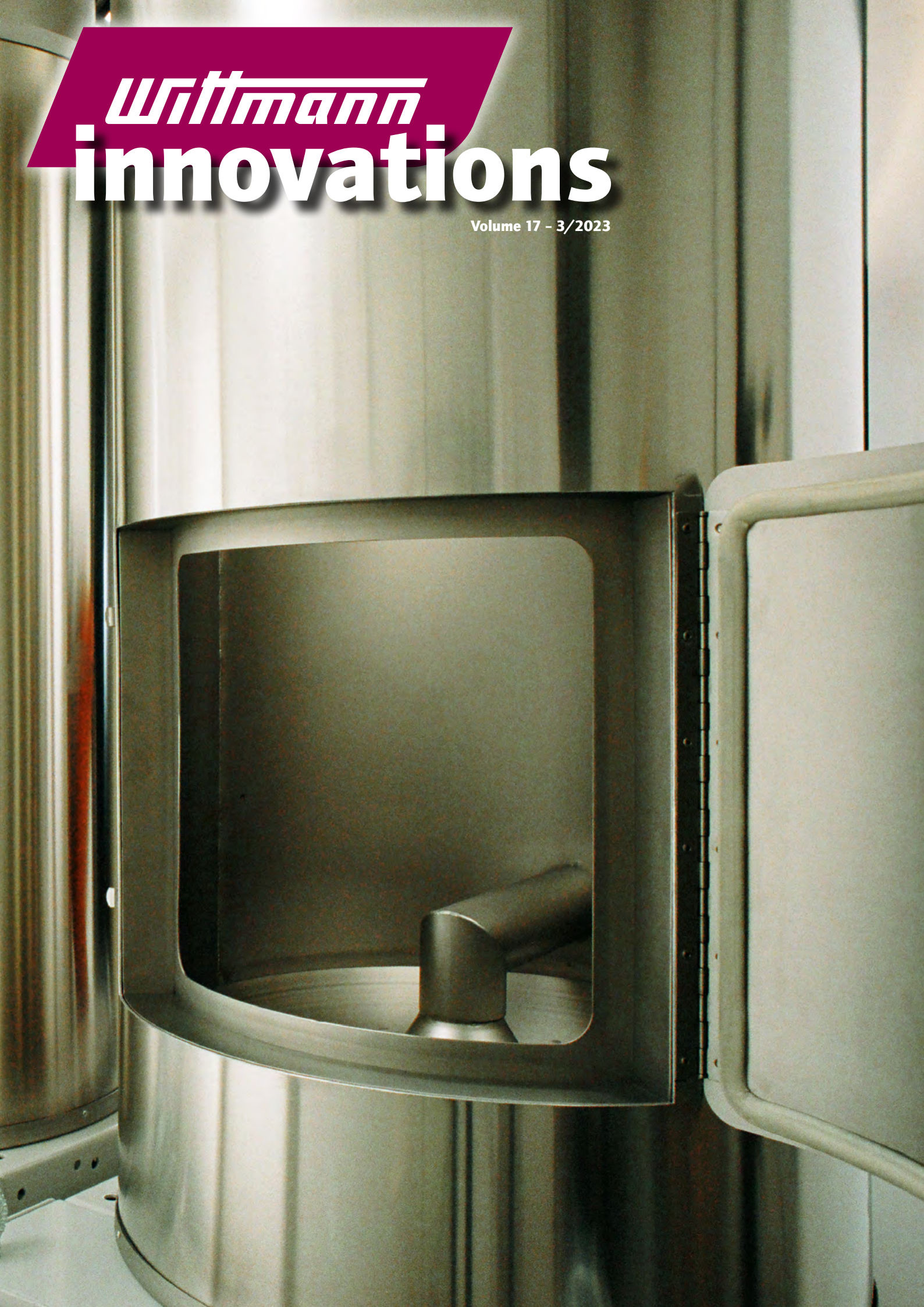


Wittmann innovations

Volume 17 - 3/2023





The cover shows a series of Silmax drying hoppers for material drying from WITTMANN.

WITTMANN innovations (Volume 17 - 3/2023)

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Editorial

Dear Reader,

New times – new challenges. For the longest time, the European plastics industry enjoyed economic stability and consistency and didn't even know how lucky it was. Then came the crisis in the automotive industry in 2019 and a year later Corona. Since then nothing has been the same as before. Price increases were typically been in the low single digits, if at all. The high inflation that prevails today has now shattered this self-image. Also – before Corona – the unavailability of components and products seemed almost unthinkable to companies and consumers. And the economic health of a nation was measured, among other things, by the unemployment rate. The Covid pandemic turned out to be the ultimate game-changer.



While the global supply chains are now getting back on track to some extent, inflation and labor shortages are persistent. The latter factor in particular may have come to stay. A blatant shortage of workers in practically all pro-

fessions and sectors is becoming apparent with frightening suddenness. Even if this development is not directly related to Covid and experts have been pointing out the demographic development for many years, the abruptness of the development is surprising. Our industry and our customers have to face this new situation.

When implementing new systems and automation projects, more and more attention is paid to how high the future personnel costs will be, especially the need for skilled workers. The motto in the industry is

to automate as much as possible, while at the same time requiring the least amount of skilled workers. The area of automation also includes assistance systems such as our HiQ packages, which require a specialist to set up, but subsequently work largely independently. Just as important for these devices is simple operator guidance.

For many years we have been working on a uniform and consistent menu concept for all our products – injection molding machines, robots and peripheral devices – in order to achieve exactly this goal. We attach great importance to taking the operator's perspective into account – intuitive operation of our devices with the least possible training effort. In this issue of *innovations*, too, we introduce you to companies that have come to know and appreciate the advantages of our products and controls.

And now I want to wish you a lot of reading pleasure.

