

today

The ARBURG Magazine

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100 YEARS
1923-2023
OF THE HEHL COMPANY

100





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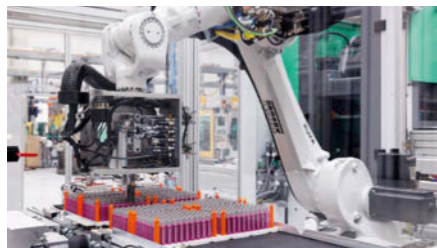
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Dear Readers,

One highlight follows on from the next: last autumn we were at two leading world trade fairs, K 2022 and formnext 2022, and presented our products and services, including new developments – with great success! And the next important event is already coming up in 2023: “100 years of the Hehl family company”. It goes without saying that this special anniversary is the focus of this issue of today. In the interview, we share our very personal memories and explain the values our company has represented, still represents and will continue to represent in the future. We take you on a “colourful” journey through our success story.

No less exciting are the ideas and innovations that our customers and partners are putting into practice. In this issue we introduce you to two companies, igus and periplast, for example. One has created a comprehensive recycling system, while the other has developed an innovative material based on corn starch. Tech Talk also deals with sustainability and resource conservation – and specifically with saving energy.

So this “today” again offers a colourful mix of topics and plenty of inspiration for your company.

We hope you enjoy reading it!

Juliane Hehl Michael Hehl Renate Keinath

IMPRESSUM

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Good reason to celebrate:
“100 years of the Hehl family company”!

ARBURG

A family with a vision!

Centenary: Hehl family company turns 100

When you celebrate 100 years of existence as a family company, you look back on a long and sometimes eventful company history. There are ups and downs, good and less good decisions, and external factors that can make a company's life difficult or foster its development. In 2023, the third generation of the Hehl family company will be looking back over this milestone period. And can be proud of what has grown from humble beginnings during these 100 years!

In 1923, company founder and precision mechanic Arthur Hehl takes the plunge and becomes self-employed in Lossburg, Germany. He manufactures precision medical instruments. In the founding year, his eldest son, Karl, is born, followed by Gerhard in 1925 and his youngest son, Eugen, in 1929.

1923 – 1932



1933 – 1945



1933 to 1945 are marked by Nazi rule in Germany and the Second World War. The family company is not unaffected by this, and production is switched to precision mechanical parts that are important for the war effort. In 1943/44, Karl Hehl invents the name ARBURG.

1945 – 1952

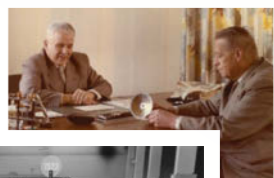


After the war, Eugen and Karl Hehl set about modernising their father's business from the ground up. First, everyday goods such as potato baskets are produced. Karl Hehl is already in charge of technology and the machine fleet while Eugen Hehl handles product sales. In 1951, with the dawn of the German economic miracle, ARBURG switches production to flashguns, which are marketed under the name "Duo Lux".



The flashguns also become an international success, but problems start with complaints from overseas. Damp conditions cause creepage currents that drain the flash battery. The solution: encasing the metal connectors in plastic. The breakthrough comes in 1954 when technician Karl Hehl develops a small injection moulding machine with a parting line clamping unit for overmoulding the plug connector. This machine also interests the manufacturer of the metal connectors, and so production of injection moulding machines begins in 1956.

1953 – 1960



1961 – 1970



ALLROUNDER – a name that shapes the entire plastics scene worldwide. In 1962, the first ALLROUNDER 200 is delivered. Its key advantage is that its pivoting clamping and reversible injection units allow parts to be produced in several working positions. The ALLROUNDERS are so successful internationally that by 1969 the company has expanded in several construction phases on the basis of a grid design.

In the 1970s, ARBURG drives forward groundbreaking developments, with the first fully electronic PolytronICA machine control system going into series production in 1972. In the same year, the first of several INFORMANT demonstration buses with machines travels to customers in Germany – a road show so successful that it is also introduced in the US. Then in 1978, the 25,000th ALLROUNDER is built.



1971 – 1979

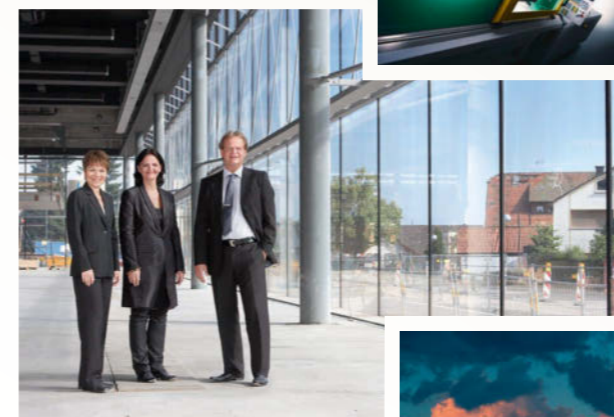


1980 – 1989



The company becomes a business: by 1981, the ALLROUNDER has been around for 20 years. The multi-purpose building is extended and 25,000 square metres of production space are added in 1986. The first subsidiary is opened in France. A technical milestone is reached at K' 86: a modular automation system with host computer.

