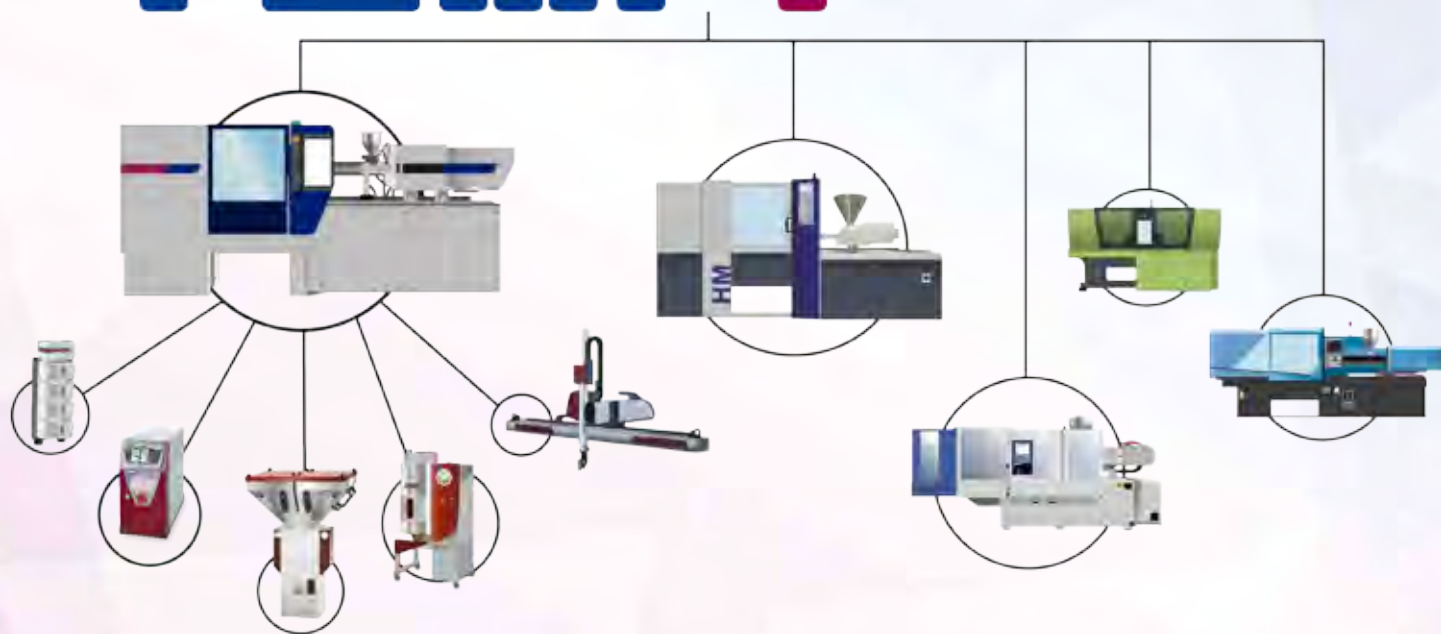


innovations

Techniques - Markets - Trends

Volume 14 - 3/2020

TEMI+



*The Intelligent
MES Solution*



WITTMANN innovations (Volume 14 - 3/2020)

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Michael Wittmann

Dear Reader,

Since the last issue of *innovations*, the world has changed dramatically because of the Corona pandemic. I am writing these lines in mid-June, marooned in my home country – Austria in my case – due to massive travel restrictions, like most of the other inhabitants of this planet. Meanwhile life here has almost returned to its usual routine – thanks to relaxation of the restrictions in the wake of declining numbers of cases. But we are still very far from normality especially with regard to the economy, since many sectors of industry not engaged in food production, medicine, building construction, or products and services for social distancing, still remain more or less heavily affected by the crisis.

One of my personal highlights in this crisis has been to see how plastic was able to prove its worth as an emergency rescuer and thus to restore its recently battered image to some extent. For disposable medical products, industry relies very strongly on plastics, a trend which is still on the increase – another fact already generally known in pre-Corona times, but one not getting a lot of attention from the media and not being questioned by critics of plastics either. So it is all the more surprising, how much popularity the new medical products have gained, which are now being used for compliance with social distancing rules and hygiene requirements – developed and brought to market by the industry at record speed.

An amazing achievement, for which the companies had to combine their efforts with those of their partners and suppliers. We have also made our contribution by supporting the production of protective face visors, masks and components for hygiene products. An article on this topic also appears in this issue of *innovations*.

But the success of these products does not release us from our responsibility to handle plastics with care and make use of all technical possibilities to process them within a recycling economy system. I feel personally offended by the sight of outdoor areas littered with waste, especially plastic waste such as thoughtlessly discarded PET bottles or packaging materials. Most recently, disposable gloves and face masks have been added to this. An unbearable sight which should remind us of the fact that plastic is a valuable material which can be re-used many times, or utilized as a source of thermal energy. Let's get to work on this – in times of Corona crisis, too.

By the way: our *innovations* magazine is also available in digital form. I wish you great pleasure in reading it.

Sincerely, Michael Wittmann

Control Technology

Working in times of Corona



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The linking of machines



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MacroPower produces fittings



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New Sales Management in Nuremberg

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Digital solutions in times of Corona: an interview with Giorgio Pigozzo

The world will be faced with the COVID-19 pandemic for many more months. The strict rules of conduct for social distancing and more stringent hygienic precautions also affect the plastics industry and the way people can work together on a production floor. In private life as well as in business, digital communication of every kind has gained more significance. Will this trend also have an effect on production plants? Is this perhaps the much-discussed and generally expected right moment to drive further digitization of machinery by way of MES solutions? These are the questions entrepreneurs are faced with against the backdrop of having to maintain production in times of the Corona crisis. In the following interview, Giorgio Pigozzo, Digital Product Manager of the WITTMANN Group, discusses the advantages which digital solutions such as the TEMI+ MES system and the intelligent WITTMANN 4.0 communication platform are offering.

