

innovations

Techniques – Markets – Trends

Volume 10 – 4/2016



Recipes



10/A04 + 16/D22

Perfect Parts

- 1) Take a WITTMANN BATTENFELD injection molding machine with UNILOG B8 control.
- 2) Combine thoroughly with WITTMANN peripheral equipment of your own choice (temperature controllers, robots, drying & conveying equipment, blenders, water flow controllers, granulators).
- 3) Start your production run.
- 4) Get hot stuff.

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Michael Wittmann

Dear Reader,

“be smart” is the headline of a road safety campaign against the use of cell phones when driving – and it also represents our slogan for the K 2016. We present “smart” machines that can be connected to cell phones using our *QuickLook* app (preferably not when driving!). This feature, for example, enables forward-looking maintenance. Our robot control integrates a virtual model of the actual robot, and this allows at any time a full review of the robot’s current and future behavior.

“be smart” also means to great importance to integration of in terms of *Industry 4.0*. In a word: we are showing “smart” solutions. “be smart” not only refers to intelligent controls, but also to the control functionality that gets more and user-friendly. In fact, truly intelligent machine behavior does not require more expert knowledge or more training. On the contrary, the work of the operator is made much easier. A “smart” control with integrated databases can make a lot of decisions independently. And what sounds rather complicated, really has only one agenda: better injection molded products through simpler, hands-on handling. Make sure to get a picture of it yourself! From October 19th to 26th the WITTMANN Group exhibits at the K show in Düsseldorf, presenting the best across our entire product range: with injection molding machinery in hall 16/D22, and with robots and peripheral equipment in hall 10/A04. We occupy an overall exhibition space of 1,270 m².

We are proud to present our new control systems: the UNILOG B8 for our molding machines and the R9 for our robots. New control generations are typically introduced only every 8 years – and we are happy to say: we met this target for the K 2016. Our new UNILOG B8 controls support the newly launched EUROMAP 77 communication standard. The intention of EUROMAP 77 is to create a standard interface for the data interchange between the machines of different manufacturers and Manufacturing Execution Systems (MES). At the VDMA booth – and in collaboration with several manufacturers – an implementation of EUROMAP 77 will be demonstrated. Naturally, the WITTMANN Group is in it – in the front rank. With each passing year the performance of today’s plastics processors continues to rise and we strive to exceed expectations. All of our latest equipment designs have been created with regard to open communication – and also to meet new industrial standards as defined by *Industry 4.0*.

Aside from the control sector, we are showing many more innovations from every product group. Please make sure to visit us at our show booths and experience our “be smart” products. I am looking forward to seeing you personally at K 2016.

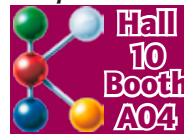
Yours cordially, Michael Wittmann

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Innovative drive at the WITTMANN BATTENFELD booth

At the K 2016 in Düsseldorf, WITTMANN BATTENFELD will present numerous novelties. Certainly, the highlight will be the new UNILOG B8 control system, which is available for all machines of the PowerSeries, but the innovations in terms of machine technology are also quite noteworthy. Integration according to the concept of Industry 4.0 is a recurring theme in the majority of exhibits on display.

New from WITTMANN BATTENFELD: UNILOG B8 machine control

The new UNILOG B8 control system from WITTMANN BATTENFELD will be shown on every single machine. This new control system generation distinguishes itself from its predecessor with several additional features and even greater operator comfort. Via an attractively designed, pivotable 21.5" full HD multi-touch screen, the process functions can be retrieved by gestures (zooming/wiping), while the operating functions are triggered by tactile keys located in the machine's central console. This makes it possible to address frequently used functions easily and directly.

The new UNILOG B8 control system – available for all machines from K 2016 onwards.

Visualization and machine operation both run under the new Windows® 10 IoT operating system, which offers an extensive choice of options for a modern user interface and enables easy integration into the world of Windows® applications. A display screen which can be partitioned allows simultaneous visualization of two different functions. This is a special advantage, making it possible to visualize and operate machines and peripheral appliances side by side via a single monitor screen. An assistant wizard and help systems support operators in machine setting and process optimization.

WITTMANN 4.0 as the realization of Industry 4.0

On all exhibits shown at the K, networking of the machine and peripheral equipment with WITTMANN 4.0 will be implemented and demonstrated – being the WITTMANN Group's answer to the widely discussed concept of Industry 4.0.

With the new B8 machine control system, the machines, as well as the robots and peripherals connected with them, can be linked with each other and operated via the uniform Windows® user interface.

This enables interaction between the individual appliances, and the entire production process becomes optimally coordinated as well as transparent. WITTMANN 4.0 transforms the injection molding machine into a control terminal for robots, peripherals as well as superordinate systems.



This technology opens the route to the world of Industry 4.0. In regard to the exchange of data that may occur between the working cell and the outside world, the question of data security comes up. Data security is guaranteed when using the WITTMANN 4.0 router. Only appliances which identify themselves unambiguously to the router are granted access to the production cell.

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EcoPower Xpress 400/1100+ – IML application

With the new EcoPower Xpress, WITTMANN BATTENFELD introduces a high-speed, all-electric machine model primarily geared to the requirements of the packaging industry. The highly dynamic drive axes for injection as well as closing and opening of the machine are designed for fast movements and ultimate control accuracy. Moreover, extremely high energy efficiency is achieved by using servo drives. EcoPower Xpress stands for high output with optimized utilization of energy, thus making a vital contribution to sustainability in plastics processing.

At the K, the WITTMANN BATTENFELD EcoPower Xpress injection molding machine will be on display with a WITTMANN W837 IML system. Lids made of PP will be injection-molded within a cycle time of 4.7 seconds with



an 8-cavity mold supplied by Greiner Packaging (Austria). The W837 side-entry robot inserts the IML foils, removes the finished lids, presents them to an integrated camera for quality inspection and then separates the good parts from rejects. The system comes with compact design and a facility for fast foil change.



MacroPower 1100/8800 – CELLMOULD® process

A *MacroPower* machine does the live demonstration of the advantages of CELLMOULD®, the WITTMANN BATTENFELD structured foam process. This process enables the production of extremely light-weight parts with high rigidity and minimal warpage, and is of interest for the automotive industry, where both the weights and the outward appearance of components play a vital part. The production of an automotive part will be shown. The parts will be removed by a WITTMANN W843 pro robot, then subjected to quality inspection and deposited on a conveyor belt. As a special highlight, a CMS (Condition Monitoring System) will be demonstrated for the first time on this machine. Important machine status data are measured by sensors, processed by the machine's control system and passed on to the company by an MES system for optimal maintenance planning.

MicroPower 15/10H/10H – multi-component model

A further highlight at the WITTMANN BATTENFELD booth will be this *MicroPower*, the first 2-component model in the company's machine series specially designed for injection molding of micro and nano parts. On this machine,

equipped with two parallel injection units and a rotary disk, a 2-component plug, inside a sound recorder head made of PC and electrically conductive PC, will be manufactured with a single-cavity mold supplied by Ortofon (Denmark). The machine is equipped with an integrated camera system and a WITTMANN W8VS4 SCARA robot for fully automatic quality inspection and parts removal.

SmartPower 180/525H/210L – multi-component technology

WITTMANN BATTENFELD will present for the first time at the K 2016 the multi-component COMBIMOULD process on a machine from the servo-hydraulic *SmartPower* series. These machines are currently available from 25 to 350 t as standard models and will be available with multi-component technology as well from K 2016 onwards. This system manufactures the cap of a drinking vessel made of thermoplastic and liquid silicon. This is produced with an 8-cavity mold supplied by ACH Werkzeugbau (Austria), using transfer technology. Parts removal and depositing will be handled by a WITTMANN W832 pro robot.

