – assumed that the flow rates are readjusted adequately. One special requirement of serial circuitry is the need for stronger pumps that are able to manage relatively high flow rates at high operation pressures. When working with serial circuitry, usually a tempering unit with flow measurement is applied.

Parallel or Straight Pass Circuitry

Especially for applications that are processing great quantities of plastic – and therefore are realizing great heat quantities in molds of possibly several tons in weight – pumps with high delivery rates are needed. Thus it is possible to draw the heat from the mold, and to produce parts of a relatively constant quality. Very often, in these cases parallel circuitry of the mold channels is chosen.

This is leading to some effects that are supporting shorter cycle times: less decrease of pressure for the consumer, a higher flow rate, smaller temperature differences between mold flow and mold return. Parallel circuitry needs a tempering unit and a standard flow regulator (with at least optical flow indication).

The Advantages of WITTMANN Water Flow Control

- Flow and temperature measurement of every single circuit.
- Flow and temperature control of every single circuit.
- Improvement of the process security through detection of blocked tempering channels or broken tubes at an early stage.
- Accuracy of measurement of ± 0.5 l/min allows for a constant part quality.
- Cost saving due to avoidance of scrap.
- Flexible possibilities of connecting the WITTMANN Water Flow Control unit to existing or new applications.

WFC – Water Flow Control

When applying serial circuitry (serpentine circuitry), executing flow control via a tempering unit with flow measurement normally is absolutely sufficient. Parallel circuitry (straight pass circuitry) has the serious risk of loosing con-
The contact-free flow measurement has been integrated into the basic elements of the WITTMANN 230 flow regulator series and is connected to an electronic indicating/operating unit. The flow value setting can be easily done by the operator using the control valves. The values can be easily provided with tolerances via the input unit – and can be controlled using the connection to the injection molding machine. The WFC unit is of high compactness, thus allowing the possibility of mounting the system on the frames of smaller injection molding machines. Beyond that, only noncorrosive materials are used.

Reproducibility of variances therefore is assured when using the Water Flow Control unit. Blocked channels or broken tubes (for example after having changed the mold) are a thing of the past, because such problems are detected immediately.

The WFC construction

The contact-free flow measurement has been integrated into the basic elements of the WITTMANN 230 flow regulator series and is connected to an electronic indicating/operating unit. The flow value setting can be easily done by the operator using the control valves. The values can be easily provided with tolerances via the input unit – and can be controlled using the connection to the injection molding machine. The WFC unit is of high compactness, thus offering the possibility of mounting the system on the frames of smaller injection molding machines. Beyond that, only noncorrosive materials are used.

This kind of flow measurement is based upon the Karman vortex street principle, and it has been applied in WITTMANN’s TEMPRO plus C90 temperature control units since their introduction. This method also is used for the WFC flow measurement, and it has the following advantages:

- No moving parts in the flow medium.
- No abrasion of the measurement system.
- No increasing error in measurement during the period of application.

The metering range of the WITTMANN Water Flow Control lies between 2 and 40 l/min per circuit, the maximum operating temperature is 100 °C, and the maximum pressure is 16 bar.

The relatively high accuracy of measurement of 1.5% FS (Full Scale) stands for a maximum deviation of ± 0.5 l/min from the main application temperature range. This is leading to an outstanding process security and a constant part quality.

In addition to the flow, also the temperature for each single circuit is registered. As the heat transfer from the tempering channel to the surface of the cavity is depending heavily on the flow (and as the flow has its direct effect on the set temperature), the temperature sensor in addition is used for the control of marginal variations in temperature. These variations can be caused by changing flow.

Because of its metering range of 0–100 °C, the temperature sensor is highly adaptive. It comes with a metering precision of ± 1 °C and a response time of less than 2 sec.

The indicating/operating unit

Yet the WFC basic equipment allows setting, control and changing of the flow rates via a visual display. Other suppliers initially offer only the connection to the processing machine, and in the next step they offer the visualization of the flow values, amply charging their customers.