Mr. Pigozzo, the Corona virus has suddenly changed the general rules for interpersonal cooperation of every kind. What do you think are the new needs for the industry resulting from this change?

Apart from the economic challenges, companies will be required to address especially the necessary logistic adjustments of their processes over the next few months. The rules for cooperation in production areas have changed dramatically. The need to reduce staff density, the restrictions on interpersonal contact and the requirement to wear personal protective equipment have built up a physical barrier against keeping up the traditional standard processes in every company. These restrictions will definitely have an effect on production efficiency. However, the necessity to keep production costs down will require some decision-making from the management: either to soften the rules for occupational health and safety, or to close the efficiency gap by introducing new tools and production strategies.

This takes us to the issue of telework and/or remote access. Can you suggest any solutions in this area to promote efficiency in production?

We at WITTMANN BATTENFELD have already been supporting digitization of the production for a long time, and most recently in a very special way since the introduction of some unique, innovative products, such as WITTMANN 4.0 Plug & Produce and our TEMI+ MES solution. I am very proud to say that we were already able to provide decentralized and location-independent access to machines and production cells long before this pandemic situation set in. This can be attributed to the interconnectivity of our products. In fact, we are the only company at present able to offer a solution to cover the entire production chain in the injection molding industry, from material drying and the actual injection molding process up to gentle depositing of the finished product into the transport box.



Can you give us an example?

In medical technology, contamination prevention has already been a vital factor for some time. Therefore it is important to minimize human interaction, since humans are generally the biggest cause of fine dust. The solution is our WITTMANN 4.0 production cell with a central UNILOG B8 display control. The display of the production cell can also be shown on a decentralized monitor screen located outside the clean room. Parameter changes can be set as required on this screen. And that not only applies to the injection molding machine, but also to all WITTMANN 4.0 auxiliary appliances and robots connected to it. As soon as this WITTMANN 4.0 production cell is integrated in our TEMI+ MES solution as well, users will have remote monitoring and analysis at their disposal as well. And this takes us straight to the currently prevailing situation of social distancing.

What concept does WITTMANN 4.0 follow?

WITTMANN 4.0 is a combination of hardware and software to automate and to optimize the interaction between WITTMANN auxiliaries/robots and WITTMANN BATTENFELD machines. The central WITTMANN 4.0 Router acts like the conductor of an orchestra, harmonizing the production equipment and guiding it to perfect synchronization. The concept behind this is that of the "Internet of Things". The WITTMANN 4.0 Router recognizes which appliances are connected to the production cell and/or should be connected to it. So it issues a warning signal whenever a wrong appliance is connected for use in the production of a particular molded part. The various appliances of the production cell, often widely different to each other, all act together like a single appliance from the operator's point of view. The displays of all WITTMANN 4.0 appliances can be brought together at one central point, the UNILOG B8 display unit. What is more, the combination of WITTMANN 4.0 with TEMI+ makes it possible

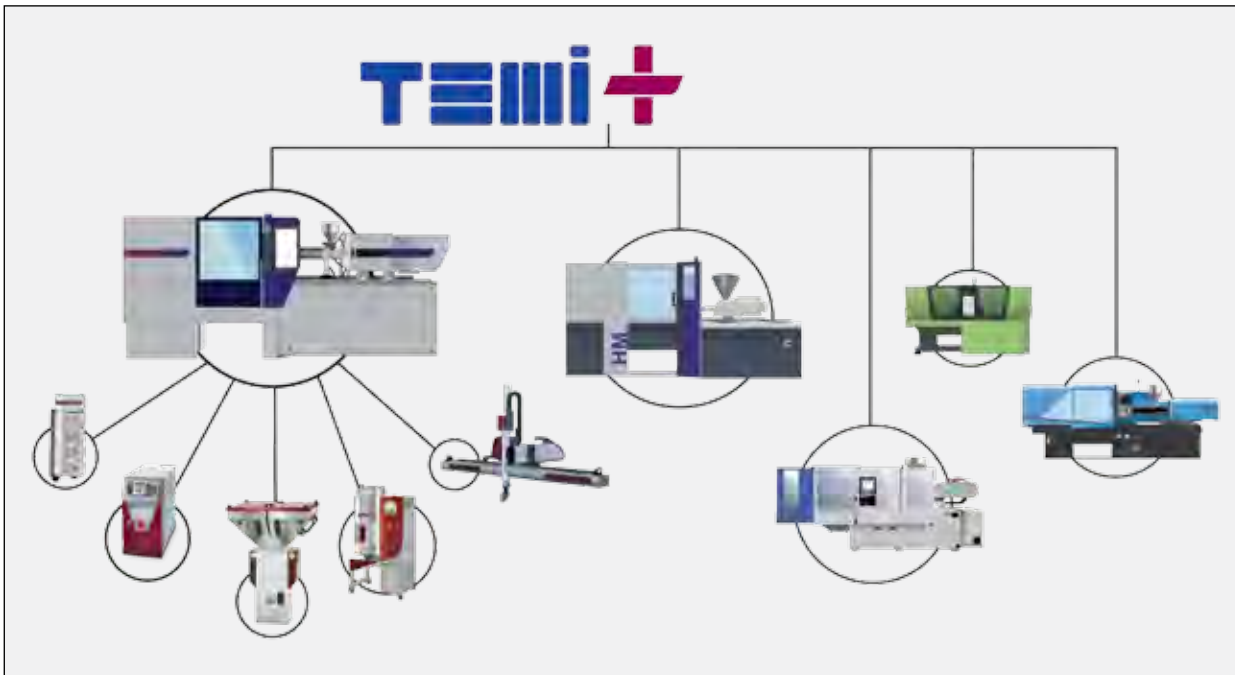
Giorgio Pigozzo,
Digital Product
Manager of the
WITTMANN Group.

for our customers to monitor and save the analysis data not only of the injection molding machine, but also of the auxiliary appliances. We are still the only company on the market which is able to offer this kind of technology.

