

# today

The ARBURG Magazine

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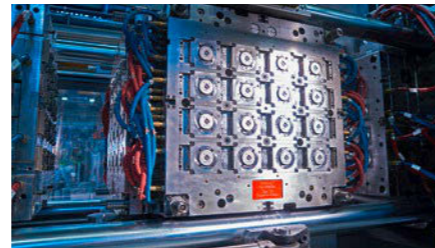
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## Dear Readers,

2023 was an eventful year for us, with our celebration of an extraordinary “100 Years of the Hehl Family Company” taking centre stage, as you know. However, alongside many wonderful experiences, we also have some sad news to report. At the end of the year, we unfortunately had to bid farewell to our father, Eugen Hehl. All those who knew him will have a sense of what we have lost: a visionary and a go-getter with immense passion for everything he did. An outstanding entrepreneur, he and his brother Karl, who passed away in 2010, turned ARBURG into one of the world’s leading companies in the plastics industry. At the same time, he was also very committed to his family and to playing an active role in the community. You can find out more about the man and entre-

preneur Eugen Hehl, to whom we – his family, ARBURG, the region and the international plastics industry – owe a great debt of gratitude, in this issue of “today”. But we are also looking to the future, just as our father would have wanted.

Our course has already been set: ARBURG was, is and will remain an independent, family-owned company. This will ensure that we remain a strong, reliable and innovative partner in the future. Given the current economic situation, this statement is more important than ever.

“Wir sind da.” We are here for you, to help you successfully meet the major challenges of today and tomorrow. Our fascinating application reports are further proof of this. We hope you enjoy the magazine!

Juliane Hehl    Michael Hehl

## LEGAL NOTICE

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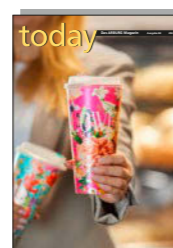
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HuJin produces the colourful IML cups for bubble tea in China using high-tech machines from ARBURG: more than 700 million cups per year – high quality and economical at the same time.

**ARBURG**

# Architect of a great success

## Eugen Hehl: Visionary in global sales as well as corporate development and strategy



**O**n 12 December 2023, ARBURG Senior Partner Eugen Hehl passed away at the age of 94. Throughout his life, he played a decisive role in the unique transformation of a small Black Forest business into a highly successful global plastics processing company thanks to his drive, vision and ideas. His ability to remain grounded throughout is clearly reflected in one of his guiding principles: "To be, rather than to seem".

A trained master mechanic, Eugen Hehl took charge of the development of national and international sales at a very early stage. But he also had the foresight to ensure that the company headquarters in Lossburg were purposefully expanded to meet the needs of products and employees while utilising state-of-the-art infrastructure.

For more than seven decades, he travelled in the interests of "his" ARBURG, always attentive and with a keen sense of

what customers and markets were looking for. Looking back on what he had achieved together with his family and also as a businessman himself, he once said: "When I see how the family and the company have grown continuously from humble beginnings, I realise that, despite all the setbacks and mistakes, we still made some good calls and did a lot of things right." Considering the 100-year history of the Hehl family of entrepreneurs and the family business that gave rise to ARBURG, there's no denying that this is true.

### What Eugen Hehl leaves behind

Eugen Hehl's legacy? Great entrepreneurial flexibility, the family and the family company at the centre, healthy operations, a solid grounding, social responsibility towards employees and the region, environmental protection and conservation of resources for a home region of great recreational appeal, continuous innovation

through inventiveness, commercial flair, creativity and foresight.

Eugen Hehl brought all of this together in his vision for ARBURG. Everything had to be and radiate ARBURG as if cast from a single mould, was how he summarised his view of things, from design through to sales, distribution and service. Customers should immediately think to themselves: "Aha! This is ARBURG, I'm at home here, I'm in good hands".

### A visionary approach

Much of Eugen Hehl's knowledge was self-taught, which makes his visionary decisions for the company's development all the more deserving of recognition. In the sales and service areas, he tried to take as much as possible into his own hands, both nationally and internationally, developing his own sales structures and setting up his own subsidiaries worldwide, often on his own land.

A legendary move was his trip to Japan in 1962 – a high-risk gamble that nevertheless paid off when he sold 52 machines within 14 days. And a brave move was the decision he and his brother Karl took in the mid-1960s to demolish nearly new buildings in Lossburg in favour of a grid construction that followed the material flow of production and had plenty of potential for expansion.

Eugen Hehl's achievements were met with great interest and respect in every regard, both nationally and internationally. His country honoured him with the Order of Merit of the Federal Republic of Germany in 2000. Just one of many honours in recognition of his great work. For his services to the plastics sector, Eugen Hehl was inducted into the "Plastics Hall of Fame" in 2015. The last award during his lifetime

came in 2020 with the Richard Vieweg Medal of Honour from the Association of German Engineers (VDI).

### Eugen Hehl's Sphere

What remains of Eugen Hehl's character becomes obvious when you enter the company via the Customer Center: on the left is a transparent, delicate sculpture that is aptly named Eugen's Sphere. A colourful cosmos of dazzling parts, which together form a coherent, well-rounded world. Perfectly composed, interesting and with constantly evolving facets. Just how Eugen Hehl was as a person, working for the benefit of "his" ARBURG and his family.



Eugen Hehl in his element as a sales professional, host and builder: in the 1970s at Hannover Messe (image 1, right); in 1999 with the Princess Royal, Princess Anne, at the opening of the subsidiary building in Warwick, United Kingdom (image 2); in 2001 at the inauguration of the ARBURG Technology Center in Münsingen, Switzerland (image 3); in 2014 at the ground-breaking ceremony for Hall 22 in Lossburg (image 4); together with his children Juliane and Michael Hehl and niece Renate Keinath (from left); and in 2002 in the shell of Hall 21 with son Michael (left) and brother Karl Hehl (centre) (image 5).



F. Morat manufactures its sophisticated gear parts and gear housings (photo below) on ARBURG machines. The ALLROUNDER 470 H (pictured left) is a new addition to the machine fleet, and Erich Gutmann (left), production team leader, and Thomas Andres, operations manager, are completely delighted with it.

# Geared for success!

## F. Morat: ALLROUNDER 470 H milestone machine increases efficiency in production

**The desire for greater efficiency in its machine fleet prompted F. Morat & Co. GmbH, based in Eisenbach, Germany, to replace a hydraulic machine with a new, high-performance ALLROUNDER 470 H milestone machine. This decision was based on the company's positive experience with seven hybrid HIDRIVE machines.**

F. Morat considers its core competencies to be in the field of precision injection moulding, for example of automotive parts such as toothed wheels and housing components. This requires narrow tolerance bands and maximum reproducibility to achieve the high quality requirements. As operations manager Thomas Andres explains: "If you want to remain competitive in these areas, advanced technologies and functions are essential, particularly in the areas of energy requirement and production parameters."