Very cordially yours, Michael Wittmann

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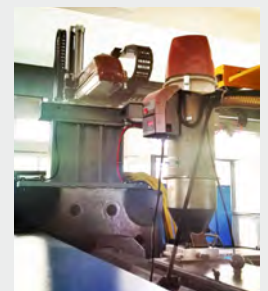
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Belgian university uses WITTMANN Group equipment for research work

B-PHOT Brussels Photonics is a research department of the Faculty of Engineering of Vrije Universiteit Brussel (VUB) with 35 years of experience in photonics education, research, and innovation. In addition to EcoPower and MicroPower machines, B-PHOT also uses WITTMANN robots and peripheral equipment.

Sergey Verlinski – Michael Vervaeke

B-PHOT runs a world-class photonics research and innovation center hosting an international and gender-balanced community of more than 70 researchers, technology experts, and skilled administrative and technical staff from 20 countries. B-PHOT's in-depth knowledge becomes manifest in five high-level research teams with access to cutting-edge photonics technology platforms for optical modelling and design, prototyping and manufacturing, metrology and quality control, as well as proof of concept demonstration of optics and photonic components and systems.

Each B-PHOT research team consists of principal investigators, postdocs, and PhD students, with unique knowledge and distinct technological expertise in a core-photonics research domain. B-PHOT also has a strong network of national and international collaborative partners.

B-PHOT's continuous mission is to advance photonics – the key digital technology that uses the unique properties of light – to innovate. As such, B-PHOT contributes to the Sustainable Development Goals of the United Nations and is recognized by the Flemish Government as "Photonics Spearhead for Industrial Research and Innovation", because of B-PHOT's track record for transferring photonics expertise and innovation breakthroughs to companies. As a core research group of Flanders Make, the strategic research center for manufactur-

ing and Industry 4.0 in Flanders, B-PHOT supports Flemish companies through the Innovation Boosting programme of Flanders Make wherein short feasibility studies for manufacturability of innovative ideas are carried out.

Internationally, B-PHOT is also uniquely involved as coordinator of the EC-funded pan-European initiatives ACTPHAST and PhotonHub Europe that support both SMEs and researchers from EU member states with photonics innovation.

In the Photonics Innovation Center several technology platforms are available to support innovation, ranging from high-end manufacturing technologies for optical components to characterization and demonstration setups for photonic systems. The B-PHOT technology platforms are accessible by companies through bilateral agreements, Innovation Boosting of Flanders Make or via the European Innovation project PhotonHub. Additionally, B-PHOT hosts the PhotonHub Experience Centre on "Optics and Free-form Optics" allowing participants to join the researchers for three days in their labs and discover the basic technical insights and skills in optics and free-form optics design, prototyping, metrology and manufacturing.

Highly differentiated machine park

Lenses and mirrors are essential optical components in imaging and non-imaging systems and are currently used in all industry sectors. Optimizing the optics design, in view of volume manufacturing in optical grade glasses and plastics, is key to maximizing a system's performance. Therefore B-PHOT applied for heavy equipment funding at the Flemish Herculesstichting as well as through the EU Interreg Fotonica Pilotlijnen and Interreg NWE "OIP4NWE". The result is a fully equipped supply chain from design to pilot production and metrology using in-house equipment ranging from hard milling and grinding on a dual-axis 5-axis CNC station, micro EDM, diamond tooling for direct optical finishing of polymers and metals, glass polishing, hot embossing of plastics and glass.

B-PHOT and WITTMANN

When a series production of free-form optics in plastic is required, B-PHOT offers replication in thermoplastic polymers using hot embossing or injection molding. The latter allows replication in much larger volumes, with cycle times that can go down to a few seconds, depending on the mold design. For micro injection molding, B-PHOT uses a WITTMANN Group MicroPower 5 – and macro injection molding is executed on an EcoPower 90 injection molding machine from the same supplier.

When B-PHOT approached WITTMANN BATTENFELD Benelux NV, the Belgian subsidiary of the WITTMANN Group, the directive was that all necessary WITTMANN peripheral equipment, including the robot, should be connected to the EcoPower's B8 control. The other challenge was the fact that B-PHOT didn't want a fence that was mounted on the floor. This objective was finally realized by having two lasers continuously scanned the defined safety area.

B-PHOT now has a complete production cell with an EcoPower injection molding machine with a clamping force of 90 tons. A wide variety of materials can be processed with this machine, even Cyclic Olefin Copolymer (COC) exposed to nitrogen gas at the machine hopper and screw. In contrast to the partially crystalline polyolefins such as polyethylene and polypropylene, COC is amorphous and therefore transparent, making it a highly interesting material for optical applications.

A WITTMANN W818 robot is used to automate the EcoPower work cell. A variothermal Tempro plus D180 temperature controller and an Aton plus VS segmented wheel dryer with material conveying are also used here. All of these devices are connected to the injection molding machine via Wittmann 4.0, so they can be easily adjusted and operated via the machine control.

Both injection molding machines are now at the service of the industry and for research in the framework of prototype fabrication, for qualification and validation, manufacturability testing, and upscaling of polymer optics.



Views of the EcoPower production cell supplied by WITTMANN BATTENFELD Benelux NV at the B-PHOT research department of the Vrije Universiteit Brussel with W818 robot, variothermal Tempro plus D180 temperature controller, and Aton plus VS segmented wheel dryer with material conveying. All devices are connected to the molding machine via Wittmann 4.0.

Internally, B-PHOT uses the EcoPower 90 molding machine for polymer blank fabrication in optical-grade polymers that are not readily available in the required sheet sizes for hot embossing. Currently B-PHOT is designing and simulating a mold for the fabrication of a collimation lens in a high-temperature resistant optical grade COC. This happens in the framework of a LIDAR system for EU ECSEL RIA "NewControl".