TEMI+ is your MES solution. Why should your customers use this particular MES product on their production floor?

I have already mentioned that some physical barriers such as avoidance of interpersonal contact will have an impact on daily work. Thanks to TEMI+, we can guaran-

teer generations is also common practice. Our TEMI+ MES solution is completely compatible with injection molding machines from countless different makers. We have installed connections with most machine models of the world's major brands. This makes it possible even for customers without a single injection molding machine from WITTMANN BATTENFELD to benefit all the same from an MES solution specially developed to meet the requirements of plastics processors. For older injection molding machine models – not equipped for digital connectivity – we have developed the IO-Connector,



Schematic representation of access possibilities of the TEMI+ MES system.

tee active and pinpointed remote production monitoring. This can be carried out from a computer on the corporate premises or from a tablet, which can be connected from anywhere via a secure VPN. Production specialists can prevent downtimes by just looking at the cycle trends and request operator intervention only when they have recognized the problem or have already remedied it. This is due to the ability of TEMI+ to display alarm signals, and to the fact that the UNILog B8 interface can be operated by remote control. In addition to these advantages, TEMI+ is able to convert data into meaningful key figures known as KPIs. These are helpful in analyzing where losses of production efficiency occur and what the causes are, and they also help production managers to take appropriate corrective action. Other available options are further development of production data digitization, such as quality checks, which can be carried out digitally with TEMI+ in order to reduce the paper flood, which also contributes to minimizing possible risks of contagion.

We have talked a lot about interfaces and communication. How does the machine-to-machine communication function when the equipment does not originate from the "WITTMANN world"?

I am often asked this question. Only very few plastics processors use injection molding machines from just one manufacturer. And using a great variety of machine

which enables the connection of such machines, too, by means of I/O signals. Of course the yield of information from this solution is smaller than from digital machine interfaces. The highest degree of connectivity and volume of information is still achieved by WITTMANN 4.0 production cells.

Many companies are just going through the challenging stage of a new production start-up. It must also be expected that the consequences of the lockdown measures worldwide will lead to an economic contraction. Why should entrepreneurs invest in digital technology right now?

In times of economic weakness new investments must be considered and carried out with even greater care. Priority will certainly be given especially to investments promising a short payback period. Well-founded data records and experience with TEMI+ systems already installed have shown that as a result of possible improvements in production efficiency a payback period of less than a year can be reached. When we consider this financial advantage plus the extra support provided to companies in the implementation of protective measures against COVID-19, an investment in our digital products – WITTMANN 4.0 and TEMI+ – seems to be highly recommendable. ♦

Contact: giorgio.pigozzo@wittmann-group.com

Flexible linking of machines by buffering capacity conveyor systems

Happ Kunststoffspritzgusswerk und Formenbau GmbH is a well-known manufacturer of parts and assemblies for the automotive industry based in Ruppichteroth, North Rhine-Westphalia, Germany. The equipment used to make these products includes several injection molding machines of the all-electric EcoPower series from WITTMANN BATTENFELD. Flexible linking together of two of these machines by conveyor systems with buffering capacity from the Happ subsidiary ErgoTek enables efficient production of complex assemblies with a guarantee of highest possible quality standards.

Gabriele Hopf



General view of the EcoPower 110/350 injection molding machines from WITTMANN BATTENFELD linked together by conveyor systems with buffer capacity.

Happ was established in 1964. Its first products were sandwich boxes and furniture fittings. The family-owned and owner-managed company based in Ruppichteroth currently employs 70 workers making high-quality, complex parts and assemblies primarily for the automotive industry in three shifts on a 6,000 square meter production floor. Some of the company's sales are also realized with products for white goods. Happ offers its customers the complete portfolio of goods and services ranging from product development and design and in-house mold-making all the way to prototyping and series production. The company processes more than 1,300 t of many different types of thermoplastics with shot weights ranging from

0.5 to 3,000 g by 1- and 2-component injection molding. About 40 injection molding machines with clamping forces from 350 to 8,000 kN are available for producing the plastic components, of which 7 are all-electric *EcoPower* machines from WITTMANN BATTENFELD in the 1,000 to 3,000 kN clamping force range.

Most of the molding machines from the *EcoPower* series are equipped with W818 and W822 robots from WITTMANN. To dry its materials, Happ uses a central material drying system from WITTMANN.

Thanks to continuous investment in innovative automation technology, Happ is able to put together complete assemblies fully automatically and consequently with ulti-

mate precision and efficiency. To develop and manufacture these automation solutions, Happ established the company ErgoTek at its domicile in Ruppichteroth in 2015.

The foundation of ErgoTek originated from a product developed by Happ in 2014 for the fitness and physiotherapy sector by the name of Ergo-Wall. This is a climbing wall which can be set at different tilt angles using automation and conveyor technology. At the University of Potsdam, the Ergo-Wall is now being used to train physiotherapists.