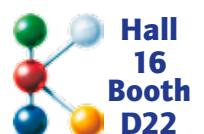
CM 40/210 R1280 – vertical round table machine with automation

In addition to the machines from the PowerSeries, WITTMANN BATTENFELD will also showcase a vertical rotary table machine with an automation system at this year's K. The CM 40/210 R1280 on display will be a machine from the new CM-R series with a rotary table and 400 kN clamping force. The machine will produce plug case made from PBT in a mold with two cavities. In the CM-R40, both the tie-bar-less clamping unit and the servo-controlled injection unit are arranged vertically. The vertical C-frame design with two symmetrical clamping cylinders provides maximum free space in the mold area and thus optimal accessibility.

CM R 40 vertical injection molding machine: easy access from all sides.

SmartPower 350/3400 – towards Industry 4.0

Smart production is one of the buzzwords that arose from the periphery of the Industry 4.0 concept. Individualization and transparency of the manufacturing process are the aspects that this *SmartPower 350* will demonstrate. A fully automatic and integrated servo-hydraulic machine will be on display, on which trade visitors will be able to witness the production of individualized plastic parts live. An attractive TPE shopping bag will be produced with a mold supplied by Haidlmair (Austria), which can be provided with a personalized imprint. At a terminal, all visitors can enter their names. To collect the bag with the personalized imprint, each visitor receives a printed voucher with a QR code, which can then be read in at the delivery station. After the QR code has been scanned in, the next bag produced will be separated and transferred to a station where it is laser-printed. After the fair, the production data of these "personalized bag" can still be retrieved by scanning the QR code for another fortnight. Handling of the bags will be effected by a WITTMANN W843 pro robot. ♦



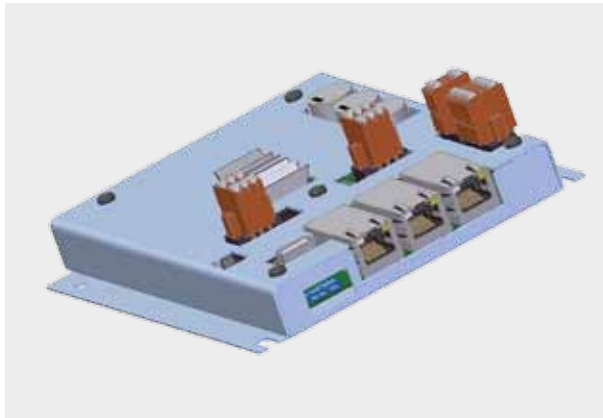
WITTMANN at the K show 2016: Making an issue out of integration

be smart

Robots and automation, recycling, mold temperature control, material drying and material conveying – at the WITTMANN K show booth, the latest innovations from all product divisions are presented. In 2016, integration solutions and data transfer are the most important topics.

The new WITTMANN 4.0 Router

The Industry 4.0 concept has highlighted a clear need to link more and more devices to an injection molding working cell. In order to help facilitate this trend WITTMANN has created the *WITTMANN 4.0 Router*.



Sketch of the WITTMANN 4.0 Router.



View of the router installed in the control cabinet of the injection molding machine.

The Router is the link between a company's network and the working cell. A working cell's injection molding machine and all the other devices – robots, flow controllers, temperature controllers and blenders – automatically 'sense' that they are connected to such a Router, and then configure themselves appropriately. No network adjustments are needed for all these devices. Only the Router itself needs definition within the larger network. And fol-

lowing the principle of *Plug & Play* or *Plug & Produce*, any device that is added to any working cell – a temperature controller, for example – will be automatically configured and identified with the injection molding machine.

Using the *WITTMANN 4.0* Plug-in, such an added device can be immediately controlled via the IMM machine control. Mold-dependent sets of parameters can also be exchanged.

In addition, the *WITTMANN 4.0* Router makes an important contribution to data security across the entire manufacturing system. Only devices that authenticate themselves as *WITTMANN 4.0* devices get access to the working cell – pre-empting possible contamination through malware.

Instead the new router makes the *WiBa QuickLook* App available. For this, the user of a smartphone need only takes a picture of the Router's IP on the IMM's terminal, typically displayed there in the shape of a QR code. An immediate overview of all the working cell devices is then available.

The new Router can then aggregate data from the working cell, and by means of the integrated OPC UA server, can provide the company network with the collected data in a safe way. Safe exchange of information with Condition Monitoring Systems (CMS), remote control or the Windows® based Web-Service 24/7 from WITTMANN BATTENFELD is also ensured in this way.

WITTMANN 4.0 technology thus opens the door to the new world of *Industry 4.0* and thereby makes a vital contribution to cyber security in production plants.

The new R9 robot control

In the past few years the WITTMANN Group has successfully concentrated on new developments relating to injection molding machine controls. Now, following the successful launch of the W8 pro robot series, the company is set to present the new R9 robot control at the K 2016 exhibition.

The R9 is a complete revision of the R8 control and from 2017 onwards, all WITTMANN robots will come with the new R9 *TeachBox*.

There are no fundamental differences with regard to the handling of the two controls, but certain features have been simplified or improved, namely; accessibility, customization, and axial movement. The entire hardware of the R9 has also undergone a complete relaunch.



The most obvious difference is the altered shape of the TeachBox. Previously the plugged panorama screen had a resolution of 800 × 600 and a size of 8.4". The *TeachBox* R9 now comes with a resolution of 1,280 × 800 and a screen diagonal of 10.1". The new screen comes in portrait format and the look of the control now comes closer to that of the UNILOG machine control.

The expanded screen of the R9 robot control is better suitable for the display of complex procedures. The combination of hardened glass and capacitive touch-technology also provides a higher mechanical stability than the former model. Above that, the new R9 solution offers the possibility of gesture operation.

Beside the generously dimensioned touch-display, WITTMANN the R9 robot control is equipped with membrane keys, enabling visual and tactile feedback: For example, the start button of the R9 *TeachBox* is illuminated in green. Other press buttons are organized in a similar way and they are distinguished also through their shapes; status buttons are rectangular, for example, while motion buttons



are round, representing one of the most important innovations in the new unit and making operational use much simpler.

The R9 has an On/Off-signal (an illuminated WITTMANN logo in case of active power supply), a central enabling switch on the back side, and a USB-port. Because of the specially designed back frame component, the *TeachBox* is naturally angled towards the operator, a feature designed for convenience, especially when complex systems are to be programmed. This angle of inclination – for example, when the control lies on a table – is about 5°, resulting in better readability and a more comfortable input.

Users operating large automation cells can opt for a second *TeachBox*. For example, when the robot is mounted lengthwise and executing the part drop behind the clamping unit of the machine, then one of the two controls can be placed by the machine control, while the other can be placed in the drop zone. In this way, the irritating journey around the machine with the *TeachBox* is omitted. The production data can, of course, be called up from both devices.

“What really makes the R9 so exciting for us is its tactile feedback,” says Martin Stammhammer, WITTMANN Group’s International Sales Manager Robots and Automation Systems. “In contrast to touch-only programming, we

have chosen a combination of touch- and key-functionality. So, by means of the so-called *Touch & Feel*, we offer an input procedure that again is more comfortable and can be done more intuitively. The R9 has better ergonomics, a larger display and reduced weight. The total weight of the *TeachBox* now is 10% less than before.”

The new G-Max beside-the-press granulator series

The new G-Max beside-the-press granulator comes as a flexible, productive and energy-efficient device with belt drive and a completely new control concept. This granulator can be operated from outside a protective housing. With the G-Max 12 and G-Max 33 granulators, the WITTMANN K 2016 presentation shows the smallest and the largest models of this series for the first time.