Michael Vervaeke is a professor at the Faculty of Engineering of the Vrije Universiteit Brussel (VUB).
Sergey Verlinski is a technology expert at B-PHOT Brussels Photonics.

Werkzeughau Winkelmühle invests in seminal technology



Variety of injection-molded parts from Werkzeughau Winkelmühle.
(Photo: Werkzeughau Winkelmühle GmbH)

Werkzeughau Winkelmühle, domiciled in Klingenberg / Saxony, Germany plans to position itself more broadly on the market and has therefore acquired 2-component technology from WITTMANN BATTENFELD to extend its service portfolio.

Gabriele Hopf

Werkzeughau Winkelmühle, which emerged in 1992 from its predecessor company "Elektronische Bauelemente Dorfain", is a family-owned and owner-managed enterprise in the second generation.

The company's founders, Karl-Heinz Berthold and Hartmut Baumgart, are still supporting its present Managing Director Tom Berthold in an advisory capacity. With a workforce of more than 70 employees, Werkzeughau Winkelmühle manufactures at its location in Klingenberg high-precision punching and injection molding tools, as well as parts in the area of punching and plastics technology for use in electronic

systems. The latter are mostly metal-plastic combinations and micro parts. The products are used primarily in interiors and engine compartments of motor vehicles. But components are also being produced for the watchmaking, solar and furniture industries, as well as for the energy sector and optical transmission systems. The majority of the company's customers are based in the German Saxony region.

Werkzeughau Winkelmühle scores among its customers above all with the high-quality standard of its products, its flexibility and reliability as well as the know-how from its many years of experience.

The majority of its injection molded products are highly complex, sophisticated parts, which are required to meet high standards of precision and load capacity. Especially in the automotive sector, the components are often exposed to extreme environmental conditions.

In its Klingenberg injection molding department, Werkzeughau Winkelmühle is currently operating 24 machines, more than half of which have come from WITTMANN BATTENFELD, including two micro injection molding machines and four vertical machines.

The highly developed VPower ...

The most recently acquired machine is a vertical model in a multi-component version from the new VPower series. This machine, a VPower 120/130H/210V, is the first 2-component VPower installed in Saxony. This VPower sets itself apart from previous models mainly by its innovative 2-tie-bar rotary table design which, by dispensing with the central tie-bar, provides optimal accessibility. Thanks to the center of rotation being designed without a tie-bar, there is sufficient space available below the rotary table for cooling water supply, hydraulics, compressed air and electrical equipment. The generously dimensioned rotary tables are combined with a 2-tie-bar portal clamping unit equipped with two external traveling cylinders for fast opening and closing. The rotary tables come with servo-electric drives for short rotation times and high-precision positioning. The "Uniforce" compensation plate system between the crossbars of the clamping unit and the mold platen area ensures even, gentle force transmission to the mold. Due to its open design, this machine is particularly well suited for the integration of automation systems with insert feeding and finished parts removal.

... meets all demands

Since this company makes primarily smaller series and consequently a great diversity of products on the one machine, Eric Mende, Production Manager at Winkelmühle, seeks first and foremost a high level of flexibility in the system whenever purchasing new machines.

Moreover, every machine must be easy to operate, with short cycle times and, above all, ensure a high level of repeatability. In view of the increased energy costs and the company's environmental standards, the energy efficiency of injection molding machines is another very important issue for Werkzeugbau Winkelmühle. Possibilities for integrating auxiliaries are also becoming more and more significant. Eric Mende comments: "The machines from WITTMANN BATTENFELD fulfil the criteria we require in every respect. What is more, they come with a compact design and are extremely energy-efficient."

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



VPower 120/130H/210V in the new Winkelmühle production hall in Klingenberg, Germany.



Leftmost: Dirk Koch (WITTMANN BATTENFELD Sales). Further on from left to right (Werkzeugbau Winkelmühle GmbH): Hartmut Baumgart (Company Founder and Senior Advisor), Eric Mende (Production Manager), Tom Berthold (Managing Director), Annett Berthold (Head of Quality Management Department), Karl-Heinz Berthold (Company Founder and Senior Advisor), Karina Baumgart-Läderach (Marketing Manager).



2-component assembly with inserts.
(Photo: Werkzeugbau Winkelmühle GmbH)

The Husqvarna central system in the Czech Republic

The Husqvarna company is a leading producer and innovator of garden and forest equipment. Its tradition, quality and reliability are historically proved and well-known all over the world. Husqvarna uses equipment from the WITTMANN Group in order to modernize the company's material handling system.

Milan Vácha

In recent years, Husqvarna has focused on battery powered products and plans to further develop this sector. Some of these devices, mostly robotic lawn mowers, are produced at the production plant of Husqvarna Manufacturing CZ s.r.o. in Vrbo pod Pradědem, Czech Republic.

In recent years, considerable investments have been made at this production site, including building modernisation as well as the production facilities. Today, in Vrbo pod Pradědem, Husqvarna has 85 injection molding machines with clamping forces of up to 14,000 kN.

The weight of the injection molded plastic parts produced here ranges between 0.8 und 6,000 g. The products are assembled in a dust-free and air-conditioned assembly area.

As part of its investment, Husqvarna sought a materials handling solution to optimize production and also benefit the employees. Above all, an automated solution was looked for – one that would guarantee fail-safe and monitored production.

Based on these needs, the Czech subsidiary of the WITTMANN Group, WITTMANN BATTENFELD CZ spol. S.r.o., was prepared a competitive quotation for a central drying and conveying system.