Some of the competitor’s units are highly unflexible because of the fixed connection to the tempering device, and are only controlling the flow and temperature process parameters. Even there is no possibility to adapt the values.

Application range and construction of the WFC

WITTMANN Water Flow Control is suitable for all applications up to 100 °C that are using water as a medium. But in the first instance for the cooling, respectively tempering of big molds with shot weights of 1 kg or more, e.g. for automotive bumpers, containers, and for multi-cavity applications.

WITTMANN Water Flow Control is presented at this year’s Fakuma show held in Friedrichshafen (Germany) in the stand-alone version with up to 8 circuits with an integrated serial interface. This solution will considerably facilitate the connection to the injection molding machines of any manufacturer.
Granulation

New Auger Equipment for WITTMANN MC Central Granulators

The new WITTMANN AF auger feed for the MC series has been especially developed for a better processing of blow molded and other bulky and soft plastic parts – for instance canisters, crates, bottles, and even bumpers.

Andreas Stix

Until now, granulator units with accordingly bigger cutting chambers were needed to process bulky parts. Using the new WITTMANN AF auger feed, is putting the plastics processor in the position of reverting to a comparatively smaller model.

This equipment is therefore not only lowering the original cost of the granulator itself and the cost of the ongoing operation, but is also minimizing the necessary production footprint.

The uninterrupted material feed of the AF screw allows for feeding the granulator with several parts at the same time, without blocking the feeding hopper. And because of using a screw for the material feeding process, the parts are directly moved into the cutting chamber.

The advantages of the new auger

- Less space requirement.
- Lower energy requirement, because a smaller granulator can be used – which means a smaller motor and a smaller diameter of the rotor.
- Maximum grinding capacity (= greater throughput) through uninterrupted feed of material.
- Uninterrupted granulator feeding with several parts at the same time – without mutual blocking.

The increase of the grinding capacity of the granulator is done by preventing the plastic parts to drop back from the rotor.

Auger application and dimensions

The AF auger feed is available as an option for the WITTMANN central granulators MC 34-60, 46-60, 46-88, and 70-80. It is possible to place the screw either in central or in decentralized position in – order to adapt it to the size of the parts. As a standard, the screw is activated by a 1.1 kW motor. Optionally, a 1.5 kW motor can be chosen. The diameter of the screw is 250 mm for the MC 34-60 granulator model, and 300 mm for all the other models. The rotational speed is 27 rpm.

This new auger feed is equipped with the ARS functionality, the special WITTMANN Automatic Reversing System, that stood the test of time when used as well with screenless granulators and conventional granulators with auger feed. If an overload is detected by changes in amperage or speed, the ARS functionality stops the motor and reverses to remove the part that caused the blockage and then turns forward again.
Drying

Energy saving products not only save the natural resources, but also on one’s purse. Every single energy saving method is adding up to an extraordinary amount over the course of a year. For the longest time, the marketing departments of manufacturers have broadcast this topic as their singular offering, and beat one another over with announcements about the savings potentials of their products.

Andreas Vierling

Also company FKT was facing this dilemma, when they were searching for an efficient resin dryer at the end of 2008. Neglecting the many claims in the literature of the miscellaneous manufacturers, FKT decided for a real life test of various “energy efficient” dryers and amongst them, a WITTMANN DRYMAX dryer. Company FKT Mold Making and Plastics Technology with their Headquarters in Triptis, Germany have devoted themselves to the implementation of complex mold projects. The core business is a classical mold making facility, which is complemented by upstream and downstream service work. FKT has a reputation as a leading technological service provider for the production of injection molded plastics and casted parts, which are used by well-known OEMs of diverse industrial sectors for the production of their parts.