Clocked systems versus systems with buffering capacity

Happ then decided to have ErgoTek utilize the knowledge gained with this product not only for assembly work on its own production floor, but for other industries as well. The conveyor systems developed by Happ consist of plastic modules that since 2018 have been used in industrial environments. Classic module conveyors have bearing units that are fixed to the conveyor chain, this means they are clocked systems.

many years of experience in conveying and automation technology. This finally has led to the development of modules that the ErgoTek company can use flexibly and in a modular way in conveyor technology systems. Here, special attention is paid to the products' cost-efficiency.

Flexible linking of two injection molding machines

A project recently completed by ErgoTek in the company's own production is the flexible linking of two *EcoPower* machines by conveying systems with buffer capacity. With this system, the outer and inner tubes of oil filter drain screws for the automotive industry are fully automatically assembled, inspected, laser-printed and deposited.

In this system, two *EcoPower* 110/350 machines are integrated, both with 1,100 kN clamping force and each equipped with a W818 robot from WITTMANN. On these machines, the inner and outer tubes of the oil filter drain screw are injection-molded, each with a 2-cavity mold, then removed by the WITTMANN robots and presented to a



Flexi conveyor (testing appliance) from ErgoTek consisting of plastic parts made by Happ.

In 2019, the modular conveyors, primarily used for clocked systems, were supplemented by the FlexiTek system. FlexiTek systems are forwarding the bearing units on the basis of their self-weight. Thus it is possible to store or buffer within the conveying process where it becomes necessary. These FlexiTek systems with buffering capacity are suitable for a great variety of applications and optimally adapted to the requirements in injection molding production. For the current year, an extension of the portfolio is planned, to include a heavy-load conveyor system for lattice boxes.

Basically, the development of the conveyor modules is based on two pillars: the competence of Happ in the field of plastic injection molding production, and the company's

camera to check the parts' dimensional accuracy. Another camera examines the parts for burr formation. Next, the tubes are transported further by FlexiTek conveyors from ErgoTek and buffered for cooling. Then, a SCARA robot fits the outer tube onto the inner tube. With the help of an articulated robot and a further camera check, the depth gauge and angular position are measured, and subsequently the parts are transferred to a labeling band for laser printing. From there, the finished components are transferred to the Flexi buffer from ErgoTek.

Using this clocked system has finally made cost-efficient manufacturing of this product possible. But the production cell offers a number of other advantages as well: >>

Ergo-Wall - the first product from ErgoTek for recreation and physiotherapy.

- Thanks to interlinking the two parts of the system via the FlexiTek conveyor belts, storage of the individual parts can be dispensed with, and the allocation of cavities and consequently traceability remain ensured.
- SPC parts can be requested and removed via the chutes.
- If an interruption occurs on one system component, the other components can continue their production for up to a maximum of one hour.
- The box buffer with the finished parts only needs to be emptied about every 2.5 hours.
- The linkage of the FlexiTek conveyor belts requires only a minimal control effort and permits separation of the individual safety areas from each other.



Happ has been relying on technology from WITTMANN BATTENFELD for over 15 years. What is specially appreciated at Happ and ErgoTek is the robustness and simple operation as well as the easy extensibility of WITTMANN BATTENFELD equipment, in addition to the excellent service. Dirk Wevelsiep, Sales Manager at ErgoTek, comments: "Thanks to their easy extensibility, the injection molding machines from WITTMANN BATTENFELD are ideally suited for intelligent linkage. And when it comes to aftersales service, WITTMANN BATTENFELD is also in a strong position." ♦



Inside and outside tube of an oil filter drain screw and (right) the finished product.

Picture left: Thomas Bertram, WITTMANN Group Salesman (left), and Dirk Wevelsiep, ErgoTek Sales Manager, in front of the interlinked molding system. Picture right: The new baseplate with selfsealing undercut.



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

MacroPower: Made for high-quality fittings

In 2018, Prince Kunststof Infra with production plant in Tholen in The Netherlands, not far from the Belgian border, installed a WITTMANN BATTENFELD MacroPower 1000/19000 injection molding machine with B8 control and an additional 5100 injection unit. The machine was equipped with a WITTMANN W843 robot as the respective automation solution and the aim was to produce large moldings for the gas and water sectors.

Michel Van der Motten

The Prince company was founded more than 30 years ago by H. Prince, producing plastic fittings for the gas and water industry. The aim was to replace the cast iron fittings from the Seventies that were of heavy weight, and with the new plastic products, corrosion of the fittings could be prevented.

In the early years, when molding plastic fittings, Prince had to deal with two main problems. First of all, there were 150 different variations of fitting in the marketplace. Creating so many mold tools to match would have been a very large scale investment.

Furthermore, the molding technology then wasn't yet as technically developed as it is now. Also, the Dutch institution that was responsible for the adjudication of the respective seals of quality did not yet approve the plastics-based parts then.

However, Mr. Prince persisted: He invested in the needed molds, and he got a molding specialist on board. Together, they devised a plastics injection technology that prevented the development of flowlines appearing on the molded products. Such flowlines would have led to fittings with weak points.

With regard to the processed material, Prince decided to use PE instead of the cheaper PVC. For this special intended purpose, PVC has proven to be too fragile. In 1985, Prince started production, having elegantly solved the tricky problem of the mold costs: All the fittings were resolved into several parts to be molded. This approach finally made it possible to produce more than 100 different fittings by using just a few mold tools. The PE-based parts could be variably combined and welded together afterwards, thus attaining the highly diverse nature of finished parts.