G-Max Series

G-Max 12

- Cutting chamber: 198x169 mm
- Number of blades: 3 x 4
- Throughput: max. 50 kg/hr
- Motor output: 1.5 kW
- Rotor diameter: 180 mm
- Re grind bin capacity: 10 l

G-Max 24

- Cutting chamber: 325x190 mm
- Number of blades: 3 x 8
- Throughput: max. 80 kg/hr
- Motor output: 2.2 kW
- Rotor diameter: 180 mm
- Re grind bin capacity: 12 l

G-Max 33

- Cutting chamber: 460x235 mm
- Number of blades: 3 x 3
- Throughput: max. 110 kg/hr
- Motor output: 3 kW
- Rotor diameter: 220 mm
- Re grind bin capacity: 16 l



The G-Max 12 is the smallest model of the new series of beside-the-press granulators from WITTMANN, pictured here with drive visualization.



G-Max 33, the strongest model of the new granulator series.

G-Max granulators are conventional beside-the-press granulators for the grinding of soft to middle hard engineering resins. These granulators are specifically designed for the inline-recycling of sprues.

G-Max granulators are especially compact, energy saving, and are equipped with a unique cutting chamber damper to significantly reduce noise.

The granulators are also equipped with IE3 drive motors that guarantee high energy efficiency. The equipment has been designed with staggered rotors and generously dimensioned cutting chambers. Depending on the model, a material throughput of 50, 80, or 110 kg/hr can be reached.

WITTMANN presents an entirely new granulator concept with this series: A remote control replaces the conventional electrical control device. This new concept allows for standard functions that are not available with >>



The G-Max granulator is shown here within the protective housing of a working cell.

conventional design. For example, the control device has an hour counter with a digital display. An interface enables communication with the injection molding machine. As an option, a special shutdown function is available: When the IMM is “off”, the granulator stops automatically, and this feature helps to save energy. There are two different positions of the control on the granulator to choose. This makes it much easier for the operator to supervise the grinding process.

TEMPRO plus D250 oil temperature controller for high-temperature applications.

In addition, the control’s connecting cable to the granulator has a length of three meters, allowing the control of the granulator from the outside of a protective housing. In contrast to the respective competitive products, WITTMANN offers all of these features as part of the granulators’ standard equipment.

All WITTMANN products are equipped with components of the highest quality, and this includes the G-Max series. The material hoppers and the regrind bins are made of stainless steel.

The G-Max models have screens with conical shaped holes as a standard feature. This makes it easier for soft tacky regrind to pass through the screens. This also helps to minimize screen hole plugging. Cleaning is made very easy, as operators can open the cutting chambers with a complete top access.

TEMPRO plus D250 oil temperature controller

The TEMPRO plus D250 is a completely overworked further development of the TEMPRO plus 250. The new thermo-oil-controller has many new features – compared to the forerunner model, beginning with its very compact design. It is also equipped with the 5.7" color touch-display of the D series, thus guaranteeing optimal ease of use. The enhanced heating capacity of the unit now reaches 16 kW.

Using oil as a heat transfer medium, it is possible to heat up molds to a temperature higher than 230 °C. This is an absolute requirement to run special applications in the high temperature range. The new TEMPRO plus D250 oil temperature controller is therefore best used when processing technical plastics.

The smaller more compact design has been realized through the use of smaller components. The newly developed heat exchanger, for example, is made from stainless steel. The heat exchanger houses the spiral cooling coil, in the middle of which is the heating rod – another new development. This heat exchanger replaces the six heating rods previously used. The freed up space is now used to accommodate a more generously proportioned oil tank.



The purge volume of 2.2 liters has now also been increased to 16 liters. Thus, the TEMPRO plus D250 is of interest to processors that want to run applications with larger molds and also have a need for a higher purge volume. An optimal mold purging system is also possible for large molds. One of this new temperature controller’s most important advantages is its use of indirect heat transfer. This method leads to less stressing of the tempering oil, and helps to prolong the oil lifetime.

The heating rod itself has a capacity of 16 kW and is covered by a thick-walled aluminum pipe. This pipe is furnished with several flow direction holes through which the thermo-oil flows. Here, a magnetically coupled pump is used (pump capacity 1 kW, or 45 l/min respectively; pump pressure 7 bar).

Thus the heating rod transfers heat to the aluminum pipe which then heats up the thermo-oil flowing through the holes – and up to the set temperature point. A 100% sealing of the entire construction of this unit is absolutely indispensable. To ensure a perfect sealing, so-called Top-chem seals have been used; especially designed for high temperature range applications.

In the course of this process, the newly designed spiral cooling coil guarantees the needed cooling capacity. The new cylindrical air separator collects the air that may oc-



cur in the filling line or the mold return line at the highest point. Then, the air passes off through the degassing line that leads through the tank. In this way a strict separation of circulating hot oil and the atmospheric environment is guaranteed. Furthermore, the oil's aging process, mainly caused by oxidation and coking, is delayed. The oil's life expectancy has been substantially increased.

The TEMPRO plus D250 can be fully integrated into the control of a WITTMANN BATTENFELD injection molding machine, using an optional *WITTMANN 4.0* interface. All of these measures have contributed and combined to create an oil temperature controller that meets the highest requirements. The new unit lines up alongside the WITTMANN water temperature controllers that have been successful for many years now.

The net5 system connects dryers and conveyors

The WITTMANN Group has developed the *net5 system* in order to advance the field of material handling; connecting dryers and conveyors together. These installations can be set up very easily and information can be input from an ATON dryer in the same way that it is applied for the control of material loaders.

Multi molding machine operations are made possible with the *net5 system*: All options can be realized quickly and without extensive operator training. This technology clears away the need for manual feeding of any equipment. The conveying time and quantity of material can be set via a potentiometer at the material conveyors. The use of a remote control is not mandatory, but certainly eases operations and additional functions can also be activated.

When production capacity increases – and when the conveying system is enlarged – the same remote control can control any material loaders that are added to the system. Adding another material loader to the system is absolutely simple – only a keystroke is needed.

Material dryers of the ATON plus series use the WITTMANN segmented wheel technology and are equipped with a touch-screen user interface. The technology of the ATON dryer stands for an especially energy saving method which is visible on the *Energy Label* on the exterior of the device.

Provided that the optimal quality of the dried air is reached, the dryer chooses between different process sequences, thus reducing the energy consumption to the necessary minimum. This special function is called *EcoMode*, and it can be activated simply on the touch-screen.

EcoMode and some more energy saving functions come with ATON dryers as a standard feature. In the event of a material loader being used for the feeding of an ATON plus – be this a single loader of the FEEDMAX S series or a new FEEDMAX G central loader – the settings for this device can be controlled using the dryer's terminal.

Every ancillary device is displayed on the dryer's touchscreen: material loaders, blowers, and of course the dryer itself. When a material loader is added, or when an

additional ATON plus is used (and linked with the first dryer), these additional devices can also be displayed with just a keystroke. All devices can also be displayed on the screen of the additional ATON dryer – including the first ATON plus. This high flexibility of the new *net5 system* allows for a system that can control from 1 to 24 material



ATON plus material dryer and FEEDMAX plus material loader.



TEACHBOX basic remote control, supporting the application of the net5 system.

loaders. If needed, the dryers can be displayed, and also two vacuum circuits can be established. In doing so, one of the vacuum circuits can display the supply of the loaders to the dryers, and the other can display the loaders supplying the processing machines.