Company FKT was searching for a solution for the drying of PA6 GF30 at a material throughput of 50 kg/h. PA6 is a very hygroscopic material, which binds water molecules deeply inside its own molecule structure. Therefore, beside efficient energy consumption also a constant dry air supply is of importance.

A special interest from FKT was placed on the energy consumption between wheel and desiccant bed technologies. Despite the energy calculation for both drying systems supplied by each manufacturer, FKT decided to conduct their own energy measurement, to verify the calculated consumption values and the associated energy costs.

The FKT test series

During the first test phase the energy consumption for the material PA6 GF30 at a throughput of 52 kg/h was determined. After a mold change, the dryers had to perform under the extreme demands of drying PC at a mere throughput of 14 kg/h.

The test arrangement consisted of two very different requirements concerning the material throughputs. Particularly, the application with the lower material throughput should in the end, reveal the real efficiency of the various dryers.

After having analyzed detailed measurements over several days, a clear test winner was determined: The WITTMANN DRYMAX 100 dryer, offering a lower energy consumption of 25% to 40% against competitive units. The saving of energy, which the WITTMANN DRYMAX 100 proved, adds up to an amount of 560.– to 800.– Euro (at 10 Cent per kWh and 8,000 operating hours per year) and emphasizes the energy efficiency of the WITTMANN dryer technology.

This test result reflects the year long research and development efforts of WITTMANN in the field of energy measurement and efficiency. As the first company in the industry WITTMANN published, in 2007, a normalized measuring standard, which serves as a basis to compare different dry air generators concerning their energy consumption.

This “Energy Rating” has already been performed for all DRYMAX dryers of WITTMANN. Since the completion of the test measurement, every DRYMAX dryer is equipped with a green sticker, the WITTMANN “Energy Label”.

Andreas Vierling

FKT Mold Making and Plastics Technology in Triptis, Germany.

The measurement report for polycarbonate.
Right picture: DRYMAX 100 with the green “Energy Label”.  

FKT Mold Making and Plastics Technology: Energy Claims Under Real World Scrutiny

<table>
<thead>
<tr>
<th>DRYMAX 100 Energy Consumption*</th>
<th>PA6 GF30, 52 kg/h</th>
<th>PC, 14 kg/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>kWh/h</td>
<td>Wh/kg</td>
<td>kWh/h</td>
</tr>
<tr>
<td>2.8</td>
<td>54</td>
<td>2.3</td>
</tr>
</tbody>
</table>

*Drying method: desiccant bed dryer with counter flow regeneration.  

Andreas Vierling

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Czech Republic and Slovakia: 
WITTMANN BATTENFELD CZ spol. S.r.o.

Even before the foundation of the first subsidiary, the name of WITTMANN was well-known on the Czech market. Booming plastics processing technologies during the past ten years, and the strong impact of Czech automotive industry had led to the formation of WITTMANN CZ. Since its formation, the Pisek subsidiary is headed by Michal Slaba, and currently employs 16 staff members – among them are three sales representatives, four administrative employees, and eight service technicians. Office space, training area, and premises for customer service and spare parts sum up to a floor space of 180 m². The historical city of Pisek not least is known for its industrial settlement.

Due to the heavy growth of the market during the past years, and the broadening WITTMANN BATTENFELD services, a new company building currently is under construction.

Market structure

Czech and Slovak industrial production is characterized by a strong orientation towards the automotive industry. During the past ten years, brands like Peugeot, Toyota, Citroën, Hyundai, Kia, and the Audi-VW company have joined the old-established Škoda (now Škoda-VW).

The Czech Republic and Slovakia nowadays are manufacturing the highest amount of passenger cars, counted per person. As a result, WITTMANN BATTENFELD in large part is working for companies that are suppliers of the automotive industry and of companies in the field of electrical engineering (Robert Bosch, Automotive Lighting, Visteon, Hella, Magna, ABB). In the Czech Republic and in Slovakia over 200 plastics processing companies are using WITTMANN BATTENFELD machines or entire production lines. The current worldwide cyclical downturn has its effect on this dynamic market.