The combination of electric clamping unit and hydraulic injection unit not only

enables the company to achieve impressive speed and reproducibility, but also offers dynamic hydraulic injection with a position-regulated screw, which meets the high demands placed on products and process stability, particularly in automotive series production processes.

### New hybrid concept proves convincing

F. Morat has been aware of the benefits of all-electric and hybrid machines since 1989. As Production Manager Tobias Dorer explains: "In addition to energy efficiency, sustainability and cost-effectiveness, the new ALLROUNDER 470 H offers a range of performance variants for flexible adaptation to different requirements. The innovative oil management concept reduces oil consumption by up to 35 per cent and enables greater precision in pressure build-up."

F. Morat is planning to invest more in this innovative hybrid technology in the future. Erich Gutmann, production team

leader, emphasises the following in this regard: "Considerations relating to energy, emissions and hazardous substances, such as the oil quantities used, are important components of internal and external

reporting. What's more, new processes require more options, for instance in terms of simultaneous cycles, sensor analyses and active sensor control systems. We can do all of this with the new hybrid machine." The faster cycle times, reduced consumption costs, shorter maintenance stops and lower energy requirement are additional

strong reasons in favour of the current series of this machine type.

### Cooperation for over 50 years

The long-standing co-operation between F. Morat and ARBURG goes back more than 50 years and has been further intensified by the introduction of the new series. ARBURG has not only supported the company with an ideal machine configuration, but also with the successful implementation of several turnkey projects.



### INFOBOX

**Name:** F. Morat & Co. GmbH  
**Founded:** 1963  
**Locations:** Eisenbach, Germany and Lerma, Mexico  
**Turnover:** Approx. 24 million euros per year  
**Employees:** Approx. 160  
**Industries:** Automotive and e-mobility, drive systems and geared motors, electronics, control systems and mechatronics, medical technology, control, air conditioning and ventilation technology  
**Products:** Gear parts and gear housings, plastic/metal compounds and complete assemblies  
**Contact:** de.f-morat.com



# Silver anniversary

## Technology Days 2024: A wealth of expert solutions from ARBURG

**If you want to get to grips with the future of plastics processing, come to the ARBURG Technology Days! For 25 years now, customers have benefited from the unique industry event that extends across the entire company headquarters in Lossburg, Germany and offers a wealth of expert solutions and exciting glimpses behind the scenes. To mark its silver anniversary, ARBURG has put together a colourful array of over 40 exhibits, new machines, a wide range of processes and applications and valuable services covering all the important plastics topics.**

Well over 100,000 invited trade visitors from all over the world have travelled to Lossburg to date so as not to miss out on this unique live experience. The main topic in the 2024 “think tank” is arburgSOLUTIONworld (see page 9). In the Efficiency Arena, ARBURG managing directors Gerhard Böhm and Guido Frohnhaus will explain in a two-way conversation how plastics processing can be kept under control and designed economically and efficiently in the future. Visitors will also be able to obtain one-to-one advice from ARBURG experts in the Training Center around the

four-metre-high LED column that already caused a sensation at Fakuma 2023.

### New machine technology

Visitors will be given a condensed overview of ARBURG’s broad product portfolio for injection moulding and additive manufacturing. For example, an ALLROUNDER 420 C GOLDEN EDITION will be on display for the first time to represent the enhanced series. Fitted with the ARBURG servo hydraulic system, the new machines consume less energy than standard hydraulic machines. Depending on the process, the savings are between around 30 and 50 per cent. Other machine highlights include the three new ALLROUNDER H machines with hybrid machine technology (see page 12).

### 30 years of automation and turnkey

ARBURG’s expertise in delivering solutions for automated injection moulding production will be demonstrated under the slogan “30 Years of Automation and Turnkey”. Its complete robot range will be on display, alongside current production cells of selected customers.

And, of course, digital topics and services won’t be neglected either. In addition,

tours of ARBURG’s current production facilities are an annual highlight and are particularly popular with first-time international visitors. If you don’t have time to be there in person, you will be able to find plenty of information about the Technology Days 2024 on ARBURG’s website after the event.



Website

# Focus on efficiency

## arburgSOLUTIONworld: Solution expertise for customer meta-topics

**S**kills shortages, energy costs, digitalisation, automation: arburgSOLUTIONworld, which was first presented very successfully as an LED column at Fakuma 2023, provides the right answers to all these current issues. Underlying this is ARBURG’s concentrated knowledge and expertise as a competent solution provider. Working with customers, our experts provide practical advice and find the levers to increase efficiency and reduce costs. Tailored to individual requirements.

as easy as possible for them to find solutions for their tasks, do business with us and be successful.”

### Valuable advice and solutions

A valuable component is the “Action Plan: Energy”, which includes energy advice, machine updates and consumption measurements to help save valuable resources and energy. ARBURG experts use individual processes and customer-specific production solutions to demonstrate how high quality standards can be maintained despite enormous price and cost pressures.

Another key component of arburgSOLUTIONworld is the digital product portfolio, which makes the production of plastic parts more efficient and transparent. The portfolio includes the ARBURG host computer system, the arburgXworld customer portal, which can be linked to it, and the GESTICA control system with its intelligent assistance and pilot functions.

“With arburgSOLUTIONworld, we are demonstrating emphatically and sustainably that our products, solutions and expertise cover the meta-topics that our customers are facing right now – and the topics that will become even more important in the future,” explains Gerhard Böhm, managing director of sales & after-sales. “Our complete package is designed to make it



arburgSOLUTIONworld brings together ARBURG’s expertise. Our experts work with customers to find tailor-made solutions.



Innovating together on a first-name basis: the two Managing Partners Mathias Stendtke (left) and Roland Lenzing.

# Securely connected

## PFLITSCH: Innovations thanks to ALLDRIVE and freeformer

**P**FLITSCH GmbH & Co. KG, Hückeswagen, Germany, is the international market leader in industrial cable management. In recent years, the company has invested heavily in production, prototyping and research and development. PFLITSCH has now also become a technological leader in LSR processing, where it uses electric ALLROUNDER A machines. The freeformer 750-3X helps shorten innovation cycles.

PFLITSCH is currently optimising the processing of thermoplastic elastomers (TPE), such as those used in sealing inserts and cable glands. Precisely tailored EMC solutions for the electromagnetic compatibility of components that fulfil the industry's special requirements for safe high-voltage wiring systems have been created especially for the automotive industry.

Since 2020, PFLITSCH has exclusively purchased electric ALLROUNDERS from the ALLDRIVE series, most recently ten ALLROUNDER 630 A machines equipped for processing liquid silicone (LSR) with a clamping force of 2,500 kN and size 800 injection unit.