2000 – 2015



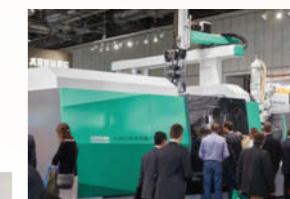
2005 sees the third generation join the Hehl family company – with a bang! Two women, Renate Keinath and Juliane Hehl, join the management team at ARBURG. Michael Hehl becomes Spokesman for the Management Team. Electric injection moulding machines and proprietary robotic systems are added to the product range. In 2009, the 2,100 square metre Customer Center is inaugurated and in 2013, the freeformer, a unique additive manufacturing system, is presented to a global audience at K 2013.

The 1990s are characterised by international growth. In 1992, the revolutionary SELOGICA control system is launched on the market. In 1991 the US subsidiary opens, followed by the UK subsidiary in 1992. By the mid-1990s, ARBURG has 22 of its own sales and service locations in 15 countries worldwide and can proudly boast 80,000 injection moulding machines delivered. 75 years of the Hehl family company are celebrated in 1998.

1990 – 1999



2016 – 2022



Building extensions and an upwards expansion of the machine range have been the focus of attention in the years up to the present day. In 2016, a new assembly hall increases usable space to a total of 165,000 square metres. In the same year, the largest ALLROUNDER 1120 H with a clamping force of 6,500 kN and the GESTICA control system are unveiled at K 2016. The official inauguration of the new Training Center in Lossburg takes place in 2020.

We are here for you!

Centenary: Interview with the Managing Partners

On the occasion of the 100th anniversary of the Hehl family company, today's editorial team spoke to Managing Partners Juliane Hehl, Renate Keinath and Michael Hehl about memories and challenges and their vision for the future of the family company.

today: What is the significance of this anniversary for you?

Michael Hehl: "100 years of the Hehl family company" is a very special success story. Although technology has been a key factor, people and the region have also played a particularly important role.

Renate Keinath: The anniversary is of course an opportunity to pause and review the past 100 years, which were shaped as much by difficult times as by bold decisions and innovative developments.

Juliane Hehl: Our family company's centenary is an opportunity to reconcile the past and the future – in other words, to take pleasure in our successful past while also embracing the chances to position our company for the future.

today: What is your own favourite moment in the company's history?

Renate Keinath: For me, the construction of the first ARBURG injection moulding

machine in 1954 – under very adverse circumstances at that time – is outstanding. It was the starting signal for ARBURG as an injection moulding machine manufacturer.

Michael Hehl: Yes, that development really set the ball rolling. The innovation that then made our company successful worldwide was the ALLROUNDER. This pioneering machine was a stroke of genius by Karl Hehl: as brilliant as it was simple!

Juliane Hehl: We were able to add many more examples to the list of innovations, because each era had its own highlights. Something very personal for me is that I get to be part of the company's 100-year history.

today: Your fathers made ARBURG one of the world's leading injection moulding machine manufacturers. What did the two of them teach you along the way?

Juliane Hehl: "Substance over style" is the motto of my father Eugen – both in his business and private life.

Michael Hehl: We also learned from him how to be persistent and persevering, to never give up and to use resources sparingly. For us, as the third generation, the same applies: we think, we analyse and we implement something consistently when we are convinced of it!

Renate Keinath: Fittingly, my father Karl always used to say "Look before you leap". For him and my uncle, it was important to

be down-to-earth, to look out for employees and to be involved in social issues.

today: What was or is the biggest challenge for you as a representative of the third generation?

Juliane Hehl: I think I speak for the three of us when I say that it was and is a daunting task to follow in the great and successful footsteps of Karl and Eugen Hehl and to continue the company as successfully as our fathers did.

Renate Keinath: A major and important challenge was and continues to be that of ensuring that the positive values from the past are maintained despite the many changes and the enormous growth of the company.

Michael Hehl: I can only agree with these two statements: our task is to preserve the family company and to pass it on to future generations!

today: Where do you see your family company in ten years and beyond?

Renate Keinath: Leading the market and blazing a trail on important issues.

Juliane Hehl: And with an even greater international reach while remaining close to our customers.

Michael Hehl: We will continue the successful concept of the past years: think, analyse and implement something consistently when we are convinced of it! This is how our family company has continued to

develop and adapt itself and its portfolio over the course of its 100-year history, and what we will continue to do in the future! As a family company.

today: What would you like to share with customers on the occasion of this centenary?

Michael Hehl: Over the past decades, we have always demonstrated that ARBURG is a reliable partner! And this will remain the case in the future.

Renate Keinath: Together with them, we can find the best solutions for their challenges.

Juliane Hehl: To put it in a nutshell: you can always rely on us. We are here for you!



Managing Partners Juliane Hehl, Michael Hehl and Renate Keinath (from left) in the gallery with historical pictures. To the left of them, company founder Arthur Hehl (centre) can be seen with his sons Eugen (left) and Karl.

Let's celebrate!

Centenary: More than 30 events around the world

Good reason to celebrate: "100 years of the Hehl family company"! Things kicked off in February with fascinating events at Lossburg – followed by more anniversary events at the headquarters and at ARBURG's locations around the world.

"The hundred-year success story of our family company would never have been possible without our customers, partners and employees," says Juliane Hehl, who is responsible for Marketing and Business Development as Managing Partner of ARBURG.