The task was to connect 12 outside silos with 24 middle-sized storage stations, 45 drying units, 8 gravimetric blenders and 10 undried material sources in the most flexible way. All this equipment was meant to distribute material via 2 coupling stations to 4 production halls. Due to the high number of drying units the system also had to be



The outdoor material silos at Husqvarna Manufacturing CZ s.r.o. in Vrbo pod Pradědem, Czech Republic.

supported with an automatic emptying solution for fast and easy exchange of material for all 45 dryers.

Adaptation of the existing equipment

The production halls as well as the material storage area already deployed existing material handling equipment. Husqvarna CZ wanted to integrate the old with the new under a single control system. WITTMANN BATTENFELD CZ therefore had to adapt many third-party operational devices, including 80 loaders, 21 dryers, 5 gravimetric blenders, and 2 vacuum pumps.

In addition, various peripheral and new devices from the WITTMANN Group then had to be commissioned and integrated, including 46 new loaders, 6 pumps, containers, controlled take-off adapters, and, of course, the WITTMANN M8 network control system with which all components of the central system are now managed and controlled.

WITTMANN CZ succeeded in establishing a system in which not only numerous WITTMANN products but also many third-party components have been integrated. An extensive central conveying system was finally implemented, consisting of around 130 vacuum conveyors, 8 pumps, 12 outdoor silos and 24 middle-sized material storage stations. Two coupling stations reliably ensure that the right material reaches each of

these numerous in the right outlets at the right dosage. And with the powerful GM 35 pumps supplied by WITTMANN at work, the conveying distance of more than 150 m is not a problem.

The fact that this system has now been working without any problems for two years clearly illustrates that the technical teams of the WITTMANN Group can cope even with the most challenging tasks that require the greatest flexibility. The successful reorganization of the material handling system and its high reliability helped Husqvarna CZ to make a real noticeable change for the better. With this project, WITTMANN BATTENFELD CZ succeeded in further strengthening the previous good cooperation with Husqvarna.

Milan Vácha is a member of the sales department of WITTMANN BATTENFELD CZ spol. S.r.o. in Písek, the subsidiary of the WITTMANN Group in the Czech Republic.



Part of the piping for the material transport, behind it on the left is a coupling station.



Two examples of the integration of peripheral equipment from different manufacturers: conveyors with control components from WITTMANN (left) and WITTMANN material dryers, each with different conveyors on the drying hoppers.



Ultra-compact granulator integrated with an electric EcoPower machine

Sedatelec is a French manufacturer of auricular acupuncture equipment based in Irigny, south of Lyon – and uses equipment from the WITTMANN Group in the company's clean room.

Denis Metral – Arnaud Moisy

Sedatelec was founded in 1978, and today employs 20 people, exporting 75% of its production to over 40 countries. The company designs, manufactures and markets sterile needles for acupuncture and other sections of complementary medicine, combining electronic diagnostic and treatment devices that are designed in-house. Many innovations have emerged from Sedatelec's research department:

- Semi-permanent needles placed in a plastic injector for a precise implantation, the needles consisting of different metals (either steel, or titanium, or gold covered steel) to offset the risks of allergy or rejection.
- Special sterile single-use acupuncture needles.

In order to provide doctors with all the appropriate know-how, Sedatelec carries out research work, and publishes scientific articles on the proper use of its acupuncture, diagnostic, and treatment devices.

Sedatelec's acupuncture needles are manufactured in a sterile clean room using an automated process. The controlled environmental conditions, imposed by the respective standards, ensure an optimal cleanliness of the needles before their sterilization. In addition, all needles undergo a 100% final inspection.

Overall production and service

The production of the devices and medical instruments is carried out entirely on-site (molding of parts, wiring, final inspection, etc.). Sedatelec has implemented a special approach to quality for over 20 years now, has obtained an ISO 13485 certification and CE marking for all sterile medical needles and electronic devices, as well as the Food and Drug Administration approval for all needles. The company's quality management system is certified by TÜV SÜD. The high quality levels of Sedatelec's products

have enabled the company to provide a 10-year after sales service after the device's official life cycle has ended.

To be as close as possible to its customers, Sedatelec has a network of specialized distributors, and the manufacturing department makes every effort to supply quality products in the shortest possible time. The company's internationalization is ensured by dedicated teams speaking French, English, German, Spanish, Portuguese, and Italian.

Arnaud Moisy:

"In the course of the first contact with Laurent Miranda, Sedatelec's Technical and Industrial Director, the specifications were made very clear. The machine had to be installed in a clean room with an access door limited to 1,200 mm in width and a ceiling height reduced to 2,400 mm, and it had to be an electric machine ensuring clean production and low power consumption.

The space restrictions in the clean room were important constraints. We offered Sedatelec a compact injection molding machine including an integrated handling arm and a granulator for the in-line recycling of sprues. We mounted the pneumatic arm on the fixed platen, and it is completely within the footprint of the EcoPower machine.

The compactness of the EcoPower 55 assured Sedatelec of fully integrating this pneumatic arm. The arm takes the sprues from the mold and places them on a chute perfectly integrated between the machine doors. The G-Max 9 Ingrinder granulator is fully integrated underneath the EcoPower machine frame. The compactness of the system matches perfectly with the available clean room floor space."

Laurent Miranda:

"WITTMANN BATTENFELD France offered us a complete solution that met our needs. Firstly – and as a 'must have', they met all the necessary medical standards (GMP certification). The 55 ton EcoPower electric >>>



ated ne



View of the Sedatelec clean room in Irigny, with the EcoPower 55 electric injection molding machine supplied by WITTMANN BATTENFELD France SAS. The granulator used here for inline recycling cannot be seen in the pictures due to the special way in which it is installed under the injection molding machine.



G-Max 9 granulator installed under the injection molding machine in the clean room.



injection molding machine with a 130 injection unit and a 14 mm screw diameter for a theoretical injection volume of twelve grams corresponded perfectly with the needs of our small part production. We produce very small parts from one to eight grams; the EcoPower 55 ensures perfect production repeatability. We also produce technical parts for needle guns and various micro-mechanisms that are used in our own products.