Prince uses WITTMANN Group equipment

Today, Prince Kunststof Infra successfully delivers standard and non-standard fittings to the gas, water, and biogas industry. The company also produces waterproof cable



Part of the staff of Prince Kunststof Infra in Tholen, Netherlands in front of the company's WITTMANN BATTENFELD MacroPower injection molding machine: M. Henning, Process Operator, W. Heijboer, R&D Engineer, and P. de Boer, Senior Technical Advisor (from left to right).



Some examples of fittings, produced at Prince Kunststof Infra.

boxes for the local market and is expanding this activity into the entire European market. Prince now is managed by Kathleen Metz who bought the company in 2013.

Before the *MacroPower* 1000 was delivered in 2018, Prince used three injection molding machines with clamping forces ranging from 200 to 650 tons. The WITTMANN BATTENFELD *MacroPower* with a clamping force of 1,000 tons has now replaced all these three injection molding machines.

With the machine's two injection units, Prince now can handle shot weights ranging from 1 kg (using the 5100 injection unit) up to 10 kg (applying the 19000 injection unit). The entire process is automated using a WITTMANN W843 robot equipped with a Z-axis of a length of six meters. Currently, Prince is expanding its production facility, and the company is also investing in even more molding capacity. ♦

Michel Van der Motten is the General Manager of WITTMANN BATTENFELD Benelux NV in Holsbeek, Belgium.

All about plasticizing screws

Part 3 of the series

In the issues 1/2020 and 2/2020 of "innovations", the basic principles of plasticizing unit design and screw geometry calculation were discussed. Calculations concerning throughput behavior, pressure buildup capacity and the melting process were demonstrated on an exemplary screw geometry. This third and final part of the series now deals with the possibilities of optimizing a screw geometry.

Filipp Pühringer

Results of the first calculation

In our example presented in the previous issue of *innovations*, the average metering performance was about 12.49 g/s with a back pressure of 80 bar and a circumferential screw speed of 300 mm/s – a value which can be improved by appropriate geometry optimizations.

The screw showed a considerable overcapacity for pressure build-up. With a back pressure of 80 bar, the screw was able to reach a peak pressure of just under 160 bar. But in the interest of gentle plasticizing to protect the material, this peak pressure should be reduced to below 120 bar in practice.

However, the melting process developed very positively, as the material was already completely liquefied after traveling about 8 D in conveying direction. In the course of further optimization, it is now necessary to prevent solid material from traveling too far into the metering zone, since in extreme cases this could lead to excessive wear of the screw, the barrel and the check valve.

Ultimately, this is also why the dwell time of the melt should not be allowed to fall below the minimum dwell time recommended by the manufacturer of the material.

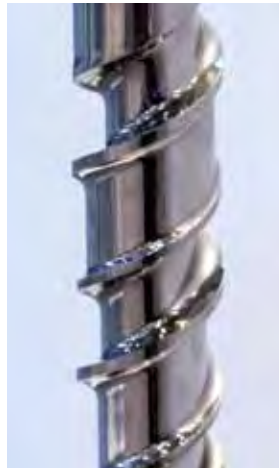
Optimizing the geometry

Test 1:

Shortening the metering zone

As a first step, the length of the metering zone should be reduced. The idea behind this is that the metering zone with its low flight depth and considerable length produces a corresponding blockage effect on the preceding screw zones. This is also shown by the closeness of the peak pressure point to the end of the compression zone prior to the optimization attempt.

In this first test, the metering zone is shortened from 5.5 D to 3.5 D. To keep the total screw length of 22 diameters unchanged, the compression zone is lengthened accordingly. The effect on the peak pressure is negligible. However, the pressure gradient in the metering zone has now become steeper, since the pressure peak has moved closer to the check valve. For the sake of completeness, it should also be



mentioned that the change has a similarly minor effect on the melting process and throughput. Liquefaction is now completed at L/D 8.9, and the average metering performance is about 13.02 g/s.

Test 2:

Increasing the metering zone depth

Since the effect achieved by shortening the metering zone is only minor, the flight depth is now examined as a second step. The individual zones are returned to their original lengths (25% / 25% / 50% of the total length). The flight depth ratio of 2 zones remains unchanged, but that of the meter-

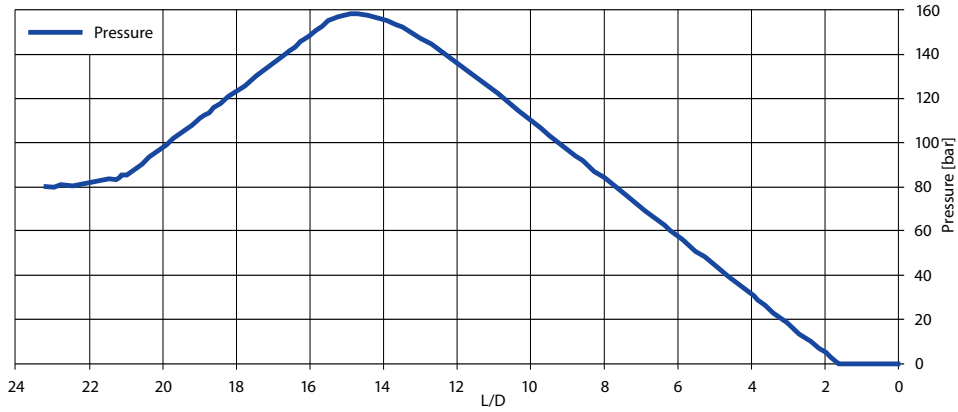
ing zone is increased by between 25 and 30%. In rounded figures, a flight depth of roughly 3.2 mm is calculated for the metering zone. After carrying out this optimization attempt, the pressure curve shows that the original pressure of 158 bar has been reduced to 129 bar. It is interesting to see how a 28% increase in the flight depth reduces the blockage effect much more strongly than a shortening of the metering zone by some 36%. Other points worth mentioning here are the average metering performance of 15.23 g/s reached by this move, and the shift of complete liquefaction to L/D 10.4.