So that we can celebrate this milestone anniversary with as many people as possible, there will be a host of centenary events and activities around the world this year. In

addition to the exceptional display of our company history, the focus will also be on the unveiling of a new ALLROUNDER.

Experiencing history up close

Anyone interested in the details of the company's unique history will find exciting insights in the anniversary publication and in the history film. The book is published by Carl Hanser Verlag and the German language version is available in stores (ISBN 978-3-446-47619-6). The history film is available on ARBURG's website and YouTube channel.

When it comes to "100 years of the Hehl family company", ARBURG social media followers (Facebook, LinkedIn) have plenty to look forward to. To stay up to

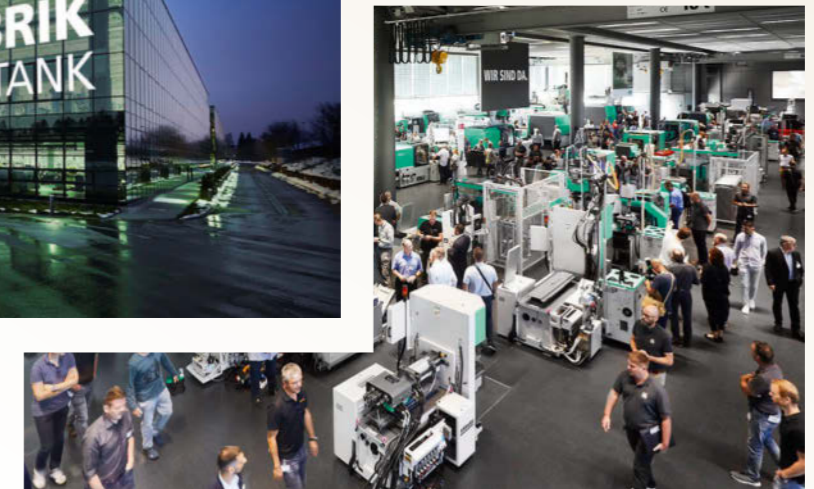
date, it's always worth taking a look at the new website www.arburg.com!



Website



"Think tank": the broad spectrum of applications can be experienced in the Customer Center (picture right).



Our think tank

Anniversary Days 2023: The full ARBURG experience

In addition to the many centenary events, there is one unmissable highlight, of course: the "Technology Days", which this year have been named "Jubilee Days". This unique industry event always attracts several thousand guests from all over the world to Lossburg – and has been doing so for over two decades!

But what actually makes the Technology Days so special? The answer is its unique mix, consisting of a good 50 exhibits and applications relating to injection moulding and additive manufacturing, the Efficiency Arena, first-class specialist presentations and company tours. On top of this, there is the personal support and the special ARBURG spirit, which is particularly noticeable at this event. Dr Christoph Schumacher, Head of Global Marketing,

puts it in a nutshell: "The term 'think tank' is a very apt description of our global industry event, as this is where we show customers and other interested visitors what ARBURG can help them achieve and where our journey together can take us!"

Lossburg plays host to industry professionals

This year, the international trade community will meet in Lossburg from 8 to 11 March 2023 for the Anniversary Days to find out "in person and in colour" about the topics that are driving the industry. The focus will be on sustainability and digitalisation, with the Efficiency Arena bringing together everything that "arburgGREENworld" and "arburgXworld" have to offer. This is also where visitors will be able to get advice tailored to their in-

dividual needs. The exhibits and turnkey systems will feature highlights from the world's leading trade fair, K 2022, as well as selected applications for all industries and processes. This also includes the topic of powertrains, which ARBURG will be showcasing together with its sister company AMKmotion. A wealth of practical experience will be supplemented by specialist presentations – and of course "100 years of the Hehl family company" will be spectacularly brought to life in the "ARBURG CUBE" this centenary year.

One day is barely enough to take in all these diverse offerings. If you would like to find out more afterwards, you can find videos and the presentations on ARBURG's new website at www.arburg.com.



Worn-out energy chains are processed into post-consumer recycle (PCR) by igus (pictures below, from left).

Florian Piplica, Area Manager Central at igus, is enthusiastic about the quality of the recycle, which is processed into new energy chains (picture left).

Photos: igus

One step ahead

igus: In-house recycling platform advances circular economy

By creating the global “chainge” online recycling platform, igus GmbH in Cologne, Germany, has quickly and consistently implemented an innovative idea for its own and other energy chains. Its clear objective: further expansion into other engineering plastics and the sale of reprocessed material.

The idea behind “chainge” is to make it easy for customers to send old energy chains back to Cologne. These are then reprocessed into recycle so that they can become new energy chains again in the company’s own production facilities, partly through the use of ALLROUNDERS. Lena Naumann from igus’ chainge business unit says: “The customer feedback

has been so positive that we have expanded the project, with K 2022 marking the launch of our new platform.

This will allow us to recycle other technical plastic parts as well as energy chains in the future. At the same time, users can also buy pre-processed material in the form of regrind and regranulated plastic via the platform.”