### Shorter cycles, increased output

This has made production in Hückeswagen even more economical and efficient. Roland Lenzing, managing partner at PFLITSCH, comments: "The conversion of our injection moulding machine fleet to the electric ALLROUNDER A and the different COMFORT, PREMIUM and ULTIMATE performance variants have helped us to achieve further increases in production volumes thanks to shorter cycle times. The high degree of automation achieved means that we can maintain our

well-known high quality standards. Both contribute to improving energy efficiency and occupational safety."

### Faster development

"For us, the freeformer represents the next stage in the development of special solutions and prototypes. It shortens innovation cycles by optimising the production of A and B samples, that is, prototypes and pre-series samples, in the development process. As a result, innovations can be implemented more easily," says Mathias Stendtke, managing partner at PFLITSCH alongside Roland Lenzing, explaining the advantages of the system for his company. Geometries that cannot be produced using the standard injection moulding process are also produced at PFLITSCH using the freeformer. "We are aiming to expand our production portfolio to include additive

manufacturing in the near future, and one of the key factors behind this has been our collaboration with ARBURG. With the development of the freeformer, the company has succeeded in taking this process to a new level," says Mathias Stendtke.

### True ARBURG fan

The two companies have enjoyed a close partnership since the 1970s, based on a shared commitment to quality and a strong awareness of service. Mathias Stendtke believes that another important thing they have in common is that "both family companies are world leaders in technology. We value ARBURG's reliability, the short communication channels and the seamless, personal support right through to commissioning. The partnership works in both directions, as ARBURG installs cable

glands from PFLITSCH in its freeformers. We now utilise our jointly developed expertise, particularly in developing special solutions. In this respect, you could call us fans of ARBURG."



Photos: PFLITSCH



The sealing inserts and cable glands from PFLITSCH are not only made from TPE, but also from LSR due to stringent requirements.

### INFOBOX

**Name:** PFLITSCH GmbH & Co. KG  
**Founded:** 1919  
**Location:** Hückeswagen, Germany  
**Employees:** Approx. 300  
**Industries:** Mechanical and plant engineering, food and pharmaceuticals, rail, automotive and electromobility  
**Products:** Cable glands, cable entries, cable routing, cable protection  
**Contact:** www.pflitsch.de

# Hybrid excellence

## ALLROUNDER H: New hybrid machine technology

**P**articularly easy on energy and resources, efficient in production, reliable and user-friendly: the new hybrid ALLROUNDERS meet customers' requirements precisely. The HIDRIVE series with new hybrid machine technology is now available in sizes 470, 520 and 570 with clamping forces of 1,000, 1,500 and 2,000 kN and in three performance variants.

"We have equipped our new ALLROUNDER H with many features that will make our customers happy," says Gerhard Böhm, managing director of sales & after-sales, with conviction: "The new hybrid machine technology is perfectly suited to our times and an excellent fit for the global market. Its optimised energy

footprint and reduced cycle times are particularly impressive."

### Plus points: Energy efficiency and cycle time

The new ALLROUNDER HIDRIVE machines combine an energy-efficient and precise electric clamping unit with a powerful and dynamic hydraulic injection unit. Added to this are reduced purchase and operating costs as well as very good energy and carbon footprints. The new oil management concept results in oil savings of up to around 35 per cent. The cooling water capacity can be reduced by up to 70 per cent and the dry cycle time is also around 40 per cent shorter. Thanks to a wide range of options, the ma-

chines can be customised precisely to the respective requirements.

### Customisable: Three performance variants

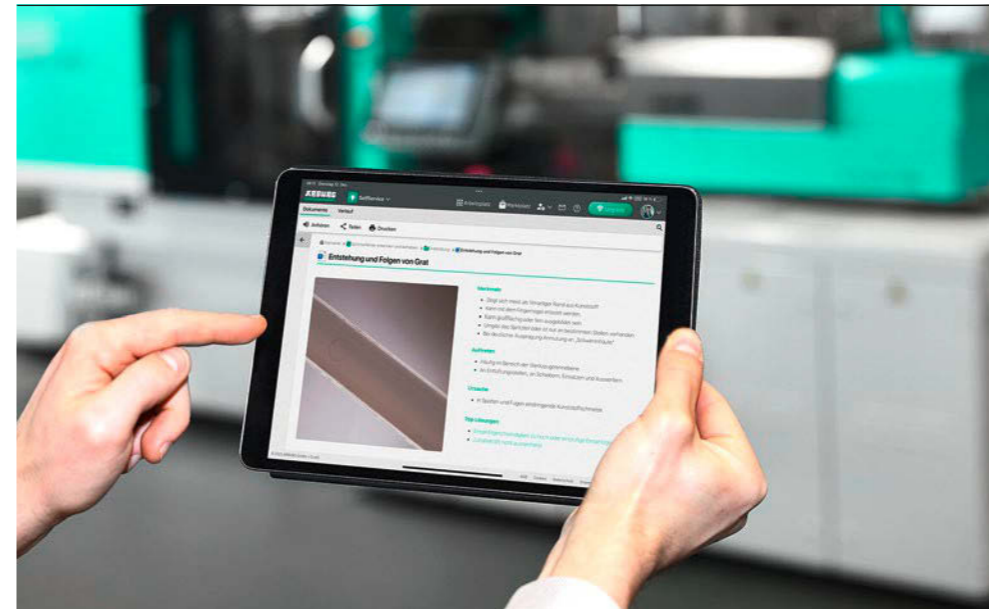
The machines are available in the COMFORT, PREMIUM and ULTIMATE performance variants, with the first two variants equipped with the ARBURG servo hydraulic system (ASH) as standard. A new feature of the PREMIUM variant is flow rate splitting, which enables simultaneous movements of hydraulic secondary axes such as the ejector and core pull (see Tech Talk, today 83). This saves energy, costs and space on the machine and increases production efficiency.

Efficient and configurable according to customer requirements: the new hybrid ALLROUNDER H is available in sizes 470, 520 and 570, each in the COMFORT, PREMIUM and ULTIMATE performance variants.



# Four new helpers

## arburgXworld: New features make everyday injection moulding easier



Quick everyday assistance: "SelfService" can be used to detect and rectify moulded part faults.



**arburgXworld, our digital customer portal, is constantly being expanded. Four new features have recently been added to help customers manage their day-to-day work even better.**

"SelfService" is a feature that makes it possible to detect and rectify moulded part faults. To do this, a database has been set up that can now analyse process errors as well as machine problems. This application technology knowledge is available in the form of explanations and step-by-step illustrated instructions. Customers describe their problems and the database then displays possible causes.

In the "Shop" there is additional information under the heading "Other customers also bought...". This can provide useful

assistance for further purchases based on our most recent incoming orders.

### AnalyticsCenter 2.0

The "AnalyticsCenter 2.0" not only displays all online machines in the machine dashboard, but also their status over the previous two hours. The overview includes bad parts produced, orders and incidents. The time selection for each machine can be made for up to two weeks backwards. Information of this kind is useful for start-up and mould sampling, for example, as well as for process validation and quality analysis.