This production of plastic parts is completely integrated in our workshops. We therefore have control over all deadlines and quality issues, and our research and development work is totally implemented and guaranteed by our technical teams.

We were looking for a partnership with one manufacturer of equipment rather than sourcing different equipment from different manufacturers or distributors. The proposal from WITTMANN BATTENFELD France allowed us to have a single point of contact for equipment, design work, start-up installation and after sales service. Plastic injection is a peripheral activity when compared to our main activity of producing acupuncture needles. It was therefore essential to set up an autonomously functioning and remotely monitored production that can run through the night. The basic version of the EcoPower convinced us, because the machine allows the production to be monitored via smartphones using Windows 10 IoT.

The QuickLook function allows remote monitoring of the machine operation without having staff in the clean room:

- Green signalling: automatic cycle with visualization of the number of parts produced and remaining to be produced.
- Blue signalling: manual cycle, the machine is stopped because production is finished.

- Red signalling: a defect has occurred, a defect notification is sent to the smart phone.
- The display specifies which mold is running.

The optional TeamViewer application with subscription was purchased because it allows us to benefit from the 24/7 remote after sales service. TeamViewer is proprietary software for remote access, control and maintenance of end devices. You start the TeamViewer function, and our after sales service can see the display of the machine control. This really helps us with troubleshooting or parameterization.

The VNC Viewer allows us to access the machine' control from a PC. As access to the clean room is restricted, the settings on the machine are carried out without human intervention – thus saving a considerable amount of time. VNC Viewer also allows us to record machine programs within our network, manage Excel spreadsheets for monitoring and remote maintenance.”

Arnaud Moisy:

“The large B8 control touch-screen of the EcoPower allows a remote connection to the machine via a PC using Windows 10 IoT. Sedatelec wanted to control the machine remotely in order to limit interventions in the closed and locked clean room as much as possible. The B8 IoT interface on Windows 10 allows the installation of TeamViewer for remote maintenance, the smartphone application QuickLook allows the monitoring of the production. The VNC link then allows us to enable safe and reliable remote control.”

Laurent Miranda:

“We used to collect sprues in a granulator outside the production area. However, the under-the-press integration of the G-Max 9

granulator (Ingrinder solution) now allows us to recycle our material inline, thus avoiding any accidental contamination or moisture absorption.

Furthermore, the integrated G-Max 9 granulator has given us numerous advantages in terms of handling and operational safety. The materials we are using most are PA6, PA12, and POM. The return on investment that we could realize by recycling the sprues inline was an economic imperative for our company.

Without the under-the-press installation of the G-Max 9, we would not have been able to recycle the sprues inline, due to the limited space available in the clean room. This integration of the granulator met our needs perfectly. This solution was also not available from the other manufacturers that we contacted. Only WITTMANN BATTENFELD France met this requirement.

The production of plastic parts for our own product range requires us to produce a number of very small batches with many mold changes. In this regard we were impressed by the easy cleaning of the G-Max 9 when changing materials and/or colors. The remote control operation of the EcoPower machine also allows us to increase our production compared to the previous installation and especially during night time operations: For night running we collect the parts in a large container under the machine using an automatic separation flap for 'good parts' and 'rejected parts'. The system is capable of an independent running time of up to ten hours in automatic mode.”

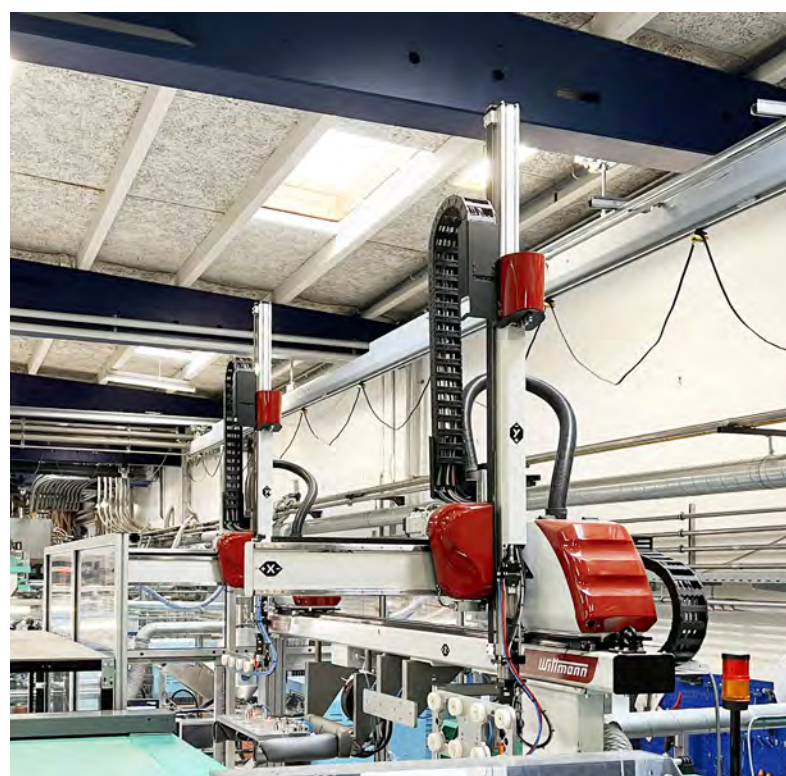
Denis Metral is International Product Manager for granulators at WITTMANN BATTENFELD France SAS in La Buisse.

Arnaud Moisy is WITTMANN BATTENFELD France Area Sales Manager for injection molding machines.