ALLROUNDER with recycle package

Lena Naumann is on the same page as ARBURG when it comes to handling plastics. “We have to make it as easy as possible for customers to return their post-consumer plastics so that there is no longer any alternative to recycling.” As igus’ main



machine supplier, ARBURG also makes a contribution to the smooth processing of recycles. An initial test machine was equipped with the new recycle package. Its modified cylinder module ensures that even poorly flowing materials are fed into the machine reliably. A wear-resistant plasticising screw with special geometry enables homogeneous material preparation, while additional control features such as “aXw Control PressurePilot” guarantee stable processes. Once the tests have been successfully completed, igus will convert its own production of the “cradle-chain” chain parts to series pro-

duction with recycled materials – and this will be done on ALLROUNDERS.

Post-consumer recycling: thinking big

Lena Naumann goes on to note that “63,840 kilograms of worn-out chains have already been returned as part of ‘chainge.’” Otherwise, as is still too often the case, these would have ended up in industrial waste and would therefore have been incinerated. igus will continue to develop its recycling network as it expands its online platform, with global recycling at various locations.

This year, the world’s first energy chain made from 100 per cent recycled polymer was created in Germany – the “cradle-chain E2.1.CG2.” Tests in the company’s own lab-

oratory have shown that the new product has almost the same technical properties as a chain made from standard material. Customers can get the sustainable chain for the same price as a chain made from standard material. This makes igus a system service provider – in other words, both a plastics producer and supplier, assembly service provider and disposal company, as well as a producer and supplier of recycled material. An unparalleled offering.

INFOBOX



- Name:** igus GmbH
- Founded:** 1964
- Locations:** Headquarters in Cologne, 30 more locations worldwide
- Turnover:** Around 1 billion euros (2022)
- Employees:** 4,500 worldwide
- Industries:** Over 50 different industries, including automotive and packaging, rail and agricultural technology, machine tool manufacturing and renewable energies
- Products:** Energy chains, cables, plain bearings, linear technology, semi-finished products, 3D printing, low-cost automation, intelligent sensor system
- Contact:** www.igus.de

Bio-revolution

periplast: Degradable, thermoplastic starch-based natural material

It is the stuff of engineering dreams and goes by the name of periamyl. The granules look like plastic, but they're not. So what exactly is it then? Something that the company says could revolutionise plastic processing products in many areas. Prototypes are produced from periamyl on a freeformer, followed by series parts on ALLROUNDERS.

Dr Timo Porsch is proud. Very proud, in fact. He is the Managing Director of periplast GmbH & Co.KG in Wuppertal, Germany. A medium-sized family business

that started in 1978 with the production of plastic spools for the textile industry and has been manufacturing precision plastic products using injection moulding for over 40 years.

Because maximum sustainability and the responsible use of limited resources are at the top of the company's agenda, periplast was looking for a suitable biomaterial for its products. But the market only offered compounds with plastic components. So the company set about developing its own material and after a few years scored a major success with periamyl. At periplast, the developers even speak of a revolution

in the field of plastics. In the words of Dr Porsch: "As far as I know, there is no comparable material that combines the same properties and remains comparable in price to PLA or PLA compounds."

Compostable and water soluble

So it's worth taking a closer look at this material. The most important aspect is that there is no fossil carbon or synthesised polymer in periamyl. It is a thermoplastic natural material based on starch (corn). Only renewable raw materials are used to produce it – making it biodegradable, compostable at home and water soluble. It can be processed on injection moulding machines as well as on the freeformer. periplast uses its industrial additive manufacturing system for the production of prototypes, and its ALLROUNDER machines for the series production of parts, also made of periamyl. Colouring, printing and different surface coatings, for example with shellac or wafer-thin



Dr Timo Porsch (r.), Managing Director of periplast, and Dr Josef Wender, Head of Research and Development, are proud of periamyl, a material that can be processed on the freeformer as well as on injection moulding machines.



The pericolor masterbatch, which consists of periamyl and natural pigments, can be used to create different colours.



From disposable forks to closures and dowels: thanks to individual coatings, the durability of products made from periamyl can be defined individually.

ceramics, make it possible to achieve a high degree of visual appeal and optimise the product for its area of application.