Another feature relates to arburgXworld's "Premium" and "Premium Connect" equipment packages. The "DataDecoder" can be used to make machine data sets – including for multi-com-

ponent ALLROUNDERS – readable and comparable in table form, differentiated between master and operator data sets. Up to five data sets can be correlated like this in tables with a convenient comparison function. This makes interventions easy to see and makes it clear where there are programming discrepancies before an incorrect data set is loaded, for example.

# A riot of colour

**HuJin: Bubble tea cups – just as colourful as their contents**

**B**ubble tea, the popular drink, has literally “spilled over” from Asia to Europe. HuJin (Suzhou) Industry Co., Ltd. uses in-mould labelling (IML) to produce huge quantities of thin-walled cups for the tea: more than 700 million per year. This involves the use of eight highly automated, hybrid ALLROUNDER H machines.

In countries such as China, the mostly green and frothed teas, often mixed with milk, sugar and ice, and the surprising “bubbles” made from tapioca starch, have been much more popular than coffee for a long time. Branding for a wide range of customers is carried out using the IML process. In less than ten years, HuJin has become the top partner for over 1,000 tea brands and is the country’s leading supplier of high-quality cups at low cost.

In contrast to what is often the case on the Chinese market, HuJin decided against domestic injection moulding machines and moulds in favour of reliable production with a minimal error rate. In other words, they chose a more expensive system for the production of their cheap end product –



Photos: HuJin

HuJin’s high-end production facility produces more than 700 million IML cups in a wide variety of designs every year (images left).

a decision that HuJin’s general manager Liu Wei is very much in favour of: “As we want to achieve high-quality and stable production, we have chosen ARBURG as a long-term cooperation partner.”

## Over 40 per cent faster

HuJin produces its cups on eight hybrid ALLROUNDER 820 H machines, which operate with automation technology from Machines Pagès and six-cavity injection moulds from KEBO. Cycle times have been significantly reduced from nine to 5.25 seconds – worlds apart in injection moulding. Liu Wei recognises the particular advantages of high-quality IML injection moulding technology: “As well as providing a simple container for the brand that is safe for consumers, we also need to provide high-quality packaging that matches the visual and, in many cases, youthful aesthetics.”

Now with eight years of manufacturing experience, the company has created innovative products and new cup shapes and looks that meet market requirements and offer customers an increasingly wide selection. According to Liu Wei, the secret of the technical team’s success is “the rapid

development of new products, the design of product models, tens of thousands of tests and a colourful appearance.”

The cups for this popular drink hold 700 millilitres. Production can be customised simply by exchanging labels. The cycle time on the ALLROUNDERS has also significantly reduced the wall thickness. With a flow length ratio of 1:400, it is now 0.42 millimetres with no label or 0.48 millimetres with a label.

## Sustainability increasingly important

The average material saving here is 18 per cent, which equates to around 2,000 tonnes less polypropylene per year, a significant figure from an economic perspective. HuJin also wants to offer more and more products designed for the circular economy in the future. With its subsidiary in neighbouring Shanghai, ARBURG is proving to be a fitting partner, as Liu Wei summarises: “We have received a lot of support during our collaboration. It is very reassuring that the systems consistently produce flawless products. We will continue to focus on joint progress and a win-win situation with ARBURG in the future.”

## INFOBOX

**Name:** HuJin (Suzhou) Industry Co., Ltd.  
**Founded:** 2015  
**Locations:** Taicang, Suzhou, China  
**Turnover:** 200 million renminbi yuan (approx. 25.5 million euros)  
**Business areas:** Packaging  
**Employees:** 75  
**Industries:** Food and beverages  
**Products:** In-mould cups and food containers  
**Contact:** www.hujin-micoan.com



# Traditionally sustainable

## Borealis: Strong focus on recycle

**P**restigious materials manufacturer Borealis and ARBURG have been working together for over 15 years, and this partnership has been extended to include recyclates over the last five years. Borealis launched its first compounds with PCR content (post-consumer recycle) back in 2014 and has also been offering PCR solutions for packaging since 2016. The today editorial team spoke to Application Technology Manager Luc Monnissen and Marketing Manager Philip Knapen, both from the Consumer Products Rigid Packaging division at the Belgian location of Borealis Polymers N.V.

**today:** Can you give us an idea of the proportion of polyolefin recyclates in Borealis' portfolio?

**Philip Knapen:** Borealis aims to be producing 600,000 tonnes of sustainable materials by 2025, and 1.8 million tonnes by 2030. Polyolefins from PCR are recycled either mechanically or chemically. Wherever possible, we always prioritise mechanical recycling. For the time being, however, this can only be used for non-food applications. We try to chemically process all packaging that cannot be mechanically recycled.

**today:** When did Borealis start working more closely with ARBURG in the field of recycling materials?

**Luc Monnissen:** We have been working together for more than 15 years now. A focus on PCR was established for the first time during the ARBURG Technology Days 2018. In co-operation with ARBURG and Erema, we have demonstrated that polyolefins can be comprehensively recycled and reused. Like ARBURG, we are participating in the HolyGrail initiative for

marking moulded parts with digital watermarks in order to achieve better sorting and a higher recycling rate for packaging in the EU. We showcase other sustainable solutions together at trade fairs such as K, the world's leading trade fair, and Fakuma, where our BJ368MO material was used for the injection compression moulding of round cups in 2023, for example.

**today:** What role do the arburgGREENworld programme and innovative machine technology play in this?

**Philip Knapen:** Our commitment to the circular economy and the arburgGREENworld programme complement each other perfectly. Together, we can offer our customers truly sustainable solutions. This also includes technical in-

Philip Knapen (left) and Luc Monnissen from Borealis value their cooperation with ARBURG. Together, the two partners are advancing the topic of the circular economy.



Photo: Borealis

novations such as the ARBURG recycle package with its customised hardware and software or control functions such as the "aXw Control RecyclatePilot".

**today:** Is mechanical recycling more resource efficient than chemical recycling?

**Luc Monnissen:** Mechanical recycling of PCR has a significantly lower carbon footprint, but needs to be further developed towards a better final quality in order to expand its use for packaging. Adjustments to the processing machines are also necessary here. Our mass-balanced chemically recycled solutions are based on the International Sustainability and Carbon Certification (ISCC PLUS). This material can also be used as food packaging, as these polyolefin grades have exactly the same properties as the petroleum-based ones.

**today:** How are you driving the topic forward?

**Philip Knapen:** Recycled polyolefins, whether chemical or mechanical, are always a resource-efficient alternative to virgin material. In Lahnstein, Germany, we operate a pilot factory for mechanical recycling together with Tomra, the sorting experts. We can already use these recyclates in high-end packaging applications for household goods or cosmetics, for example.

**today:** What role will recyclates play in five years' time?

**Luc Monnissen:** Due to tax developments in Europe and the Packaging and Packaging Waste Regulation (PPWR), recycled polyolefins are becoming increasingly important. The Regulation stipulates a recycling rate of 30 per cent for beverage

applications, 35 per cent for non-sensitive packaging and ten per cent for sensitive packaging. This will drive forward the circular economy and the use of PCR.