For an easy and well-arranged distribution of the material, a coupling station can be used. And to avoid the risk of blocked up material lines, a purging function emptying the lines can also be applied. ♦



New JUNIOR 3 Compact granulator shows an impressive performance

The French MIHB company, being a widely-known high-quality molder in the automotive field, executed industrial test series with the new WITTMANN JUNIOR 3 Compact screenless granulator. – The results are speaking in its favour.

Julie Filliere



Grégory Maron, Sales Representative from WITTMANN BATTENFELD France (left), Olivier Billot, MIHB Manufacturing Manager, and the new WITTMANN JUNIOR 3 Compact beside-the-press screenless granulator.

The French plastics processor MIHB was founded in 1968, and is based in Groissiat in the Oyonnax “Plastic Valley” in the west of France, not far from the Swiss border. The company is a successful family-run business, and is managed by Frédéric Jullien, representing the second generation.

MIHB’s main business consists of designing and manufacturing more than 800 different plastic parts and sets for the automotive and cosmetics industry, as well as for the domestic appliances sector.

MIHB operates 66 injection molding machines, each of them suitable for different molding technologies, and for processing one to four different materials. In addition,

JUNIOR 3 Compact for the grinding of large sprues

- Regrind size: 4, 5, 7 or 10 mm
- Motor output: 2.2 kW
- Cutting chamber: 240 × 467 mm
- Number of cutters: 3
- Max. throughput: 30 kg/hr
- Second shaft (option)

the company is also executing insert molding, magnetic molding, extrusion processes, and working with blow molding machines.

The Groissiat plant’s floor space is 19.000 square meters, where MIHB employs a staff of 160, generating revenue of 23 million Euros a year.

One of MIHB’s specialties is the manufacturing of keys for many different auto brands. In fact, MIHB

manufactures the keys that are used with 39 car models from the following well-known automotive companies: Renault, Peugeot, Citroën, Toyota, Scania, Land Rover, BMW, Mercedes and Honda. Therefore, MIHB is considered one of the major players in the automotive supply industry. “Transform to success” is the company’s slogan, to which

Frédéric Jullien, MIHB's CEO, refers to, when stating: "We are not only a simple manufacturer of plastic parts, we also realize innovative solutions in regard to design, control systems, process development, and the application of combined technologies."

MIHB makes use of WITTMANN granulators

The company's Manufacturing Manager, Olivier Billot, states that more than 15 WITTMANN granulators are in use on the production floor, primarily MINOR 2 and JUNIOR 2 Compact screenless granulators. "We immediately agreed, when the Research & Development Team of

WITTMANN BATTENFELD France contacted us, asking whether we would like to execute industrial test series with their new JUNIOR 3 Compact granulator. The point was to evaluate the performance of the new granulator before its market launch. We wanted to quantify the possible throughput of different materials, how many sprues and defective parts the granulator was able to process, and of course we wanted to rate the energy savings that could be achieved, and finally judge the quality of the regrind."

Olivier Billot found, very much to his surprise: "The granulator's drive motor never blocked, although we used PA with 50% glass fiber, and also POM containing 30% of glass fiber."



Top ranking for the JUNIOR 3 Compact from WITTMANN

Olivier Billot is very enthusiastic about the JUNIOR 3 Compact granulator. The unit is well adapted to using it for large sprues and defective parts. Billot adds: "The footprint is minimized. Compared to competitive products, the JUNIOR 3 Compact features a footprint of 30% less, thus allowing for a much easier beside-the-press installation. The space available in the hopper avoids any blocking caused by sprues or defective parts, enabling a regular feeding. We also appreciate that the opening and cleaning procedures are laid-out very easy, and that the instant visibility of the grinding process is provided by means of the special hopper viewing window."

To get a practical feedback, the Research & Development Department of WITTMANN BATTENFELD France stayed in close contact with MIHB during the test series that was executed with the JUNIOR 3 Compact. The outcome was absolutely convincing:

- ◆ The JUNIOR 3 Compact turned out to be the granulator that is best adapted to using it with injection molding machines of up to 300 tons of clamping force.
- ◆ The quality of the regrind matches all of MIHB's specifications with less dust, and uniform material that allows for optimizing the inline-recycling process.

A selection of high-quality MIHB products, ...



... parts for motion transmission systems, ...



... day light, and fluid management parts for the automotive industry.

Customer specifications that include the use of regrind, are leading to less manufacturing costs, and as a result, are increasing the company's competitiveness. Moreover, using regrind has a positive environmental impact.

MIHB has adopted an environmentally-friendly approach. Olivier Billot concludes that this test series experience makes him sure of the relevance, the quality and the reliability of WITTMANN granulators. He also highlights the availability of WITTMANN BATTENFELD's service technicians, and the quality of their work. ◆

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

An innovative Malaysian packaging company chooses WITTMANN

The COMBI-PACK Sdn Bhd company, based in Seremban, about 50 km south of Kuala Lumpur, specializes in providing innovative high-quality food packaging products. In order to run a high-volume 24/7 production, COMBI-PACK relies on a high-performance central material conveying system and an IML automation system (In-Mold Labeling) from WITTMANN.

David Tan

High-quality injection-molded IML packaging parts (left), and Combi-Cups with cardboard sleeves (right), manufactured at COMBI-PACK Sdn Bhd in Malaysia, using auxiliary equipment and an IML system from the WITTMANN Group.

COMBI-PACK was founded in 2007 by Mr. C.Y. Chow, his wife Clara Chang, and their business partner Linda Leong. The company is leading the Malaysian market for the manufacturing of high-quality oriented food packaging products for instant noodles, hot served foods, snacks, and yogurts.

One of the most innovative products of COMBI-PACK is the so-called Combi-Cup that has won several prestigious innovations awards. This cup is made from a combination of thin-walled injection-molded ribbed plastic and a wrap-around cardboard sleeve. This cup is specially designed for using it with instant noodles that have to be heated up, and its cardboard sleeve is mainly applied to guarantee optimum heat insulation. In addition, COMBI-PACK offers In-Mold Labeling services for dairy and other food products.

More than 50% of COMBI-PACK's products are exported to Australia, Singapore, and Indonesia. In 2014, the company moved to the actual Seremban production premises. Prior to this, they invested about MYR 20 million, and upgraded the 20-year-old factory to a modern state-of-the-art manufacturing plant. COMBI-PACK is certified according to the requirements of Food Safety System Certification 22000 and Hazard Analysis and Critical Control Points (HACCP) standards.



C.Y. Chow, Chief Executive Officer (second from the right), and Clara Chang, General Manager (second from the left), of COMBI-PACK Sdn Bhd; David Tan, Business Development Director (left), and Howard Wong, Sales Manager (right), from WITTMANN BATTENFELD (Malaysia) Sdn Bhd.



WITTMANN automation systems ...

In 2008, WITTMANN BATTENFELD Malaysia supplied the first W727 IML robot system, automating the production of a 1-liter bucket that is molded in a 4-cavity mold. The IML automation system and a European injection molding machine model make up a completely integrated work



View of the COMBI-PACK production plant in Seremban/Negeri Sembilan: WITTMANN DOSIMAX dosing unit (left), WITTMANN FEED-MAX central material loaders (right) and WITTMANN servo robots.

cell. The test run for the entire system – including the mold – was executed in Germany. Eventually, the complete system was shipped to Malaysia, installed, and commissioned, and from that time on it has run absolutely smoothly. Subsequently, COMBI-PACK ordered several additional WITTMANN robot systems: a W737 IML system, and W832 UHS, W832 HSS and W818 linear robots, to cope with the rapid growth of their food packaging business.