Moreover, it is basically possible to vary the compression ratio, the zone length ratios, etc., in a similar way in order to optimize their influence on the processing parameters.

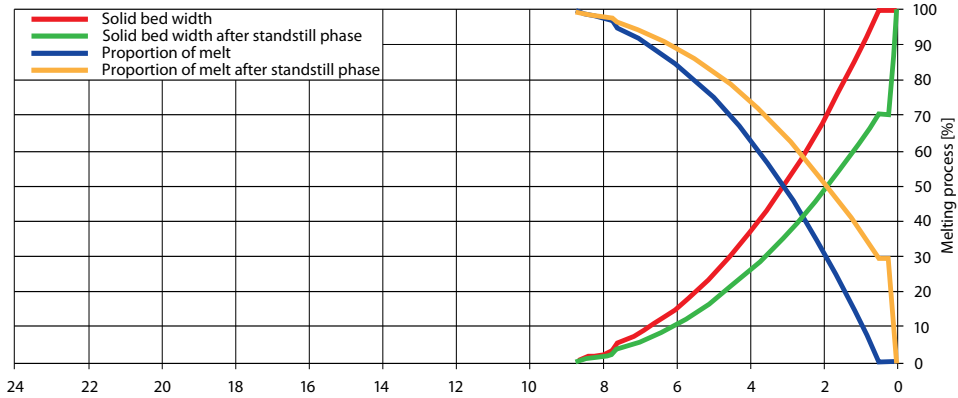
UNIMELT screws from WITTMANN BATTENFELD

Where these tests are carried out for many different materials and harmonized accordingly, a universally applicable screw geometry emerges as a result. At WITTMANN BATTENFELD, multi-purpose screws of this kind are sold under the name of UNIMELT. They stand out by their extremely wide range of possible applications in thermoplastics processing. In combination with a suitable anti-wear package, they offer a long-lasting plasticizing system.

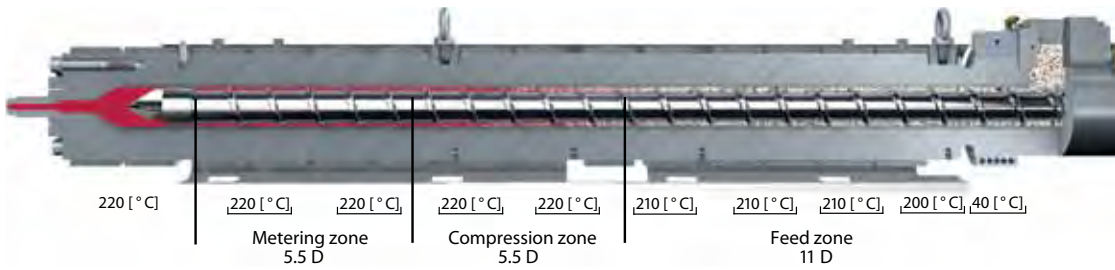
Wherever special challenges in injection molding must be mastered, the WITTMANN BATTENFELD team of engineers stand ready to help their customers in a joint search for the optimal plasticizing solution to fit every individual purpose. ♦



Pressure curve along the screw at 50 mm stroke position prior to optimization.



Melting process for the screw in stroke position 50 mm towards the end of the cycle: results of the original calculation prior to optimization.



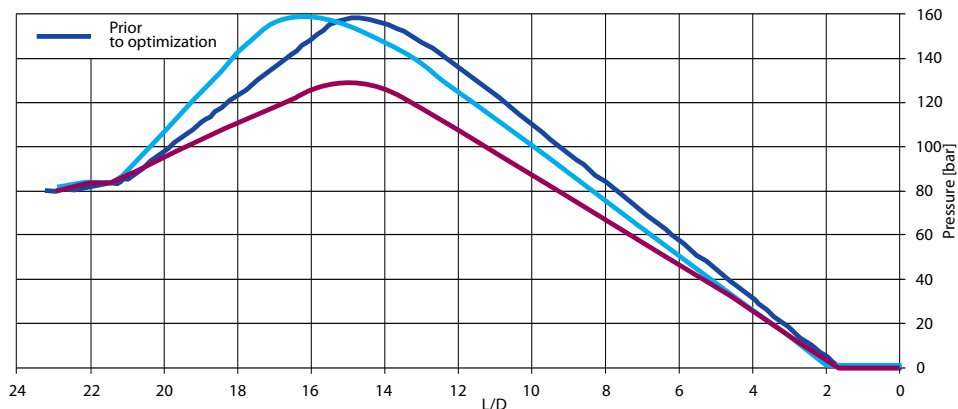
The calculations are based on the barrel zone temperatures.

Zone	Length	Flight depth	Flight depth increase	No. of threads
Feed zone	11.00	5.00	50.00	1
Compression zone	7.50	5.00-2.50	50.00	1
Metering zone	3.50	2.50	50.00	1
RSP ring check valve	1.96			

Chart for test 1: metering zone shortened, compression zone lengthened.