**Philip Knapen:** We want to move from 'resource intensive' to 'renewable'. As a partner, ARBURG offers us the right machine technology and comprehensive expertise to achieve this.





# Colourful and precise

**Hoefer & Sohn: Turnkey system for over 45,000 parts per day with seven inserts and nine variants**

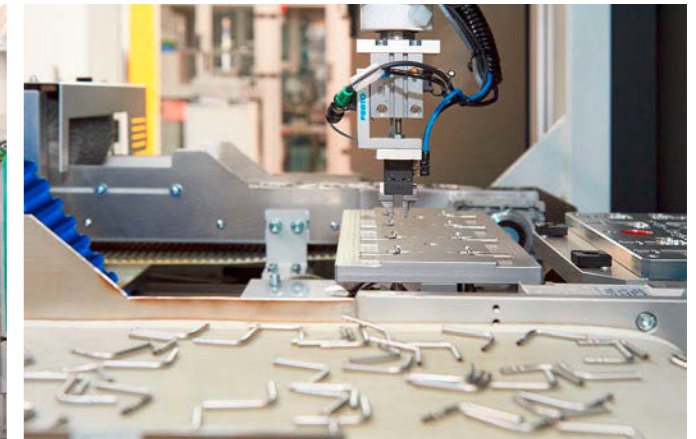
**H**oefer & Sohn is a company with a long history. Founded in 1876 as an engraving company, its focus today is on plastics production and mould construction. Around 330 million quality components now roll out of its production halls in Fürth, Germany, every year. The majority of these are produced on a wide range of injection moulding machines from ARBURG. One outstanding example is the fully automated turnkey system based around an ALLROUNDER 1200 T rotary table.

ARBURG is valued as a reliable and competent partner, as Dr Christoph Badock, managing director at Hoefer & Sohn, confirms: "We have been working in close partnership with ARBURG since 1974. We are impressed by their reliability, short response times, innovative solutions and expert support whenever we need it."

#### Innovations for full automation

The turnkey system with ALLROUNDER 1200 T rotary table machine was built to handle the flexible loading of several dif-

ferent inserts into an 8-cavity mould and complex visual inspection of the finished parts. A special delta robot plays a key role here, making the production of return pipes for motors much easier. The overmoulded precision pipes are part of a diesel injector for an automotive customer. These return pipes are necessary to convey the switching quantity of the piezo fuel injector back towards the tank system. The ARBURG turnkey specialists came up with a system based around an ALLROUNDER 1200 T rotary table machine with a clamping force of 1,000 kN



The precision pipes are available in different versions (large image left). The inserts are provided in the correct position by anyfeeders and a delta robot, inserted into the mould by the six-axis robotic system and overmoulded in a vertical ALLROUNDER with rotary table (images above right).

and a size 290 injection unit together with a KUKA six-axis robot.

#### Anyfeeders and delta robots

The randomly conveyed metal pipes, which are bent at 90 degrees and come in different variants, are picked up by the delta robot under camera control via two anyfeeders and inserted into the transfer platens on a rotary table in different orientations. The rotary table swivels the moving mould platens alternately by 180 degrees into the demoulding position for the KUKA.

The delta industrial robots specialise in fast packaging and pick & place. Three parallel, ultra-light articulated arms move the travelling gripper in three degrees of freedom. And very quickly and flexibly.

In this case, it is precisely these robots that pick the metal components of different sizes from the anyfeeder conveyor belts with their own exceptional precision and insert them into the mounting platen on the rotary table. All the variants can be mounted with only minimal mechanical set-up effort.

#### High flexibility, high output

The KUKA KR 22 picks up the inserts from the transfer platens and moves to the mould position at the rotary table machine. The gripper then first removes the finished, overmoulded parts from the lower part of the rotary table mould. The inserts are then transferred to the mould for further injection moulding. To make the entire handling process even more flexible, the KUKA gripper can be equipped with interchangeable platens for other variants. A total of nine part variants can be produced in this way

Managing Directors Dr Christoph and Martina Badock (pictured below) are proud of the turnkey system, precision and output (image right).



with seven inserts. Thanks to the robotic systems working in combination, the system output is over 45,000 finished parts per day.

**High-precision mass-produced inserts**

The various versions of the return pipes must be mass-produced with high precision in order to meet the stringent requirements of the automotive industry.

The secret to maintaining this high level of quality begins with the upstream process in pipe machining for the production of inserts at Hoefer & Sohn. For this purpose, prefabricated pipe sections must be pre-machined to the nearest hundredth, bent and fitted with a throttle. This complex production process requires specialised expertise in pipe machining.

After removal, the overmoulded finished parts are transferred to a second small rotary table and fed via an additional three-axis robotic system to the complex QA system, which is equipped with several camera systems for internal and external contour inspection. The extensive visual quality inspection is based on a detailed inspection plan. Prism deflection, which

allows the camera to look inside the pipe, is sometimes used here in addition to the external inspections, which also include radius measurements, for example.

This system proves once again that ARBURG always has the right solution, even for special challenges.

**INFOBOX**

- Name:** Hoefer & Sohn
- Founded:** 1876
- Location:** Fürth
- Turnover:** Approx. 20 million euros (2022)
- Business areas:** Precision mould construction and plastics processing
- Employees:** 130
- Industries:** Automotive, medical, cosmetics/consumer goods, electrical engineering
- Products:** Complex plastic components from 0.1 to 220 grams, plastic components and inserts (in-mould decoration and labelling, two-component processing, composites)
- Contact:** www.hoefer-und-sohn.de



# Gigantic!

## EuProGigant: Energy requirement and CO<sub>2</sub> emissions during product manufacture

**H**ow much energy will my planned product require during production and how many CO<sub>2</sub> emissions will it cause? The German-Austrian EuProGigant project aims to provide answers to this question with the help of a carbon footprint forecast during the product development phase.

Put simply, energy requirement measurements are being carried out at ARBURG, the sole injection moulding machine partner in this project, in order to determine the CO<sub>2</sub> emissions generated during the manufacture of an injection moulded product (scope for the purposes of calculating the footprint). In addition to the injection moulding machine, all other consumers such as the peripheral equipment with

dryer or material feed, are also being measured and taken into account individually.

If the proportions are less than one per cent of the total emissions of the product's carbon footprint, for example, they can be disregarded.

**CO<sub>2</sub> savings of up to 80 per cent**

Optimised design, material and production planning along with an adapted machine size can result in CO<sub>2</sub> savings of up to 80 per cent. In the final stage of the project, ARBURG will therefore be able to offer its customers a service that will also have a noticeable economic impact on the moulded part manufacturers in the form of emission savings.