... and WITTMANN auxiliaries

In 2010, the WITTMANN BATTENFELD Malaysia team started the installation of an eMax-controlled central material conveying system for the material supply of 12 injection molding machines, providing a total material throughput of 450 kg/h. And prior to the start-up of the new Seremban factory in 2015, a second central conveying system was successfully installed, serving 18 injection molding machines with a total material throughput of 900 kg/h.

These central conveying systems include the easy-to-use WITTMANN eMax/24 network control, with which the whole installation can be overlooked. The peripheral equipment that is used with the system is made up of the following WITTMANN devices:

- Maintenance-free side-channel blower station.
- Two-stage filtration system.
- Stainless steel coupling station for four different PP-based material.
- High-functionality leak-proof FEEDMAX B series loaders with pneumatic discharge shut-off valves that guarantee dust-free operation at the machine.
- DOSIMAX volumetric blender for a uniform blend of batches are used with the majority of injection molding machines.

WITTMANN W737 IML robot system: in a 4-cavity mold, a 1-l bucket is produced.



Views of the piping installation of the central material conveying system at COMBI-PACK Sdn Bhd in Seremban, Malaysia.



COMBI-PACK CEO C.Y. Chow says that he is very satisfied with his central material handling system from the WITTMANN Group. When asked why he had chosen this manufacturer as a supplier, he declared: "In view of a production run that goes around the clock, we needed very reliable and high-performance automation and material handling systems. We demand minimum downtime, and little human intervention. And also most important was the fact that WITTMANN BATTENFELD Malaysia is able to provide a local quick-response, after-sales service." ♦

David Tan is the Business Development Director of WITTMANN BATTENFELD (Malaysia) Sdn Bhd in Selangor, Malaysia.

TEMPRO plus D180 on duty for carbon lightweight applications

Last year, German carbon specialist Wethje invested in 3 TEMPRO plus D180 dual zone temperature controllers. The company wanted to temper a new working cell that uses the Prepreg Compression Molding (PCM) technique. The devices turned out to be the optimal choice for this application.

Gottfried Hausladen



Two of the three WITTMANN TEMPRO plus D180 temperature controllers that were installed at Wethje.

Schematic description of the PCM process:

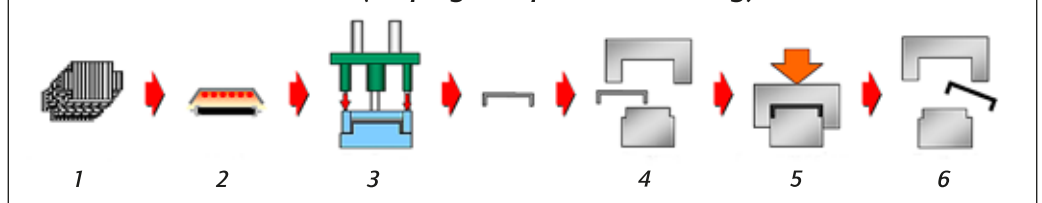
- 1 - Laminate
- 2 - Heat
- 3 - Preform
- 4 - Charge
- 5 - Compression
- 6 - Demold

The company Wethje Carbon Composites GmbH ranks among the leading lightweight construction specialists in the

world. It has two plants in Germany, in Hengersberg and in Vilshofen/Pleinting, where the most complex high-quality carbon elements are built. On the one hand, the business make structural elements like the so-called monocoques (passenger cells), on the other hand the company also makes car body shell parts (bodyworks) and other exterior parts.

Wethje also manufactures custom-made products and builds prototypes and preproduction series parts. For example, Wethje built the complete monocoque for the X-Bow sports car from KTM right from the start – and does it still today.

PCM (Prepreg Compression Molding)



Wethje supplies many premium OEM companies and Tier-1 industrial manufacturers, amongst them companies that work in the fields of aviation and space flight.

PCM technique (Prepreg Compression Molding)

Together with MITSUBISHI RAYON CO., LTD – the main stockholder of Wethje – the company has developed the so-called Prepreg Compression Molding technique (PCM). This approach allows a significant reduction of the cycle time when it comes to producing conventional carbon parts.

PCM starts with the production of a preform. This carbon preform is brought to its final tolerances using a high-pressure press with a heated mold. After hardening the part is demolded. Applying this principle of pressing brings about the possibility to achieve "Class A" surfaces.

Consistency and short set-up times

In order to get to the best results with this technique, it is necessary to apply a perfectly handled tempering procedure. It becomes vital to use the most powerful and failsafe temperature controllers. The WITTMANN temperature controller TEMPRO plus D180 unit uses mold sensors



connected to it for the purpose of heating up the molds up to 160 °C. When this temperature is reached, the process of integration starts within the material, and the hardening times can then be realized. Here, the consistency of the temperature is the most important parameter. A maximum deviation of ± 0.5 °C is the crucial criterion in order to en-

sure a stable production run. Previous losses of energy brought about the need for a temperature controller that could handle temperatures that exceeded 160 °C. As a consequence, WITTMANN temperature controllers from the TEMPRO plus D series were chosen: high temperature versions with a flow temperature of up to 180 °C.

In order to achieve the shortest possible working cell set-up times for molds of up to 3,000 kg, the heating capacity of the temperature controllers was chosen in a way that the time needed to heat up the mold met a target of 45 minutes. Three dual zone devices with enhanced heating capacity were used; each circuit with a capacity of 16 kW. In the end, this arrangement led to an installed heating capacity of 96 kW in the working cell. In order to support the application of energy into the mold, enhanced pumps with a pump capacity of 60 l/min were also installed.

Further optimization of the set-up time was finally attained by using the new purging function – using compressed air to blow out the mold. This approach empties the mold circuit much faster and much more efficiently – compared to an extraction by suction that is executed by the pumps. WITTMANN temperature controllers are equipped with a cross-platform digital interface. Via this interface, the devices are integrated under the control of the high-pressure press, meaning that temperature controller settings can be loaded automatically when the molds change over.

Contributing to quality control

Because of their high usability and detailed process documentation, TEMPRO plus D devices are contributing considerably to quality control. TEMPRO plus D controllers come equipped with generously dimensioned touch-screens in order to easily recall operating modes and important parameters. For example, if the mold symbol on the screen is displayed in green, this means that all parameters are within the set limits. The integrated oscilloscope function allows complete traceability of process parameters such as pressure, temperature and flow measurement – up to 24 hours later. This is offered for all 6 circuits of this application, each being equipped with flow measurement.

Michael Hobelsberger of the company says that "we have used these devices in practice for one year now. We can confirm the reliability, the simple usability, and the adherence of all matters to our very tight tolerances. With WITTMANN, we have found a competent partner that responded exactly to our needs." ♦

Michael Hobelsberger, Wethje Engineering Director (left) and Gottfried Hausladen, Sales Engineer of WITTMANN Robot Systeme in Germany.

Carbon demonstrator component: roof element for the X-Bow sports car.

Gottfried Hausladen is Sales Engineer of WITTMANN Robot Systeme GmbH (Germany), and is in charge of the complete product portfolio from the WITTMANN Group..

Manufacturing at low energy costs using WITTMANN auxiliaries

The Plant Manager of the Baddi plant of Havells India Ltd, Jitendra Kumar Dhaka, talks about his company's reasons for turning to the WITTMANN Group as a supplier – particularly when it came to the decision of installing a new central material drying and conveying system.

Nanda Kumar



Havells India Limited is a leading Fast Moving Electrical Goods (FMEG) company and a major power distribution equipment manufacturer with a strong global presence. Havells enjoys an enviable market position across a wide spectrum of products, including industrial and domestic circuit protection devices, cables and wires, motors, fans, modular switches, home appliances, electric water heaters, power capacitors, CFL lamps, luminaries for domestic, commercial and industrial applications.