Zone	Length	Flight depth	Flight depth increase	No. of threads
Feed zone	11.00	6.40	50.00	1
Compression zone	5.50	6.40-3.20	50.00	1
Metering zone	5.50	3.20	50.00	1
RSP ring check valve	1.96			

Chart for test 2: screw with increased flight depth.



Pressure curves before and after the optimizations. Test 1: pressure curve at stroke position 50 mm. Test 2: increase of flight depth by approx. 28%.

Filipp Pühringer heads the WITTMANN BATTENFELD Process Engineering Development Department.

Community masks manufactured with technology from WITTMANN BATTENFELD

FRÖBEL, domiciled in Blaufelden, Baden-Wuerttemberg, Germany, has developed a high-quality community mask for the fight against COVID-19 together with its partner company AKO Kunststoffe Alfred Kolb GmbH in Hoffenheim. The parts for this mask are produced at FRÖBEL using latest injection molding technology from WITTMANN BATTENFELD.

Gabriele Hopf

FRÖBEL, a family-owned company in the second and third generation, was founded in 1949. With the production of thermometers, the company entered the plastics processing industry in 1960. Today, it supplies its products to virtually all non-automotive sectors of industry. Its portfolio of goods and services ranges from the development and production of individual parts and complete assemblies to finished products. In some cases, FRÖBEL even takes care of its customers' logistics right up to the end customer.

Tobias Fröbel, Managing Director of FRÖBEL Kunststofftechnik (left), and Andreas Schramm, Managing Director of WITTMANN BATTENFELD Germany, in front of the SmartPower 90/350.

Of the 40 injection molding machines installed at FRÖBEL, ranging from 150 to 6,000 kN in clamping force, 36 are from WITTMANN BATTENFELD, among them large machines from the *MacroPower* series, all-electric machines from the *EcoPower* series, as well as machines from the servo-hydraulic *SmartPower* series.

The robots, a total of 30, have also come from WITTMANN BATTENFELD.

Moreover, FRÖBEL operates its own mold making shop, which offers the company among other benefits a high degree of flexibility in fulfilling its customers' wishes.

Community masks cooperation

The very latest product from FRÖBEL is a high-quality community mask, which FRÖBEL has developed jointly with its



Top pieces for the FRÖBEL community masks, produced on a WITTMANN BATTENFELD SmartPower 900/350.

partner company AKO. For Tobias Fröbel, the company's junior managing partner, the main consideration in this project apart from the desire to help with the fight against COVID-19 was the aspect of sustainability. Therefore it was important to him to develop a reusable product with the filter fleece being the only disposable part.

The mask created in cooperation with AKO consists of a base with a top piece, on which flexibly adjustable elastic bands are fastened. The base is produced from a supple, elastic grade of TPE, which provides a high degree of protection together with excellent wearing comfort. In addition to serving as the fixture for the elastic bands, the top piece holds the disposable PP filter fleeces in place, of which a package of ten is automatically included in the

delivery of the mask to the end customer. The masks can be cleaned with standard disinfectants or with hot water. When people put them on or take them off, they do not come into direct contact with the disposable fleece. Basically, the masks can be upgraded with a great variety of filter media.

Apart from the high wearing comfort due to the soft, elastic base, FRÖBEL's customers appreciate the light weight, good speech attributes and high air permeability of the large filter area.

The masks are available in two sizes. In addition to the standard model M, a 20% smaller S version has been developed, which is intended primarily for women and children. For large-quantity orders, a customized color choice is also possible. The S model primarily intended for women and children is available with a choice of several different colors as standard.

The masks are manufactured at both FRÖBEL and AKO and sold worldwide. They are currently distributed exclusively in the B2B sector. A B2C solution with partners is in preparation. Currently 70,000 S model masks and 140,000 M model masks are being produced per week, of which 70,000 are manufactured at FRÖBEL.

At present, the mask is undergoing a CPA/FFP2 certification process. With this certification, the masks would be officially recognized as Corona virus pandemic respiratory masks.

The service engineers of WITTMANN BATTENFELD Deutschland GmbH have also been equipped with these protective masks, and the feedback about the use of the masks, especially their wearing comfort and speech quality attributes, is very positive.

WITTMANN Group equipment

The production at FRÖBEL is carried out with a 2-cavity mold on a machine of the servo-electric *SmartPower* series from WITTMANN BATTENFELD with 900 kN clamping force, equipped with a PRIMUS 16 robot from WITTMANN. FRÖBEL plans to extend the production capacity in the near future by adding another four two-cavity and four-cavity molds currently under construction.

These molds will be used on two machines of the all-electric *EcoPower* series from WITTMANN BATTENFELD with 1,100 kN clamping force and a hydraulic HM 110 model.

With the production of its reusable masks using the machines of the *SmartPower* and *EcoPower* series from WITTMANN BATTENFELD, FRÖBEL also makes another contribution to protecting the environment, since one of these machines' attributes is high energy efficiency, an aspect of particular importance to both Tobias Fröbel and his father, Joachim Fröbel, who is the company's CEO. The high process stability and easy operation of the machines, as well as their integrated robot concepts, are also appreciated at Fröbel.

Tobias Fröbel comments: "The machines from WITTMANN BATTENFELD are reliable, energy-efficient and easy to operate. An additional benefit is their compact design, which helps us to make optimal use of the valuable space in our production plant." ♦

Component parts of a community mask, M model. – From the left: top piece of the mask, filter fleece and base made of TPE.

(Photos on p. 13: FRÖBEL Kunststofftechnik)

Community mask, M model.

Component parts of a community mask, S model. – From the left: top piece of the mask, filter fleece and base made of TPE.

Community mask, S model.