An individual energy requirement calculation for each injection moulding machine

will also be provided via an injection moulding simulation. This will make it possible to reliably forecast energy requirements at the future production site and hence costs and direct emissions (Scope 1 and 2) and indirect Scope 3 emissions along the value chain.

Data will be exchanged between the parties involved via Gaia-X, a secure and verifiable European data transfer system. Further information on the "European Production Gigant" (EuProGigant) project can be found at [www.euprogigant.com](http://www.euprogigant.com).



ARBURG's energy requirement measurements will make an important contribution to the EuProGigant project.





Mauro Frangipani (image left), Plant Director North America at Freudenberg Household Products, is proud of his mop and bucket system (image right), the award and the ALLROUNDERS.



Photos: Freudenberg

# Making mopping fun!

Freudenberg Household Products: ALLROUNDERS produce the “Coolest German Thing Made in the USA 2023”

**R**ecently, Freudenberg Home and Cleaning Solutions in Weinheim, Germany, developed an ingenious new “mop and bucket system” that completely changes the principle of mopping. The system is so unique that it was named the “Coolest German Thing Made in the USA 2023” by the German-American Chambers of Commerce. It is produced at Freudenberg Household Products in Aurora, Illinois, USA, on ALLROUNDER machines.

“When you talk about cleaning products, nobody really cares,” admits Mauro Frangipani, plant director North America at Freudenberg Household Products (FHP), which owns the O-Cedar brand, the number one mop and bucket manufacturer in the USA. Its products are sold in the rest of the world under the name of Vileda. “Cleaning products are very simple tools,” Frangipani continues, “associated with tasks most people would

rather not perform. But Freudenberg is known for technical innovation, so we set out to transform cleaning and make it more efficient, easier and – yes – even a pleasure.”

### Clever solution

The RinseClean™ mop system introduced in 2022 was designed to keep clean and dirty water separate. The outer bucket is equipped with a wringing device operated by a foot pedal, which sucks the dirty water out of a special microfibre mop head and collects it in the lower part of the outer bucket. Clean water is stored in an integrated tank and released into a small rinsing tub as required. This ensures that the mop is always clean when the user starts mopping a new section of floor.

FHP has grown rapidly. Turnover has increased by 50 per cent compared to two years ago, and injection moulding capa-

city has increased by 60 per cent in the same period.

### Made in America

Many O-Cedar products are manufactured in China, but Freudenberg decided to produce the new RinseClean products in the USA. “The coronavirus pandemic made us realise how important it is to shorten delivery routes,” says Frangipani, adding that “relocating production back here will increase customer confidence in us as a reliable supplier. It will also improve our carbon footprint.” Transporting these products ultimately means transporting a lot of air, which is simply not very efficient.

To guarantee high-quality production of the RinseClean system, Frangipani’s team recently purchased six large ARBURG machines from the HIDRIVE series: two ALLROUNDER 1120 H machines with a clamping force of 730 US tonnes and four ALLROUNDER 820 H machines

with a clamping force of 445 US tonnes. These are among the largest machines in ARBURG’s portfolio and feature servo-electric clamping units and dosage drives as well as hydraulic accumulator technology for injection, core pulls, ejectors and nozzle force.

### More speed and precision

“The speed and overall efficiency of the HIDRIVE machines were important selection criteria,” says Frangipani. “The option of programming simultaneous movements of the clamping and injection units was particularly attractive as these can have a significant impact on cycle times,” he remarks, “and ARBURG’s GESTICA control system makes programming easy.”

Frangipani’s experience with ARBURG goes back to a valuable use of the ALLROUNDERS in Freudenberg’s automotive group and he says: “When we were looking to buy additional machines here in

Aurora, I knew that ARBURG’s approach to service was different.

### Service makes all the difference

We not only wanted to buy the machines, but also the associated service. I know that if we have any issues or need help with preventive maintenance, I will get good support from here.”

His team also utilises ARBURG’s digital service solutions. “We use arburgXworld to consult the online manual, order spare parts and plan maintenance work, and we have mainly used the VirtualControl app for training.” Frangipani adds that they also use the training offered by the ARBURG Technology Center in Elgin, Illinois, just 20 miles away.

### INFOBOX



**Name:** Freudenberg Household Products LP  
**Founded:** 1998  
**Location:** Aurora, IL, US  
**Business areas:** Consumer and professional-grade cleaning products  
**Employees:** 520  
**Products:** Mops and buckets  
**Contact:** ocedar.com

# Firing on all four cylinders

## Pollmann: Automotive supplier from Austria with an unusual CUBE application

**P**ollmann is the global market leader for sunroof kinematics and door lock housings, and one of its growth markets is hybrid and e-mobility. In order to maintain this leading position in the future, Pollmann was the first automotive company in Europe to purchase an ALLROUNDER CUBE, which ARBURG has specially customised for this production segment.

The CUBE's cube-mould technology originates from the packaging sector and has been extensively customised by

ARBURG and Foboha. The automation was realised by MAXXOM Automation, a Pollmann subsidiary. The ALLROUNDER CUBE 2900 is used in the production of an assembly for seat and backrest tilt adjustment for several seat generations. Pollmann produces a total of five moulded parts in large quantities for this purpose, two of which consist of several components. One of these is produced using CUBE technology and a 16-cavity cube mould. This means that four sides, each with 16 cavities, are available throughout the process for two-component part production. As a result, a daily output of 56,000 parts is

achieved – an exceptional capacity for the automotive industry.

### Comprehensive carefree package solution

How did this unusual application with the cube-mould machine come about? Robert Stubenberger, COO at Pollmann International, knows the answer: "For the very high output volume of up to 16 million parts per year, ARBURG was able, as a business partner, to offer a comprehensive carefree package with machine, mould and individual project planning."

### How the product is made

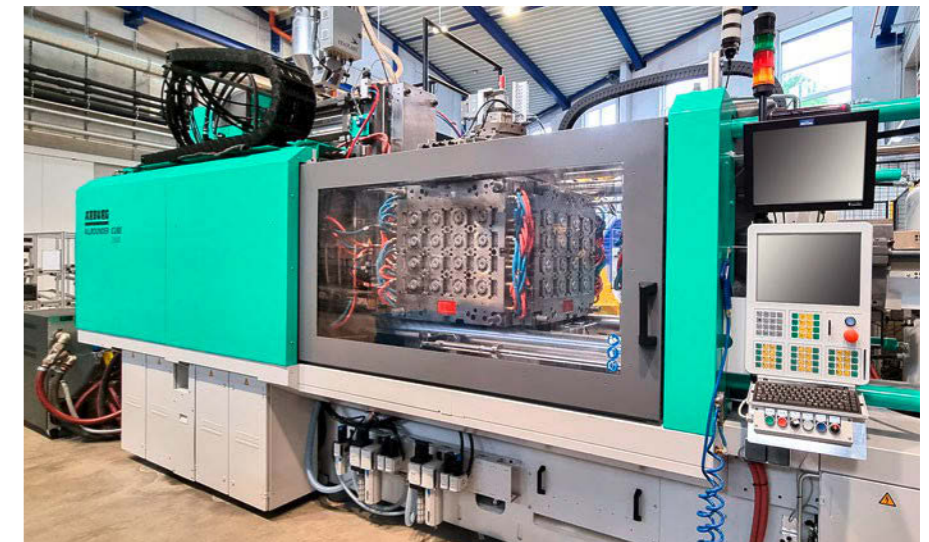
PA66 GF30 and unreinforced PA are processed in a two-component injection moulding process in a cube mould. The parts are then removed and automatically set down in a box changer by a six-axis robot. This is followed by a special conditioning process that prepares the items for the special heat and humidity requirements in the vehicles.