Today, Havells owns some of the most prestigious brands like Havells, Crabtree, Standard and Promptec. It has 11 plants across six locations in India and manufactures over 90% of its products in-house.

With a focus on zero-defect molding, the company successfully integrated not only a WITTMANN BATTENFELD all-electric injection molding machinery at their production plant in Baddi, Himachal Pradesh, but also a WITTMANN central material conveying system and other auxiliaries, as well as WITTMANN automation, to strengthen the company's manufacturing capabilities.

With regard to the impressive ongoing growth of the Indian market for electric devices, Jitendra Kumar Dhaka, Plant Manager of Havells' Baddi plant, states: "To realize with our technical products the very high demands that we have specified, it is definitely necessary to only apply state-of-the-art machinery. Today, we have some of the most advanced plants in the industry. The WITTMANN Group was our ideal choice, because they are able to supply entire solutions, comprising equipment for material drying, grinding, conveying, and blending."



"We are very happy that we have turned to WITTMANN as the supplier of our auxiliary equipment."

Jitendra Kumar Dhaka

Why Havells turned to the WITTMANN Group

When asked why WITTMANN has been chosen as a supplier and not one of the other companies present on the local market with similar products, Jitendra Kumar Dhaka declares:

"It is our philosophy to produce world-class products in state-of-the-art plants. With WITTMANN as a supplier we are able to achieve all of our goals. We have compared the WITTMANN devices with those of their competi-

tors with regard to low energy consumption. As a result, we found that the auxiliaries from the WITTMANN Group are clearly in compliance with our standards of the lowest possible energy consumption. Above that, these devices are equipped with many useful features. The DRYMAX dryers' intelligent *SmartFlow* function, for example, which has automatic air distribution to adjust to different materials and fluctuating material demands. WITTMANN dryers achieve the best drying results, even at a dew point as low as -60 °C. And, for one more example, the company's granulators provide for a perfectly uniform regrind, free of dust. We have narrowed down our auxiliaries outfit, now using only WITTMANN products. Here, we (or other customers) have

a single-source supplier for all of our requirements, including everything from temperature controllers, granulators, drying and conveying equipment, and material blenders. We are completely happy that we have turned to WITTMANN for our peripheral equipment.”



In fact, at the Baddi plant, Havells has almost every type of product from the WITTMANN Group, including:

- W808E robot.
- MINOR 2 granulator for inline recycling.
- DRYMAX E180 battery dryer with several SILMAX drying hoppers.
- Coupling station (8 × 4, uncoded).
- WITTMANN material conveying system with FEEDMAX material loaders.
- GRAVIMAX material blenders.
- WITTMANN water flow regulators.
- WITTMANN temperature controllers.

Jitendra Kumar Dhaka continues: “In the past, it was rather difficult for us to achieve temperatures above 90 °C

using our former water-based temperature controller devices. This has changed since we have turned to TEMPRO units from WITTMANN. Before that had happened, we had issues relating to heater failures, seal failures, and also problems with the units’ cooling coils. Two years ago, we re-

placed the obsolete devices by TEMPRO controllers, and we haven’t had any problems ever since.

Concerning the parts granulation process, we were able to essentially improve it through the use of WITTMANN equipment. To make it clear, dusty regrind was the number one disruptive factor for the smoothness of our production process and for the quality of our products. Thanks to the cutting technology of the WITTMANN MINOR 2 screenless granulator, we now have very little dust formation. Another striking advantage that this granulator model offers is that its cutting tools can be reversed when one of their edges got blunt.

Finally, in terms of the WITTMANN drying and conveying equipment, we absolutely need superior and efficient material drying to comply with product manufacturing standards in a global context, and this equipment hasn’t caused any trouble so far.

Our technical team evaluated all of the central WITTMANN unique selling points – for example, the *SmartReg* energy saving function, as well as the superior dew point controlled operating mode that is able to function smoothly even at a dew point rate of -60 °C. Not only from a technical point of view, but even personally, I like the visions that WITTMANN has realized in the field of material drying, setting the benchmark for the entire industry in terms of energy efficiency, which is clearly communicated through their dryer energy labels. All this is supported by the advanced eMax conveying system control.

We truly rely not only on the great machinery and auxiliaries the WITTMANN Group provides, but also on the unmatched local support that we get from them. Unlike running up a single device, installing an entire drying and conveying system is a matter of high complexity. Such an effort needs a lot of instantly made decisions, that is to say, relevant customized variation orders have to be executed to precisely adapt to the shop floor layout conditions. The WITTMANN BATTENFELD team realized a really well-organized layout that also fits to the general aesthetic look of the shop floor.

Altogether, estimating the strength of the WITTMANN Group’s products and the quality of their service, I have to say that we will call upon the WITTMANN Group also for our future demands.” ♦

Views of the WITTMANN central material drying and conveying system (DRYMAX battery dryer, SILMAX drying hoppers, FEEDMAX material loaders, etc.) at the Indian plant of Havells in Baddi, Himachal Pradesh,

Nanda Kumar
is the General Manager of WITTMANN BATTENFELD India pvt Ltd. in Chennai.

Ackermann – successful with innovative, energy-efficient technology

Ackermann, based in Kierspe, North Rhine-Westphalia, Germany, has supplied the mechanical engineering industry with high-quality plastic products for more than 60 years. From the very beginning, these products have been manufactured on BATTENFELD injection molding machines. In March this year, an EcoPower 300 with an Insider solution was added to the company's range of machinery.

Gabriele Hopf



*Picture right:
Ackermann production hall in Kierspe.*

*Picture below left:
For the core melting process, Ackermann has converted a TM machine model from WITTMANN BATTENFELD.*



*Picture right:
Matthias Ackermann, Quality Manager, Christoph Ackermann, Managing Director/CEO, Frank Höher, WITTMANN BATTENFELD Salesman, Peter Kroczek, Ackermann Production Manager in front of the new EcoPower 300 (from the left).*



The company Hugo Ackermann GmbH & Co. KG in Kierspe is a successful, medium-sized, family-owned company in its 3rd generation, originally founded by Hugo Ackermann as a tool-making shop in 1938. For the first thermoplastics processing machine made by BATTENFELD in 1949, Ackermann was the company that supplied the mold. In 1954, the company acquired its first injection molding machine for thermoplastics processing, and it was supplied by BATTENFELD. Over the following years,

Ackermann continued to extend and modernize its range of machinery. Today, Ackermann has 15 injection molding machines installed, 14 of which have come from WITTMANN BATTENFELD, with clamping forces ranging from 350 to 5,000 kN.

With 23 employees, Ackermann manufactures, in two shifts, mainly products in small and medium-sized batches for general mechanical engineering, the pump industry, and electrical engineering. The company has made a name

for itself in the industry for many reasons, one example being the development of a lost core technology to realize complex internal cavities. For this purpose, Ackermann casts melting cores, consisting of an alloy with a low melting point, and surrounds them with plastic by insert molding. Due to the special attributes of the plastic material used, the metal cores are subsequently melted by induction instead of heat – in contrast to the lost core technology used in the automotive industry.

To make high-quality parts with internal cavities, such as handles or telephone receivers, the company has been using the AIRMOULD® internal gas pressure process from WITTMANN BATTENFELD for many years. Multi-component technology from WITTMANN BATTENFELD is



also applied by Ackermann. The company's products are highly technical plastic parts made to customers' specifications, including housing components, small parts for pumps and fixtures, and fluid technology parts, primarily made of polycarbonate, polyamide, POM and PBT. Fiberglass- and carbon fiber-reinforced materials are also used.