Thanks to the increased demand of more economic cars, and to several supporting activities (car scrappage scheme), the downturn has not excessively impacted the Czech suppliers. WITTMANN BATTENFELD CZ will realize profit in 2009.

Concerning auxiliary equipment for special projects, the demand has increased since the beginning of the second quarter. In the field of injection molding machines, the upturn is a long time coming – least of all because of high investments in machines during the past years on all sides. Anyway, the possibility of offering complex overall solutions is a striking advantage over other providers.

Future prospects

Regarding the future – after the construction of the new building will be finished – it is planned to push the construction of grippers, end-of-arm robot tooling and to even offer better training possibilities (including injection molding machines).

Of course WITTMANN BATTENFELD CZ spol. S.r.o. will appear at the most relevant industrial shows taking place in the Czech Republic and in Slovakia.

Through the ambition of their team, the company has become one of the most important suppliers in the entire field of plastics processing. And it is the stated objective of WITTMANN BATTENFELD CZ to further strengthen this position.
Taiwan: WITTMANN Robot (Taiwan) Ltd.

WITTMANN Taiwan was founded in Taichung, located in the center of the country, on April 1st, 2007. After the takeover of BATTFEN Feld, the company was named WITTMANN BATTENFELD (Taiwan) Ltd. It is bringing all the WITTMANN Group products into the Taiwanese market, supplying European equipment to these customers.

Taiwan is a very special market. There are about 137 injection molding machine manufacturers, 68 plastic hollow shaping machine manufacturers, 185 plastic extrusion machine manufacturers, 33 robot manufacturers, 28 plastic peripheral manufacturers and Japanese competitors in this 35,800 km² island. An excellent sales policy and superior quality are a must to penetrate this market. More importantly, fast and knowledgeable technical service from the WITTMANN service team helps to succeed in this fierce competition.

The Taiwanese staff

WITTMANN BATTENFELD Taiwan provides customers a young and energetic impression, promising customers professional products and service. There are 7 employees in the team, including 2 salesmen, 3 technical service engineers and 2 administrators, who are responsible for finance, purchasing, import and export, warehouse management, etc.

The Taiwan sales staff offers after-sales service, systematic project planning and comprehensive solutions according to the customers’ needs, in addition to selling equipment. Customers can get a complete one-stop solution at WITTMANN BATTENFELD Taiwan.

Key sales targets in Taiwan

WITTMANN BATTENFELD Taiwan has key sales targets in the Taiwanese market, such as medical equipment, cosmetic packaging, RO pure water facilities, optical products and 3C products.

They also supply a complete range of auxiliary products to plastic machinery manufacturers who may forward an integrated working cell abroad.

Currently the sector of medical equipment is most important. Customers in this field are in need of an equipment with high-stability and high-efficiency, the strengths of WITTMANN products can be fully implemented in this field.

Secondly is the cosmetic packaging market. Cosmetic packaging manufacturers pay great attention to the surface and chemical properties of their products, thus there is a high demand for quality and stability of the manufacturing equipment. Normally local suppliers can’t meet these requirements. WITTMANN is able to provide these customers products that allow them to be totally satisfied.

Another big market is the local plastic machinery manufacturers. Most of the Taiwanese factories are export-oriented, they are in urgent need of a supplier with a well-known quality brand to supply a complete range of products and technology.

More than that, they are in need of a strong global service team and the WITTMANN Group can fulfill all these requirements.

The future

In Taiwan, “Made in Germany” (or Austria) means high quality, which generates considerable advantages in sales, but many Taiwanese customers are not familiar with the operation and design of European machines. WITTMANN has addressed this need by putting additional measures in place to provide the highest level of training and equipment operation documentation. WITTMANN has identified the needs of the Taiwanese market and is working to develop these requirements into the European machine design, so that the entire market can be served.