The GESTICA control system is so powerful that not only the machine but also all the peripheral equipment can be managed centrally via one interface, which was another decisive purchasing factor for Pollmann. Other important factors in the product design and purchase decision were energy efficiency, sustainability and long-term utilisation.

### ALLROUNDERS in use around the world

Commenting on the system, Roman Schmidt, head of sampling technology, says: "What we particularly appreciate about the ALLROUNDER CUBE is its outstanding ease of operation, extremely robust technology, high output and repetition accuracy, as well as its high degree of flexibility. All of our machines are fully automated to guarantee process reliability and part quality."

The ALLROUNDER CUBE (pictured above) can produce 16 million parts per year. The cube mould used (image left) has four sets of 16 cavities.

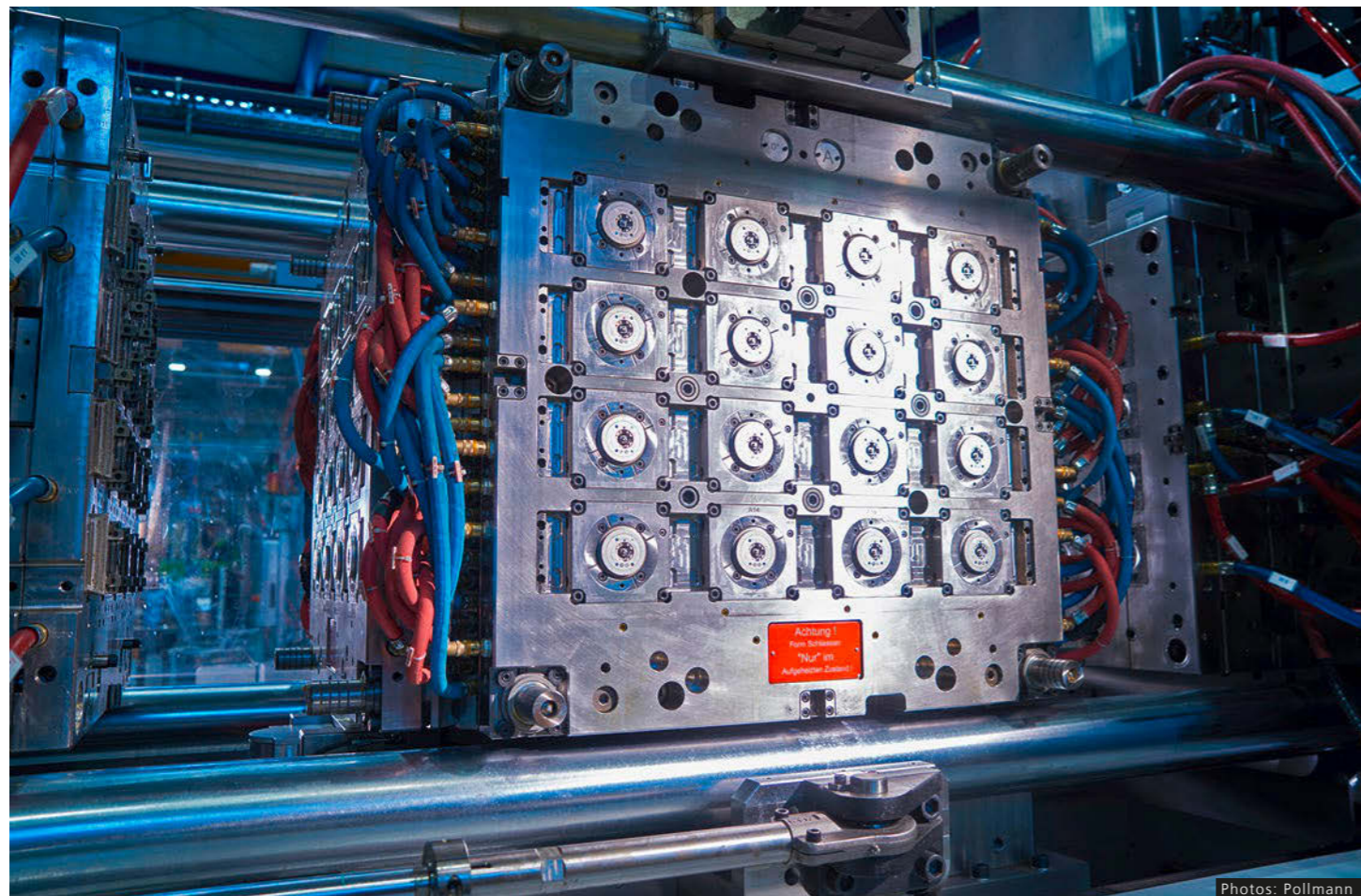


### First-class service between equals

The long-standing partnership runs smoothly on an amicable basis. As Harald Weber, production manager at Pollmann Austria, explains: "ARBURG's technology is always state of the art and is constantly being refined to meet every market requirement. And most importantly, we have a contact person for all the necessary process steps and don't have to deal with an annoying hotline."

### INFOBOX

**Name:** Pollmann International GmbH  
**Founded:** 1888  
**Locations:** Karlstein an der Thaya and Vitis, Austria, others in the Czech Republic, China and Mexico  
**Employees:** Approx. 1,400 worldwide  
**Industries:** Automotive  
**Products:** Parts and components for the sunroof, door, motor, drive and e-mobility sectors  
**Processes:** Multi-component injection moulding, MuCell, in-outsert technology, composite systems  
**Contact:** www.pollmann.at