Praise for the EcoPower

In 2009, when WITTMANN BATTENFELD brought its first machine from the new *PowerSeries* to market, the all-electric *EcoPower*, Ackermann was the first customer to buy it. The high precision of these machines and their extremely low energy consumption impressed Christoph Ackermann, the company's Managing Director and CEO, as well as his brother Matthias Ackermann, who is responsible for product quality. Christoph Ackermann comments: "From the *EcoPower*, we get products with excellent surface quality, and we have hardly any start-up scrap. Compared to our older machines, the *EcoPower* consumes just one half of the energy." Positive experience

with the first *EcoPower* machines prompted Ackermann to install an additional machine of this type in 2014, this time with 1,800 kN clamping force. And in March 2016, an *EcoPower* 300/2100 with Insider solution was commissioned at Ackermann.

In the WITTMANN BATTENFELD Insider solution, the robot, transport conveyor belt and other peripherals for upstream and downstream processing are integrated with the injection molding machine. According to Christoph Ackermann, the *EcoPower* Insider is easy to operate, requires little space and even looks good. Peter Kroczek, Ackermann's Production Manager, is also more than satisfied with the new *EcoPower* and praises its excellent performance, its low energy consumption and the low noise level of all *EcoPower* models.

Apart from the machines and process technology supplied by WITTMANN BATTENFELD, Ackermann also appreciates the WITTMANN robots and peripherals. So WITTMANN robots have not only been purchased for the newly installed injection molding machines, but also to upgrade older equipment.

Decision for turnkey packages

For Christoph Ackermann, the package as a whole is vital in making investment decisions: "We want a modern, energy-efficient machine with user-friendly robot technology from a single source." But service and closeness to the supplier are also decisive purchasing criteria for Christoph Ackermann. The many decades of business relations between Ackermann and WITTMANN BATTENFELD are convincing evidence that Ackermann has found in WITTMANN BATTENFELD a partner which meets the company's requirements in every respect. ♦

Christoph Ackermann, the company's Managing Director and CEO, as well as his brother Matthias Ackermann, who is responsible for product quality. Christoph Ackermann comments: "From the *EcoPower*, we get products with excellent surface quality, and we have hardly any start-up scrap. Compared to our older machines, the *EcoPower* consumes just one half of the energy." Positive experience

Impeller wheel, manufactured with lost core technology. – From the left: metal core, insert-molded plastic, finished impeller wheel.

Handle with internal cavity – produced with the AIRMOULD® internal gas pressure process from WITTMANN BATTENFELD.

Housing components made of transparent plastic.

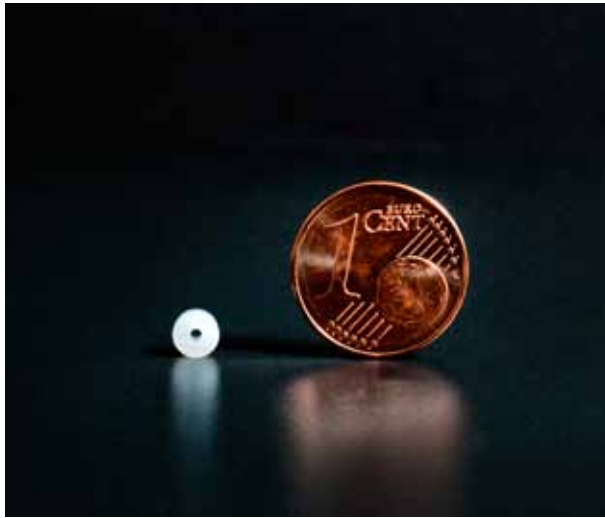
Small parts for general mechanical engineering.

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

Eltek, Italy: the winning strategy in micro molding

The well-known Italian Eltek Group has installed two clean rooms and invested in a micro molding press from WITTMANN BATTENFELD. Mission: business expansion and diversification. This is the strategy that has made investment sustainable. – A report, including a conversation with Eltek representatives.

Stefano Troilo



Micro-molded teflon seals that are to be mounted on a thermal actuator used with household appliances.



The Eltek Group's general headquarters are located in Casale Monferrato. Other manufacturing sites of theirs are located in Hone (Aosta Valley, Italy), in Poland, Switzerland, Brazil, and China; and there are sales offices in Germany and the United States. The facilities cover an area of 38,000 square meters, and the group employs a staff of more than 1,000. From an organizational point of view, the company's activities are organized as three business units: automotive, household appliances, and medical. In the latter sector, know-how is applied to the development and production of precision parts in plastic, sensors and micro sensors, as well as medical devices with CE marking. The company also operates as a contract manufacturer in compliance with EN ISO 13485 standards.

The company's expertise covers numerous sectors, including mold design and manufacturing, electronics, and the engineering of automatic and semi-automatic production lines with capacities ranging from small series to millions of pieces a year. 2013 revenues were 107 million



*"Alternative solutions can only be found when the focus is put on technology."
Giuseppe Avonto*



*"Because of the results we had got using the test mold, we decided to purchase a MicroPower."
Fabio Nebbia*

euros, 3.7 million of which were invested in research and development that year.

In recent years, the Eltek Group has expanded into the medical and nanotechnology sectors. The clean rooms at the Italian production facilities in Casale Monferrato and Hone – as well as the recent acquisition of an electric micro molding machine – demonstrate the company's interest in further investments following this direction. As the Eltek Group's Director of the Business & Development and Supply Chain Departments, Giuseppe Avonto

states: "This investment has required a careful benchmarking, and has become a reality thanks to a sophisticated approach, turning to our extensive knowledge that we have acquired on our primary target markets over the years."

How did you make the decision to focus on micro injection molding?

In the past few years, there has been demand from a number of companies in the medical sector for micro parts that made it necessary for us to use this technology. But the

investment we needed was not justified by the contract volumes we could get. Generally, the volumes did not exceed a few dozen thousand pieces. Then, given our interest in supplying high-tech segments to remain competitive (but preserving our philosophy of all-Italian made products), we understood the medical field was a strategic area. Accurate analysis of our production processes has enabled us to identify areas with the potential of applying micro molding in the context of traditional processes. We thought that this could push on the amortization of new resources. Using micro molding for producing a part that had to be mounted inside another part for the household appliances industry, was the turning point. The key was a gasket we previously purchased from a supplier, but within a year we were able to produce this gasket in-house. Thus

ture made up of various plastic parts which is expected to replace the current metal product. This will protect patients better from the risk of infection, still one of the leading causes of death in hospitals. Then, for another client, we are developing a plastic component to be integrated into the electronic microcircuits of radiology machines.

To what extent does the medical sector account for your group revenues?

About two percent. And this seems to be a marginal figure, when compared to the overall amount, but it is significant when considering the fact that we have entered this segment only four years ago. Our goal is to hit ten percent, working on our portfolio of currently 30 projects, partly under the Eltek brand.



What are the most significant projects you are working on?

In addition to some plastic parts designed to client specifications, a number of Eltek plastic devices are used, for example, in the dentistry sector (e.g. mouth gags). The most significant medical device will pretty soon be ready for its market launch (when the CE marking procedure will be concluded). This is a complete machine with various sets of disposables that is targeting the regenerative medicine sector. It is a device for the preparation of platelet-rich plasma for non-transfusion use (PRP CPunT). Above

Teflon seals for micro injection molding. – A closer look at the assembly procedure.



that, we are developing a project on behalf of a manufacturer of small surgical devices, based on our design and patent. It is about tacks for non-absorbable sutures – clips and suture anchors that currently are produced using titanium. Lastly, we are in the final development stages regarding complex devices equipped with sensors for the measurement of physiological parameters of various internal organs.

it was possible to complete the vertical production cycle of a part with an output rate of approximately 25 million pieces per year.