SP Moulding: Reduction of cycle time by more than 20% using WITTMANN robots

SP Moulding is a part of the SP Group, with 32 companies within all sectors of plastics production, comprising ISO certified manufacturing sites in Denmark, the People's Republic of China, Finland, Slovakia, and Poland. The overall machinery in operation is made up of more than 500 injection molding machines. For many years now, SP Moulding counts on WITTMANN Group automation.

Michael Juul-Andersen



Views of the tandem automation solution at SP Moulding in Juelsminde, Denmark, consisting of two W918T WITTMANN robots, mounted on one Z-axis.

SP Moulding is a leading Danish manufacturer of injection molded plastic precision components, serving many different industrial enterprises worldwide. In addition to the actual molding activities that are carried out in modern production facilities, SP Moulding is also handling parts and realizing comprehensive assembling, packaging and consignment for a large number of customers. SP Moulding delivers technical plastic solutions to numerous leading companies in different industries. As the customers are located all over the world, the company's exports account for some 50% of the total turnover.

Quality and environment

SP Moulding's management system covers all the demands and expectations that suppliers of technical plastic parts are confronted with. The company complies with all environmental directives, among these are the RoHS (= Restriction of Hazardous Substances) and REACH directives (= Registration, Evaluation, Authorisation und Restriction of Chemicals). SP Moulding's quality and environmental policies and respective goals are seen as being essential to strengthen its competitive position. Where possible, plastics recycling is conducted, as well as focusing on the reduction of scrap and

the minimization of manufacturing errors. SP Moulding is constantly committed to the ideas of due diligence, always striving toward customer satisfaction. By really listening to the customer's needs – and afterwards implementing new ideas that grow from constructive dialogue – both customers and employees are taken seriously and are in good hands. SP Moulding strives every day to keep energy consumption as low as possible and to further reduce it.

Statistical process control

The company works pro-actively with statistical process control (SPC) techniques – opti- >>

mizing production and service processes by continuously monitoring and recording all relevant day-to-day manufacturing processes and data.

These methods are defined and approved on the basis of measurement system analysis, MSA. MSA refers to the analysis of the ability of measuring equipment and complete measuring systems in quality management. The purpose of MSA is to assure that a selected measurement system delivers reliable results with repeatability and reproducibility.

SP Moulding and WITTMANN robots

More than 110 employees work at the SP Moulding production site in Juelsminde, 24 hours during five days a week. The plant houses 65 injection molding machines ranging from 50 to 1,500 tons. The company has been using various types of WITTMANN robots for over 25 years now. From 1994 to 2022, SP Moulding has installed a total of about 40 WITTMANN robots. The latest acquisitions are two WITTMANN W918T robots, configured as a tandem solution and working on a 160 ton injection molding machine. The installation is used for packing large quantities of customized injection molded parts.

Why WITTMANN robots?

The Juelsminde SP Moulding Production Manager, Anders Bach, is familiar with

WITTMANN robots for more than 20 years – since he was a plastics engineer from 1996 to 2000. He emphasizes three main reasons for opting for WITTMANN as a robot supplier:

- Easy-to-understand intuitive programming, and although nowadays provided with many additional new features, the basic structure from 1996 is still maintained. It is therefore very easy for the operators to understand the latest features of the most advanced robot models. Thus, setups and program changes can be executed quickly and trouble-free.
- Working with linear robots, the operator recognizes immediately the position of the robot's arm. The entire system design is easy to understand. Tortuous explanations are not necessary.
- According to Anders Bach, one main reason for the successful partnership between WITTMANN and SP Moulding was also the committed technical staff at Wiba Tech ApS, the Danish representative for all WITTMANN Group products. These highly skilled engineers were seen as always very helpful and enthusiastic, always willing to answer

questions, giving fast and correct advice, when needed. And also, it was possible to get in contact with Wiba Tech ApS at any time, Anders Bach points out.

Through exact programming by competent employees and monitoring of the results, SP Moulding is very proud to announce a more than 20% reduction in cycle time with the company's WITTMANN robots.

Michael Juul-Andersen is the President of Wiba Tech ApS, the Danish representative for all WITTMANN Group products in Fredensborg, Denmark.

SP Group is not only an ambitious injection molder, but also handles all finishing techniques such as ultrasound welding, surface treatment, and compression procedures.

Thanks to the group's collective competencies, they always stand by with advice and offer the optimal production method to their customers.

The in-house product development and the participation in research projects are important factors that continually help improve the capabilities of plastic materials and the surfaces of finished parts. SP Group aims to be at the forefront of technical know-how, focused on the practical application of materials and production technologies.

Nanotechnology offers various possibilities that can be exploited commercially, enabling the production of unique surface coatings and customization of plastic materials to obtain special properties such as

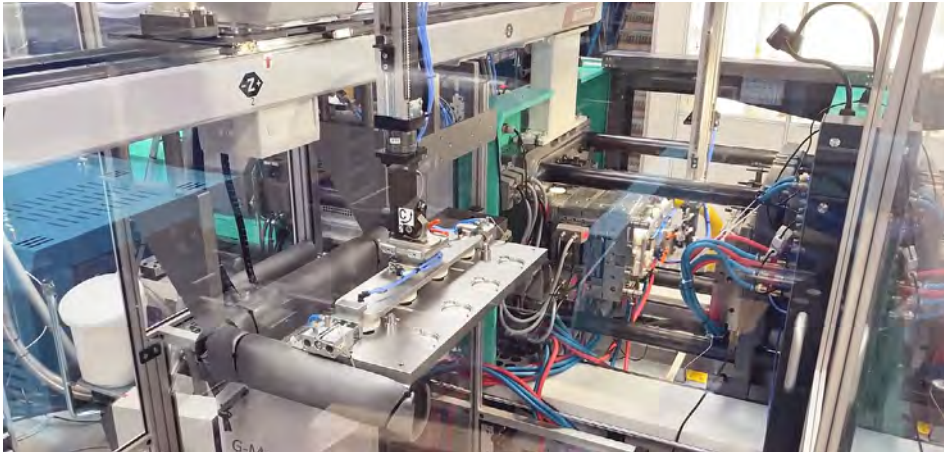
antimicrobial surfaces – or surfaces with the exactly opposite properties. Conventional plastic technologies are changing rapidly, and SP Group follows these developments closely.