Photos: Pollmann

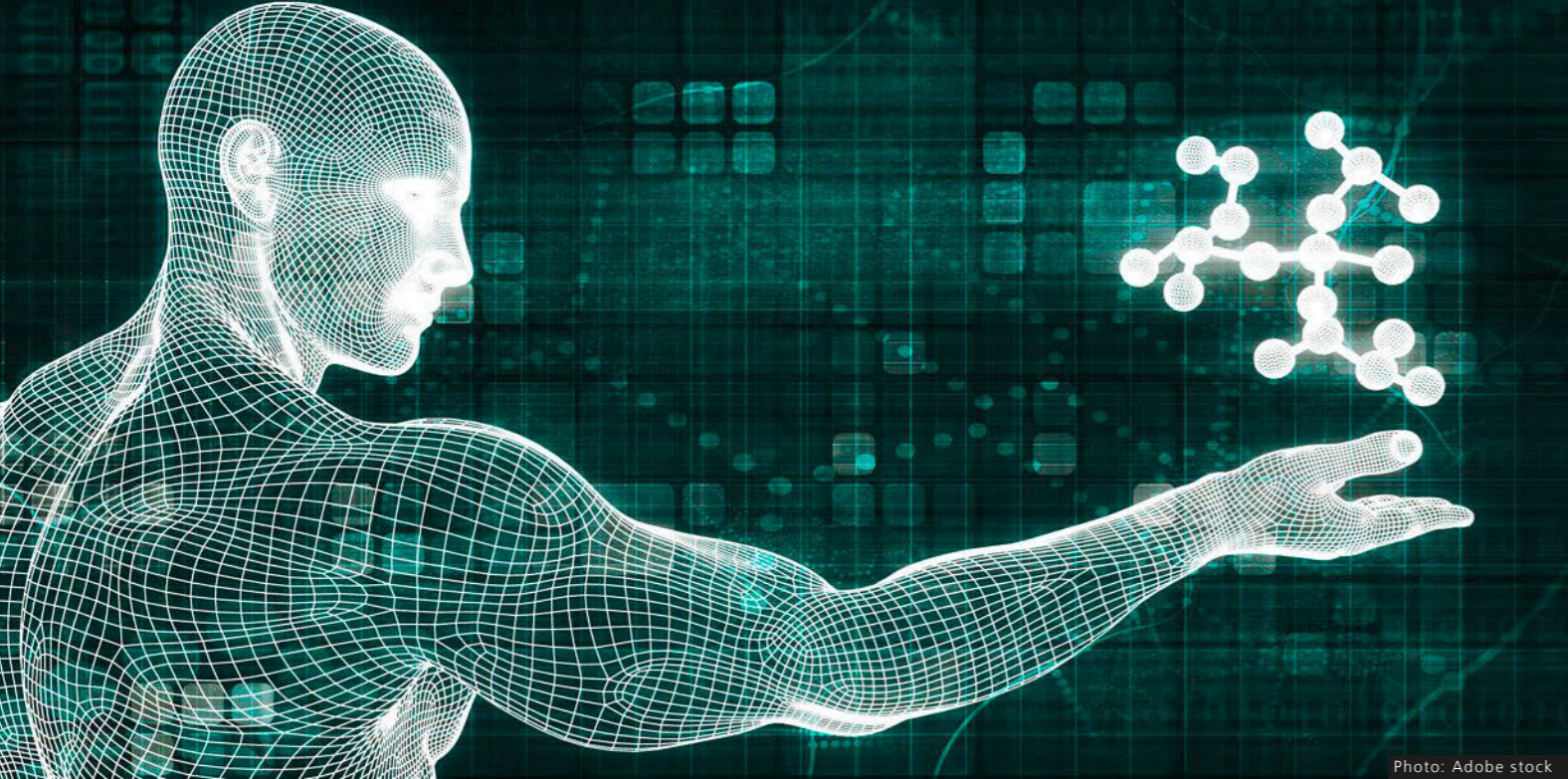


Photo: Adobe stock

# Making machines smart

## Artificial intelligence: AI models for injection moulding simulation

**A**rtificial intelligence (AI) is also relevant in plastics processing. ARBURG is working intensively on AI, particularly with regard to the smart GESTICA control system and self-optimising machines. The aim is to make injection moulding processes more intelligent and ensure efficient, high-quality production. The today editorial team spoke to Werner Faulhaber, Vice President Development.

**today:** What is the motivation behind ARBURG's work in the field of artificial intelligence?

**Werner Faulhaber:** We are currently experiencing a shortage of skilled workers, and components and injection moulding processes are becoming increasingly complex, which requires enormous expertise. Yet our customers naturally want to produce their plastic parts as economically as they can, with minimal defects and to the highest possible quality.

**today:** That's a huge challenge. How can AI help here?

**Werner Faulhaber:** AI-based systems can learn correlations independently, build on them and predict how the process will develop. We have a vision of a self-optimising machine that knows the part it is producing.

**today:** Machines today process the parameters that are entered, but don't know the part they are producing, right?

**Werner Faulhaber:** Exactly. To make our ALLROUNDERS smart, so to speak, the main thing they need is an intelligent control system that manages the processes and also recognises the three domains of machine, material and mould.

**today:** What can the innovative GESTICA control system already do?

**Werner Faulhaber:** In 2021, together with our partner Simcon, we made mould simulation data available for ALLROUNDERS for the first time and linked the three do-



Werner Faulhaber, ARBURG Vice President Development, is proud of the GESTICA control system, with which an AI-supported filling simulation is already possible today.

mains. Using the GESTICA control system and associated aXwControl FillAssist, the machine now "knows" which material it is processing and which component it is producing. The next advance is the Varimos tool, which uses AI to replace time-consuming individual simulations. This enables the machine to predict the effect of a parameter variation even before a component is produced.

**today:** So you need process expertise, domain knowledge and lots of data. What's the problem here?

**Werner Faulhaber:** The computing power and data analysis methodology are there, but the elaborately learned rules and algorithms only apply to just this one application. The process knowledge that has been acquired can't be transferred wholesale to a differently equipped machine, a different component geometry or a different material quality. This is where we are now.

**today:** What are the next steps?

**Werner Faulhaber:** Due to the sheer volume, creating a separate AI model for

every possible injection moulding process is of course not feasible. This is why our application technology and software development engineers are working on classifying the three domains in a meaningful way and developing corresponding algorithms and models.

**today:** And how are models like this intelligently trained?

**Werner Faulhaber:** The models can be provided to the customer via GESTICA and further trained during the ongoing process, and the data can then be shared. This is what is known as machine learning. However, the data can also remain with the user and the model can be trained "on-premises", i.e. with the user's existing machines, materials and moulds.

**today:** Can anonymised process data also be used?

**Werner Faulhaber:** Yes. An MES could collect anonymised data and make it available for model analyses. With what is known as "federated learning", no process data is transferred at all, but a locally

(further) trained model is made available to a central system. This generates a unified model from the models of several machines provided and restores this next generation again.

**today:** How is ARBURG advancing the development of AI?

**Werner Faulhaber:** First of all, we need to build trust! We want to create real added value in co-operation with research partners. In addition to the GESTICA control system, customers will also be able to use our ARBURG host computer system ALS and the arburgXworld customer portal in future to create a common basis for smarter, self-optimising injection moulding processes.

EFFICIENT  
HYDRAULIC INJECTION UNIT  
ELECTRIC CLAMPING UNIT  
**PERFECT  
COMBINATION**  
PERFORMANCE VARIANTS  
ECONOMICAL



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