Packaging and disposables

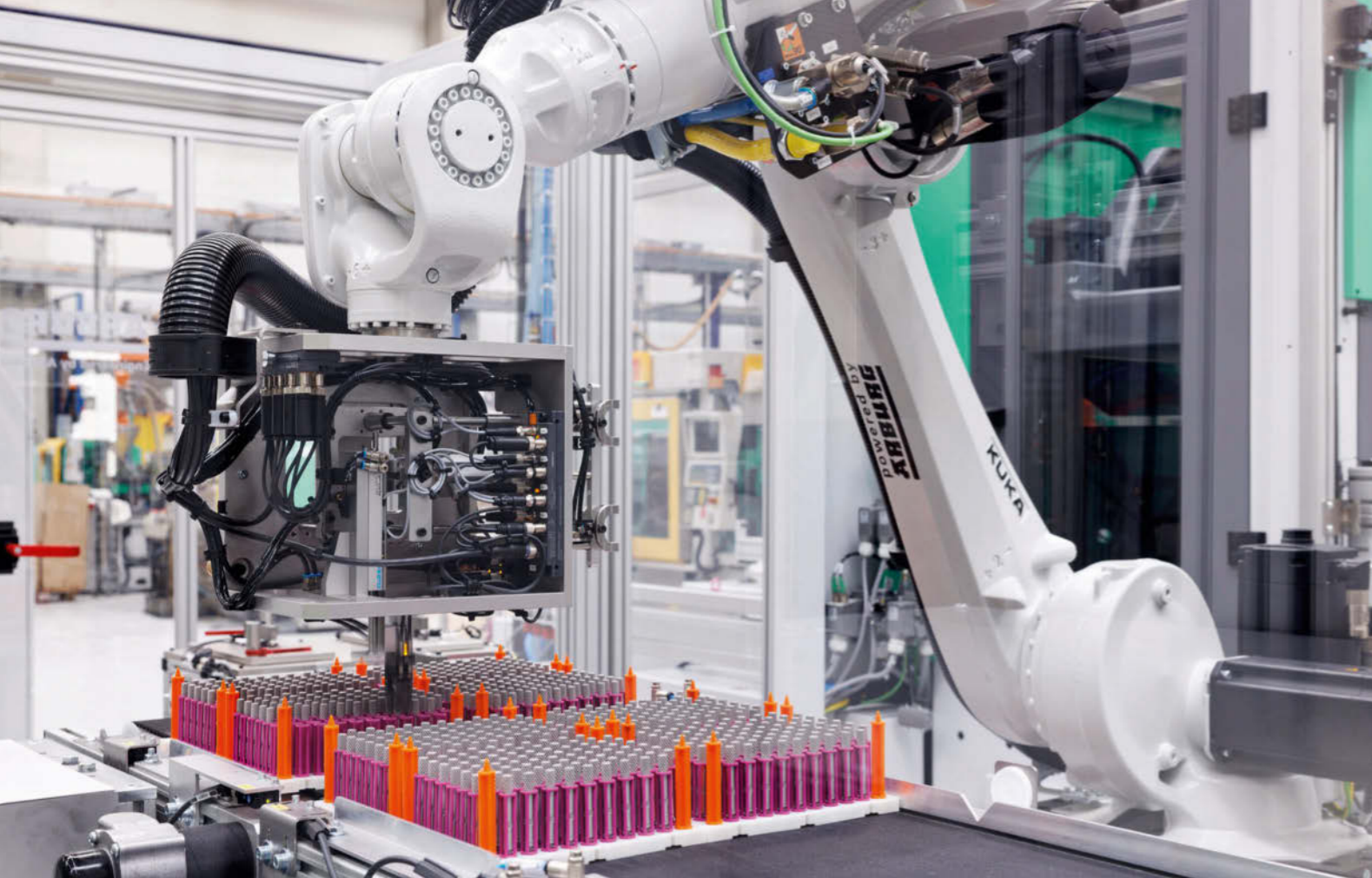
The material can be used for many everyday products. Dr Porsch explains how best to work with periamyl: "Although its mechanical stability is lower than that of some plastics, it is sufficient for packaging and disposable cutlery, for example. All products are fully biodegradable. After all, a fork for fries doesn't have to last 300 years." Before processing, the granules should be dried for two to four hours at 80 degrees Celsius to achieve the optimal residual moisture of

less than one per cent. The material should only be heated above 200 degrees for a short time and has a low shrinkage of less than 0.5 per cent.

There are now many recycled materials and bio-plastics on the market. But only a few of them are 100 per cent biodegradable, free from microplastics and carbon neutral. So periamyl is a substance with great potential for the future.

INFOBOX

Name: periplast GmbH & Co. KG
Founded: 1978
Locations: Wuppertal, Germany, Odorheiu Secuiesc, Romania
Employees: 50
Turnover: Approx. 6 million euros (2021)
Products: Spools for the textile and wire industry, first-aid splints for the medical industry and home-compostable thermoplastic material from renewable raw materials (periamyl), compostable masterbatch pericolor made from periamyl and natural pigments
Contact: www.periplast.de



Oehme Managing Director Torsten Dörpholz (left) and process mechanic Daniel Neubauer are enthusiastic about the turnkey system (small picture left). The system produces long, linkage and cross-linkage levers (bottom picture, from left). The “master” robot with a complex gripper removes the shafts from the trays (large picture left) and inserts them into the mould.

One, two, three

Oehme: Turnkey system with two robots for three products

One machine, two robots, three products: a turnkey system with ALLROUNDER 1200 T has been in operation at Oehme Technische Kunststoffteile GmbH in Berlin, Germany, since June 2022. They think the machine is pretty good. Or, as they say in Berlin: “Dit is knorke!”

Who says that nothing works in our capital city? Oehme Technische Kunststoffteile GmbH, for example, is located there. Four years ago, it only took one and a half years from planning the new location to moving in in October 2019. The result is a state-of-the-art, 1,600 square metre production facility with 27 ALLROUNDERS, including five rotary table machines. Managing Director

Torsten Dörpholz explains why Oehme opted for the ALLROUNDERS right from the start: “These are simply the best and most reliable machines on the market. Then there’s the advice, the professional competence and the excellent support.”

Specialist in technical parts

Oehme specialises in high-quality technical plastic parts. The ALLROUNDER 1200 T rotary table machine is particularly suited to the production of different part variants. Injection moulded parts with inserts are produced with a turnkey system based around this machine. Depending on the variant, the program of the injection moulding machine and the robotic systems, the injection mould and the grippers have to be changed. And

this has to be done as quickly as possible. The fact that all the ALLROUNDERS are linked to the ARBURG host computer system (ALS) is an enormous help in planning and production. “ALS is a very important tool for us, and has been since 2012,” says Dörpholz, adding with some pride that the company is one of the pioneers in this field. Production takes place in three shifts around the clock, five days a week. If necessary, even on Saturdays.