Special focus areas include laser machining and new technologies such as plasma treatment, PVD coatings and hydrophobic surfaces, in this case reverting to the Lotus effect.

The Lotus effect was initially observed on the Indian Lotus flower but is also known from several other plants. The leaves of the Lotus plant dry instantly after rain has fallen, and all dust and dirt is washed off, i.e. Lotus plants have a self-cleaning surface. The secret lies in the surface structure of the leaves, making rainwater drip off, together with the dust particles. Using nanotechnology know-how allows SP Group to copy this natural type of self-cleaning surface and make use of it in plastics technologies.

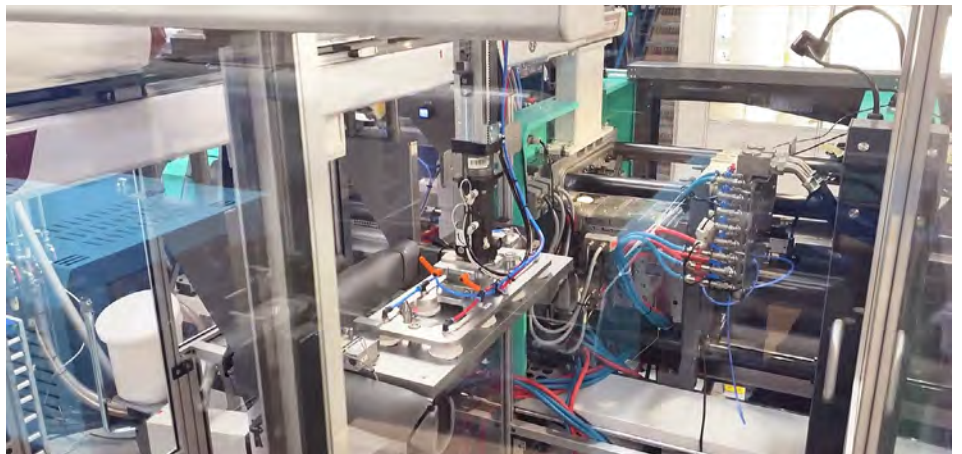


Leaf of the Indian Lotus flower.



A production run at SP Moulding in Juelsminde, Denmark.

The removal robot (right half of the image) removes the injection molded parts from the mold, while the second robot (left half of the image) removes the parts from the transfer station between the two robots.



While the second robot places the parts on a conveyor belt, the removal robot positions the removed parts on the transfer station.



The removal robot moves back into the mold area of the injection molding machine, while the other robot again picks up the parts from the transfer station.



The next cycle begins with the entry of the removal robot into the open mold and the removal of the parts, while the other robot in turn places the parts on the conveyor belt. - Cycle time: around 10 seconds.

Robots and peripherals at Automat Irrigation in India

The name Automat not only stands for outstanding achievements in technology and design, but also for consistency and maximum reliability in production. Automat Irrigation produces high-quality precision products that are used in the wide field of micro-irrigation. Today, Automat manufactures more than 350 different products, fitting for any micro-irrigation system, with global availability – and with the support of the WITTMANN Group.



Kishore Kumar

Founded by P. K. Jain in 1972, the Automat Group of Industries is a globally active organization, headquartered in New Delhi, and is present in more than 110 countries. The Automat Group of Industries currently employs 2,700 persons at several locations in India, being one of the world's largest manufacturers of irrigation sprinklers, filtration and fertigation equipment.

Being part of the Automat Group, Automat Irrigation is an award-winning company with approximately 40 million USD in annual sales. Automat's micro-irrigation components are on a par with the best in the world, deploying an irrigation method that uses less water pressure and flow than a traditional sprinkler system. Micro-irrigation has the further advantage that the plants are optimally supplied by delivering the water directly to the roots, e.g. through a drip hose. This procedure means that comparatively little water has to be applied.

And because of its excellent price-performance ratio, this agricultural equipment made by Automat Irrigation is used by farmers in India and all over the world. A large number of different plastics are used in the manufacture of the products: PP, PVC, POM, PBT, PA, HDPE, LLDPE as well as various technical plastics and thermosets. More



Automat Irrigation production in Haridwar, Uttarakhand: the interaction of automation and material handling system led to a decisive improvement in productivity and ultimately to a noticeable reduction in production costs.

than 800 collaborators are employed at five state-of-the-art injection molding plants in Haridwar, Uttarakhand, housing over 140 injection molding machines with clamping forces from 22 to 775 tons.

Automat is currently expanding its portfolio to over 400 different products in eight categories: "Smart Irrigation" products are intended to advance digitization in agriculture in the future, which has the potential to revolutionize it once again. Among these products are automatic disc filters and automatic screen filters, among many others.

Amit Jain, Managing Director of Automat Irrigation, points out: "Our biggest strengths lie with our highly trained teams, their high technical skills and with our technology partners in the fields of production equipment, materials, research and development. Our mission is to empower small and

marginal farmers. Accordingly, we have developed our latest products to enable and improve more profitable and more sustainable agriculture. This incorporation of technological innovations is the key to cautious further growth, to 'creating a green world', which is our new mantra."