In addition to the return on investment, did this move lead to further advantages?

Yes, because it raised the quality level of the process, and therefore of the produced parts. Today, this machine is dedicated almost exclusively to the production of gaskets. But in addition, we can use it to carry out tests prior to the development of new projects, as well as for the production of pre-series.

Are negotiations underway that might be concluded soon?

We are working on projects relating to micro valves and components for inhalers, and in particular, on an order from an orthopedic company. The product in question is a struc-

Will micro molding be one of the jewels in your crown?

Without question. Its implementation makes our production technologically state-of-the-art – compared to our competitors who don't have it. Moreover, and from our clients' point of view, the benefits are notable, because the now much better price for these parts is closely connected to the special features of this technique.

Does its introduction mean organizational and operational strategies have to be revised?

Eltek's operating strategy has always involved creating a complete product pipeline. In this case, and to meet future needs, we have set up clean rooms and assembly lines in our facilities in Casale Monferrato and Hone. In addition – thanks to the growing importance of Metallux SA (a Swiss company in the Eltek Group), a part of the Swiss production will move to Italy. This is a rare fact in the history of Italian manufacturing, and it enables us to fully integrate the application of microelectronics and micro molding technology. >>

The molds are made by the Eltek in-house Engineering Department.

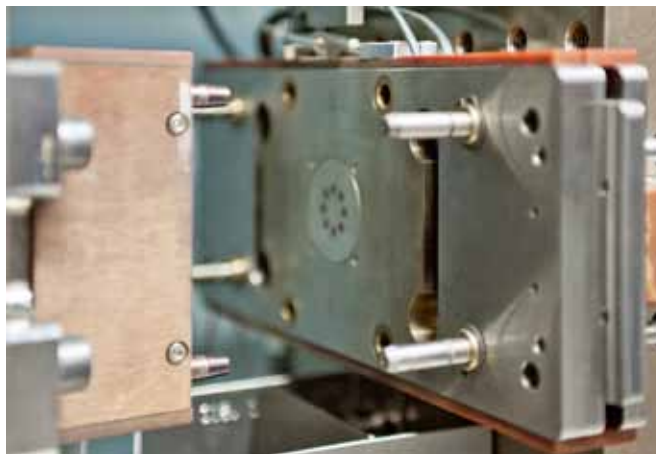
For the medical sector, electronics, and beyond

The *MicroPower* micro molding system from WITTMANN BATTENFELD is specifically designed to meet the needs of the medical and electronic sectors, but also all other markets oriented to part miniaturization. Exclusively in an all-electric version, the machines are available with clamping forces between 5 and 15 tons, with – and without – rotary table. In particular, the models of the last generation include a two-phase injection unit with plasticization screws and injection pistons injecting volumes of 0.05 to 4 cm³. This obtains a thermally homogenous melt mass and guarantees highly stable, high-quality production with short cycle times.

The *MicroPower* is not simply an injection molding machine, but a system: it is, in fact, an independent cell, complete with dryer, specific temperature controller and integrated robot. It can be combined with clean room modules, quality control units, and packaging systems.

The MicroPower 15 press from WITTMANN BATTENFELD at Eltek's production facility in Casale Monferrato.

Picture left: Eight-cavity mold for producing gaskets. Picture right: A closer look at the WITTMANN BATTENFELD MicroPower 15 injection molding machine.



Eltek makes use of the MicroPower

A teflon-based fluorite gasket mounted in a thermal actuator for household appliances is the precursor to Eltek's production of micro components for the medical industry. This part seals the technical item that it is mounted on, incurring pressures of about 1,000 bar.

Until 2013, the company purchased the part from a supplier which delivered it undivided in bars of extruded plastic. In 2014, however, production passed to an electric *MicroPower 15* press supplied by WITTMANN BATTENFELD.

The switch from one processing technique to another – which has also led to a significant increase in product performance – has resulted in numerous advantages for Eltek. Total control of the part's production process in which the gasket is inserted has increased the company's know-how, and the switch from buying the micro component to making it in-house has optimized the cost/benefit ratio.

“The idea of internally producing this type of part is not new. In fact, it dates approximately to a decade ago, but it was abandoned for a variety of reasons, primarily the lack of a polymer with suitable characteristics. The grades of teflon available at that time were not compatible with traditional molding and, what is more, such a small gasket could not be made using this technique without coming up against the thermal degradation of the polymer, wasting raw material and incurring wear on the cylinder, mold and piston,” Business & Development Unit Manager Fabio Nebbia explains. “The evolution of materials has allowed us to overcome this problem. We identified the right polymer – a teflon-based fluorite – from a set of three possible alternatives. The next step was to find an injection machine that could calibrate the precise quantity of material needed on the piston. Following tests conducted on the pilot mold, we choose the *MicroPower*. The requirements were met, in particular with regards to the resistance of the material and to the interchangeable pistons that are important when changing molds.”

Eltek repeated the final mold tests that were conducted in Austria by WITTMANN BATTENFELD. After having concluded these tests, an automatic production line was set up, producing the parts. ♦

Stefano Troilo is a photographer and external consultant of the Italian PLASTIX magazine to which he also contributes. – The conversation with the Eltek representatives took place (and the article was written) in 2014.

WITTMANN BATTENFELD USA President David Preusse honored with award

On May 6th, 2016, David Preusse, President of WITTMANN BATTENFELD Inc., the US subsidiary of the WITTMANN Group, was honored with the Francis Academy of Distinguished Engineers Award from his alma mater, the University of Massachusetts Lowell.

The award recognizes graduates of the Francis College of Engineering at the University of Massachusetts Lowell who have achieved a distinguished record of leadership in their chosen profession or life's work, whether in the academic, corporate, entrepreneurial, nonprofit, government or military sector; and performed outstanding service to the college, university or profession. It is expected that the awardee is a person of such integrity, stature, demonstrated ability and renown, that the faculty, staff, students and alumni of the Francis College of Engineering will take pride in, and be inspired by, his or her recognition.

David Preusse received a Bachelor's degree in Mechanical Engineering from the University of Massachusetts Lowell in 1985, and subsequently earned his MBA from Pepperdine University.

He has been with WITTMANN BATTENFELD for 20 years and has served as President since 2002. David reconnected with UMass Lowell, and was asked to join the UMass Lowell College of Engineering Industrial Advisory Board.

Commitment for the UMass Lowell

"I'm very honored and humbled to be receiving this award amongst such recipients," said Preusse. "The University of Massachusetts Lowell has developed so many excellent engineers who have contributed significantly to many industries and specifically to our plastics industry."

"I am proud to share that the College recently inducted David Preusse, Mechanical Engineering Class of 1985 and President of WITTMANN BATTENFELD Inc., into the Francis



David Preusse, President of WITTMANN BATTENFELD Inc. in Torrington, CT, USA.

Academy of Distinguished Engineers," said Joseph Hartman, Ph.D., P.E. Dean of the College of Engineering. "Dave has become an incredibly engaged alumnus and partner. His energy and passion for student success at his alma mater are evident in every conversation we have. Dave serves on the College's Industrial Advisory Board, and continues to work with our team to build a strong relationship between the University and WITTMANN BATTENFELD. Dave's resolve to hire

our students and put cutting edge technology in their hands provides a wealth of opportunities to the next generation of engineers. Dave's energy is infectious – we are lucky to have his support, and grateful for his commitment to UMass Lowell. Congratulations!"

The Plastics Engineering Department at the University of Massachusetts Lowell is one of the premier career training programs for the plastics industry in the United States. ♦



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