All from a single source

The system at Oehme produces long, linkage and cross-linkage levers, which are mainly installed in trucks and used to regulate the inclination of vehicles and trailers. Dörpholz: “It was incredibly helpful to us that ARBURG took complete care of all

the turnkey system components.” And there are a few.

Master and slave dream team

In addition to the ALLROUNDER T, there are two KUKA six-axis robots, the KR22 and KR10, which interact with the mould in a coordinated manner as “master” and “slave”. They are fitted with KIKI grippers that are specially adapted to the inserts and finished parts. The “master” takes shafts one or two from the SCHUMA trays and places them in the centring station. The shafts are arranged in the correct position in the ALLROUNDER’s turning station and inserted into the mould at the precise cavity distance.

Two mould halves are mounted on the injection moulding machine’s rotary table and are moved in turn into the clamping



unit by a 180-degree rotation. While the inserts are being overmoulded in one half of the mould, the “master” robot removes the finished injection-moulded parts from the other half of the mould and inserts new shafts into it. The second robot, the “slave”, removes the sprues from the mould and inserts the bushings. The feeding system is specially adapted to the bushings. With an autonomy of four to six hours, two ready-to-install levers are created in cavity-sorted deposit and transported to an automated deposit system.

Target: 1.6 million parts per year

At Oehme, they have set themselves the ambitious target of producing around

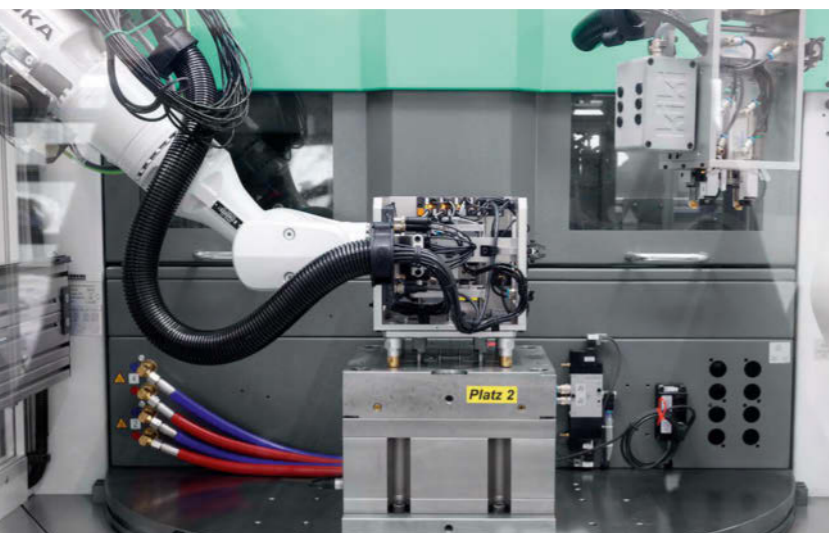
1.6 million parts on the system in 2023. Daniel Neubauer, process mechanic at Oehme, operates the ALLROUNDER 1200 T and knows the system inside out. Has he discovered anything that could be improved? “No, absolutely nothing. Everything is monitored meticulously, it’s all really thought out down to the last detail. It doesn’t get any better than that!” There you go. Things are also going really well in Berlin. At Oehme with the help of ARBURG technology.



Video

INFOBOX

Name: Oehme Technische Kunststoffteile GmbH
Founded: 1997
Location: Berlin, Germany
Turnover: 5.2 million euros (2022)
Employees: 32
Industries: Automotive, automation, white goods, e-technology
Products: Technical plastic parts
Contact: www.oehme.net



In the turnkey system, the finished parts are deposited in boxes (photo above). A “slave” robot removes the sprue and inserts the bushings (photo left).

That’s more like it!

freeformer 750-3X: More space, more economy

The freeformer family has gained a new member: the freeformer 750-3X. This caused a sensation last autumn at the world’s leading trade fairs K 2022 and formnext. Why? Because the new machine is systematically designed to meet the requirements of the industry and is therefore bigger, faster and more economical.

The freeformer 750-3X’s part carrier is around 750 square centimetres in size, making it some 2.5 times larger than the previous freeformer 300-3X – while its external dimensions remain unchanged. As a result, the new machine can produce larger components or multiple articles in a single work cycle.

Optimised melt pressure generator

The many technical innovations also include a new plasticising process: more compact and slimmer melt pressure generators are now used for dosing and injection, equipped with servo motors from AMKmotion, a member of the ARBURG family of companies. The focus is on the precision and repetition accuracy of the melt discharge, which in turn serves to produce uniformly sized, constant droplets.

Innovative GESTICA control system

In addition, the GESTICA control system has been optimised for additive manufacturing in terms of process stability, part quality and build time. Overall, this makes the process faster and more economical. The aim for the control system was a “push-button solution”, in other words, simplified operation. The innovations specifically extend to “production control” with intuitive operation such as overviews of job status and production, as well as

the “intelligent start-up sequence” for preparing production, which is processed completely independently.