Mr. Amit Jain

The benefits of WITTMANN Group equipment

The first contact between Automat Irrigation and WITTMANN BATTENFELD India Pvt. Ltd., the Indian subsidiary of the WITTMANN Group, took place in 2013. Automat

Irrigation, with its Vice President Operations, Vijay Warke, explored the possibilities of working together in the fields of robotics and auxiliaries. First of all, robots and sprue pickers were purchased from WITTMANN BATTENFELD India. Currently, Automat Irrigation has 33 WITTMANN robots of different types with payloads of 3 to 25 kg, and five sprue pickers. Above that, Automat uses a WITTMANN material conveying system, designed for 15 injection molding machines, and additional peripheral equipment: two chillers, eleven granulators (S-Max, Junior, G-Max) four Tempro temperature controllers and two Aton material dryers. The delivery of numerous other devices is ongoing.

These installations were a complete success for Automat Irrigation. The WITTMANN robots alone gave the company an increase in productivity of 10 to 15% - year on year. Vijay Warke, Vice President, Automat Irrigation, says that "we got to know our partner WITTMANN at exactly the right time when we were thinking about fully automating our plant, including the material handling system with the appropriate accessories.

We worked very closely with WITTMANN India headquarters and their local team when designing and installing the automation, and immediately noticed the corresponding effects in a wide variety of ways: productivity increases and quality improvements - and these effects endured. We received a lot of support from WITTMANN India, right down to evaluating the results. Because the success of the automation solutions was immediately apparent, we decided to work with WITTMANN in all possible areas, and this then established our now existing strong partnership.

Vijay adds that "we should not forget the work done with the new conveying system, which has also raised our production plant to a new level with regard to these processes. The new system enables us to read out and administer all parameters and to make the appropriate adjustments. This is almost a kind of scientific tool for us, which again helps us save time, improve productivity and ultimately save production costs."

Amit Jain, Managing Director, Automat Irrigation, says that "we will certainly continue to work with the WITTMANN Group in the long term - and at all of our locations."

www.automatworld.in

Kishore Kumar is the Vice President of WITTMANN BATTENFELD India Pvt. Ltd., the Indian subsidiary of the WITTMANN Group, headquartered in Chennai, India.



View of one of Automat Irrigation's injection molding production halls.



From left to right: Mr. Anuj, Mr. Praveen, Mr. Ashok, Mr. Anil, Ms. Shivali Tyagi, Mr. Vijay Warke (Vice President Operations of Automat Irrigation), Mr. Vivek, Mr. Atul Mahajan (Head of Sales of the local WITTMANN facility in Chandigarh), Mr. Sushant Dubey (WITTMANN Service Engineer).



A small selection from the Automat Irrigation product portfolio.

Luhua in China relies on the WITTMANN Group

Luhua Group, located in Laiyang City in the Chinese Shandong Province, is a large private enterprise that has become a nationwide known brand and a key national player in the food processing industry. The WITTMANN Group is proud to provide Luhua with robots and peripheral equipment, contributing directly to Luhua's success.

Wang Hongqiang

Luhua was founded in 2001, and today, the company has 20,000 employees working in 36 production plants. The Luhua Group mainly produces 5S pressed peanut oil of the highest quality, condiments, and also mineral water, just to name a few of the most important products. In addition, Luhua also manufactures various kinds of industrial packaging for its products.

As early as 2008, Luhua had begun to update the then existing peripheral equipment for injection molding machines. Based on a thorough evaluation of the WITTMANN Group and its products, Luhua finally decided to purchase two WITTMANN W711 robots. This was the beginning of a long-term and esteemed partnership.

The patented technology of the robot control from WITTMANN allows easy programming and contributes interesting features that also optimize the handling of parts and inserts within the injection mold: such as SmartRemoval, Push Function and Insert functions. This of course reduces injection molding cycle times, further improving Luhua's production efficiency.

Luhua's farseeing management, advanced production processes and means of production – and last but not least the excellent quality of its products – have earned the company wide recognition. Products from Luhua Group are made according to ISO9001 and other quality system certification standards. Luhua has been awarded a considerable number of patents, and the company also holds valuable brands.



View of the Luhua Group premises in Laiyang City, Shandong Province.

Luhua and WITTMANN

For the last ten years, Luhua Group has consistently expanded its production plants and added high-quality equipment from the WITTMANN Group. The two workshops in Yangjun Town mainly produce plastic carrying handles and bottle premoldings, both for peanut oil bottles. Here, 15 WITTMANN robots from the W8 servo drive series come into operation. These robots have reduced the cycle times considerably, (currently 13 seconds) and have contributed greatly to production efficiency and commercial success.

In response to the plans of the "National Initiative of Intelligent Manufacturing 2025", Luhua delved deeper into the topic of automation. While automatic packaging solutions had previously been developed and used in production, various pieces of conveying and dosing equipment from the WITTMANN Group were now being used to handle the raw material and color masterbatch.

These new measures reduced labor costs and made quality assurance easier. Looking to the future, Luhua also invested in

one W823 and six W833 pro robots from WITTMANN. All of these measures taken together led to shorter cycle times and increased efficiency.

Luhua's management is impressed by the fact that the company and the WITTMANN Group have been successfully working together for more than ten years – a partnership in which both sides have evolved.

There is no question that the equipment supplied by WITTMANN has raised process reliability and overall efficiency to a new level. Luhua now unreservedly considers WITTMANN as a reliable partner whose products are always the first choice.

Luhua sees its strategic goal as "improving peoples' quality of life and further developing the Luhua brand through excellent product quality." There is no question that the company will continue on this successful path, which ultimately results in meeting the needs of the people of China.

Wang Hongqiang is Sales Manager working for the Chinese subsidiary of the WITTMANN Group based in Kunshan in the Jiangsu Province.



Plastic carrying handles and bottle premoldings for peanut oil bottles.

The Yangjun Town production hall houses WITTMANN W711 (left) and W823 robots, ...



... and peripheral equipment for the blending and conveying of plastic material.