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



Management change at WITTMANN Group subsidiary in Italy

Gianmarco Braga, long-standing Sales Manager at WITTMANN BATTENFELD Italia, has taken up the position of Managing Director and CEO effective 1 January 2020.

The WITTMANN BATTENFELD subsidiary's Managing Director of many years, Luciano Arreghini, has continued to serve as management spokesman and was jointly responsible for the financial sector until the end of April 2020. When Luciano Arreghini had left the company, Gianmarco Braga had become the sole Managing Director of the subsidiary.

Gianmarco Braga took up his position as Sales Manager at WITTMANN BATTENFELD Italia in January 2003. In this capacity, he coordinates all sales activities in Italy and is responsible for key account customer service. On the basis of his technical background – he holds, for instance, a Master's degree in Production Management Techniques from the University of Castellanza – and his professional experience in the areas of sales and service at various companies, he successfully developed the Italian market for WITTMANN BATTENFELD jointly with the subsidiary's Managing Director Luciano Arreghini.

From the left: Gianmarco Braga, Michael Wittmann, Luciano Arreghini.

Farewell celebration for Luciano Arreghini that took place at WITTMANN BATTENFELD Italia, and that only could have happened at a lower extent, due to the COVID-19 crisis.



The rapid growth of the WITTMANN Group's Italian subsidiary over recent years is reflected, for example, in its relocation to a new, larger corporate building in Ceriano Laghetto in spring 2019. This facility offers sufficient office and warehouse space to provide for further expansion of the organization in the next years as well.

Effective 1 January 2020, Gianmarco Braga was appointed Managing Director of the subsidiary. Luciano Arreghini conducted the subsidiary's business jointly with Gianmarco Braga as management spokesman and co-responsible Managing Director for finances until the end of April 2020.

Luciano Arreghini, who started his career at BATTENFELD as a Product Manager in 1991 and has served as Managing Director of the BATTENFELD subsidiary since 1996, went into well-earned retirement at the end of April. Michael Wittmann, President and CEO of the WITTMANN Group, thanks Luciano Arreghini for his many years of successful service at WITTMANN BATTENFELD and is confident that the success story of WITTMANN BATTENFELD Italia will continue with the transfer of the management to Gianmarco Braga. ♦

The Nuremberg Sales Management changes

Effective August 1, 2020 Guido Ahlfeld will take over as Sales Manager at WITTMANN BATTENFELD Deutschland GmbH at the Nuremberg facility.

With Guido Ahlfeld, a passionate professional salesman with many years of experience is coming on board at WITTMANN BATTENFELD Deutschland. In 1994, after completing his engineering degree, he started his career as a field salesman. Ever since, Guido Ahlfeld has remained faithful to sales, his favorite area of activity. After holding various positions as Branch Manager and Global Key Account Manager, he spent the last decade working as Sales Manager for several well-known companies of

Guido Ahlfeld, the new Sales Manager of WITTMANN BATTENFELD Deutschland GmbH in Nuremberg (left) with Michael Tolz, Managing Director and CEO.



the automation industry. In view of Guido Ahlfeld's many years of sales and leadership experience, as well as his knowledge of the market and of our

industry, the Management of WITTMANN BATTENFELD Deutschland is confident of his being able to contribute even more effectively to the success of our customers, and of his ability to open up new markets as well. The entire company staff expressly stand ready to assist Guido Ahlfeld and look forward to supporting him in the performance of his tasks.

Guido Ahlfeld succeeds the previous Sales Manager Joachim Merk, who has worked successfully for our company in Nuremberg in the areas of auxiliary equipment and automation over the last three years, a service for which the Management wish to express their special thanks and appreciation to him. ♦

Articles that appeared in WITTMANN innovations so far

Conveying/Drying/Entire Systems

- Central system at BOSCH 1/2007
- Quality control of drivers 1/2007
- Kromberg & Schubert's system 2/2007
- Cost efficient material drying 2/2007
- FEEDMAX for the clean room 3/2007
- The new DRYMAX ED80 3/2007
- Focus on material feeding 1/2008
- Network control at Arge2000 2/2008
- Changing parameters conveying 2/2008
- Optimizing a conveying system 3/2008
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- Auxiliaries at Delphi in China 1/2009
- LISI COSMETICS' central system 2/2009
- Planning of central systems 3/2009
- Testing energy claims at FKT 4/2009
- The new FEEDMAX B 100 1/2010
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- PET processor's conveying 1/2012
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- The Bepak material handling 2/2013
- Vision Technical Molding 3/2013
- WPC injection molding 1/2014
- New Pollmann central system 2/2014
- The HELLA Mexico system 3/2014
- The Procopi system, France 4/2014
- The SLM material management 4/2014
- WITTMANN in Slovenia 1/2015
- Alliance Precision Plastics, USA 2/2015
- Our Spanish customer Fushima 2/2015
- Injection Molding at Tielke 2/2015
- The Wiba QuickLook App 2/2015
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- GOTMAR system (Bulgaria) 2/2016
- The Havells (India) system 4/2016
- FC plus module for dryers 1/2017
- Axjo + BATTENFELD Sweden 1/2017
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- The PT. WIK central system 3/2017
- The new ATON plus H dryer 4/2017
- 3A Plastics (F) central system 4/2017
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- Fadelmann, Austria: energy saving 2/2018
- Natural fibers from the ATON 3/2018
- Vignesh, India, and WITTMANN 3/2018
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- Blender economics 3/2007
- GRAVIMAX 14v blender 3/2009
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- Dosing on the highest level 1/2013
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- How to get to better blending 4/2015

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- The Grip It Fixings success story 1/2015
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