More variable dosing behaviour

The dosing behaviour is now much more variable than before, with the slicing data being used to calculate exactly how much material is needed to build up each individual layer. This reduces residence time in the plasticising cylinder. To further reduce build times, simultaneous dosing of individual sequences can take place, for example during material changes or for part and support material. Added to this are the optimisation and expansion of data preparation with regard to the lattice structures’ build strategy and what is known as break-away support: the facilitated removal of support struc-

tures. All this improves process stability, part quality and build time.

Up to 85 per cent shorter build times

Excellent examples are the “hollow tube” and automotive window seal components, where the optimisation of the lattice strategy (support structures), faster droplet discharge, greater frequency and increased layer thickness from 0.2 to 0.25 millimetres have led to a significant reduction in build time – without any loss in quality. In the case of the hollow tube this reduction was 60 per cent, while for the seal it was as much as 85 per cent, as the machine’s larger build chamber meant that the seal could be assembled horizontally instead of vertically.

The slimmer, more compact melt pressure generators mean that there is more space available for the part carrier.



Award-winning!

G. A. Röders: Metal-to-plastic specialist replaces aluminium with PAA

Three products at once earned G. A. Röders GmbH & Co KG an Innovation Award from TecPart, the German association for manufacturers of technical plastic products, at the world's leading trade fair K 2022. TecPart primarily honours outstanding solutions, manufacturing technology, plastic-compatible designs and innovations such as the substitution of other materials. One of the award-winning products, an automotive component made from PAA, is produced on an automated production cell from ARBURG.

A bypass valve manufactured by G. A. Röders using die-cast aluminium and fitted in a biturbo engine was substituted. As a metal-to-plastic specialist, the com-

pany was able to implement an in-house solution that offers great advantages in terms of price. With the PAA material used, post-crosslinking only starts at temperatures above 200 degrees Celsius. This allows the components to be used continuously at these high temperatures. To be able to run the post-cross-linking process in a controlled manner, the reliability of the ALLROUNDER and automation is extremely important, as any standstill would result in high follow-up costs.

100,000 items a year

The bypass valve, some 100,000 of which are manufactured each year, consists of a valve tappet and the valve housing with spring, O-ring and retaining ring.

A valve stem is overmoulded to produce the valve tappet. In the valve housing, two sliding bushings per cavity are inserted in the mould and also overmoulded.

One system – two products

The fact that the jointly developed system based around a hydraulic ALLROUNDER 520 S allows both components to be produced is particularly interesting. The production cell has been designed to allow switching between components with short set-up times. At the heart of it all is a MULTILIFT robotic system with an interchangeable gripper that inserts the metal components into the four-cavity moulds and removes and deposits the finished overmoulded items.

Precision and reliability

Commenting on the reliability of the system, Managing Director Andreas Röders notes: "The high precision and reproducible mould filling during injection by the position-regulated screw combined with the monitoring of the injection pressure is absolutely essential for processing this very

complicated material." Thilo Schmidt, Head of Automation Technology at G. A. Röders, adds: "We chose ARBURG as our partner for this project because we needed a reliable complete engineering solution from a single source with no interface problems. For us, the trend is clearly moving in the direction of more complex systems like this. Reliability of machines and service go hand in hand at ARBURG, which made the decision easy for us."



Recipient of the TecPart Innovation Award 2022: the complex bypass valve in PAA, which was previously manufactured from die-cast aluminium.



Managing Director Andreas Röders is pleased to have a strong partner for innovative solutions at his side in ARBURG.

INFOBOX

Name: G. A. Röders GmbH & Co. KG
Founded: 1814 as a pewter foundry
Locations: Headquarters in Soltau, Germany, additional locations in Germany and the Czech Republic
Turnover: 50.2 million euros (2021)
Business areas: Die casting, injection moulding, mould construction
Employees: 440 (2021)
Industries: Automotive (commercial vehicles), control technology, medical technology
Products: Highly complex technical parts made from engineering thermoplastics, high-temperature materials and highly filled, highly rigid materials to substitute aluminium
Contact: www.roeders.com



Gentle on resources and energy efficient: injection-moulded thin-walled IML cups (large picture).



Centrepiece of the turnkey system: the electric ALLROUNDER 720 A with new size 1300 injection unit (picture left). Sensors in the mould ensure perfect part quality (picture above).



There is another way

Injection compression moulding: Efficient and sustainable alternative to thermoforming

With its all-electric ALLROUNDERS in the new ULTIMATE performance variant, ARBURG is proving that high-quality injection moulding machines and coordinated drive technology can be an energy-efficient and sustainable alternative to thermoforming.

The “high-performance secret” of the first all-electric ALLDRIVE machine specially designed for demanding packaging applications is the injection process.

Powerful injection unit 1300

A new injection unit size 1300 was developed for this purpose and specifically optimised for high performance. The unit is equipped with precise servomotors

from ARBURG’s sister company AMKmotion and is driven via planetary roller screw drives. This enables very high injection volume flows and, in the ULTIMATE performance variant, injection speeds of up to 400 millimetres per second.

Thin-wall design saves material

The all-electric packaging machine was on show for the first time at the world’s leading trade fair K 2022 in Düsseldorf, Germany. An ALLROUNDER 720 A ULTIMATE with a clamping force of 2,900 kN produced four thin-walled IML round cups in a cycle time of 3.95 seconds. “For this application, we placed particular emphasis on a part design that saves on materials and is energy efficient,” explains



Andreas Reich, Divisional Manager Central Sales & Applied Technologies at ARBURG.

Injection compression moulding reduces energy requirement

Injection compression moulding on an electric packaging machine improved the energy footprint by 20 per cent and achieved a significant reduction in part weight from 13 to 10.8 grams. The IML cups boast a wall thickness of just 0.37 millimetres. The flow path/wall thickness ratio is 380:1. Normally, this would require a very high injection pressure – at the expense of

energy requirement and mould wear. This is why injection compression moulding is used for this application, as the mould has an open coining gap. Only when the melt is in the cavity does it close completely. This process requires less injection pressure than conventional injection moulding. Unlike thermoforming, no pre-produced foils are used and no stamping waste is produced.

Sensors monitor the processes

The procedure is complex and requires detailed process knowledge and an injection moulding machine with high positioning accuracy and reproducibility. For absolutely parallel compression, the mould is equipped with four compression path sensors. The process is monitored via the GESTICA control system.

Last but not least, the IML product can be recycled by type after use because the special “Next Cycle IML” label can be completely separated from the cup’s PP during recycling. The plastic also has a biomass footprint and is ISCC-certified.

“Spot on” for Brazil

Exatron: Motion sensors made from post-industrial recyclates

The slogan of the Exatron headquarters fits like a glove: “Progresso” – progress! This was once the motto of the founding fathers of the location in Canoas in the metropolitan region of Porto Alegre, Brazil. This is where Exatron produces electrical and electronic products such as timers and motion detectors – on ALLROUNDERS and partly from post-industrial recyclates.

The company specialises in developments and products in the fields of building and residential automation. Each year, Exatron produces six million parts, and its market share in Brazil for sen-

sors and visual detectors is a staggering 39 per cent.

Motion sensor made from PIR

The product range also includes the “Smart-X-Control” motion sensor, a pyroelectric semiconductor sensor for detecting temperature changes, manufactured on the basis of post-industrial recyclate (PIR). Ideal for controlling interior lighting in corridors, stairwells, garages, and warehouses, it increases safety, extends the service life of the product in which it is integrated and saves electricity at the same time.

Working efficiently with GOLDEN EDITION

For the production of the sensor, Exatron relies on the ALLROUNDER 570 C GOLDEN EDITION, which operates according to output and is therefore very energy efficient thanks to the frequency-controlled hydraulic pump. A MULTILIFT SELECT robotic system handles the gentle removal and set-down of parts.

Jorge Demoliner (left), Chief Technology Officer, and Regis Haubert, Chief Executive Officer, are proud of Exatron’s efficient injection moulding production.



“The ARBURG machines support our strategy of producing thin-walled parts and complex geometries with reproducibility and short cycles” says Rodrigo Volpato, Product Engineer at Exatron. “With the SELOGICA control system, we can adjust the injection program according to requirements and monitor and check the data in real time.” Another benefit, he adds, is that the ALLROUNDER GOLDEN EDITION machines also have the best cost-benefit ratio compared to machines from other manufacturers and require very little maintenance. “This is important for us because we keep our systems running around the clock. During the night shift, the machines run for up to twelve hours without operators or supervisors,” Rodrigo Volpato explains.

Sustainable production

A set of five hot runner moulds, each with four cavities, is used to produce the motion sensor, which consists of a base, carrier, lid, lens and spacer. Thanks to direct injection, all five moulds are used



The motion sensor consists of the following five components: base, carrier, cover, lens and spacer. The production of these thin-walled, complex parts requires extreme precision and efficiency.

for sprueless and hence environmentally friendly production. The cycle time for the larger parts is 14 seconds, and twelve seconds for each of the smaller parts. ABS and polyethylene-based materials are processed.

Excellent cooperation

Exatron purchased its first four ALLROUNDERS in 2014. It was the beginning of a fruitful collaboration in which they particularly appreciated the highly professional advisory service: “ARBURG

was one of the few partners who helped with the entire adaptation of the in-house operation for the injection process and with profitability calculations for the amortisation of the system,” recalls Rodrigo Volpato. The profitability forecast at the beginning was in line with the company’s performance and thus also ensured the success of the plans in the long term.

INFOBOX

Name: Exatron
Founded: 1984
Location: Canoas, Brazil
Employees: Approx. 200
Industries: Electrical/electronics, building and home automation
Products: Timers, industrial and relay sockets, motion detectors, plugs and adapters, doorbells
Contact: www.exatron.com.br



Photo: Exatron



TECH TALK

Christoph Kiefer, Technical & Commercial Sales Support



Photo: Adobe stock

Quick and easy

How can energy efficiency be achieved in injection moulding?

At ARBURG, energy and production efficiency have occupied a prominent position for decades. The result is a wide range of hardware and software features designed for the energy-saving operation of ALLROUNDERS.

ARBURG's modular product portfolio allows every machine to be configured specifically with energy efficiency in mind. Today, around half of all ALLROUNDERS are already electric machines.

Hardware saves 10,000 euros per year

But hydraulic machines can also be brought close to the energy level of electric machines, for example using the ARBURG servo hydraulic system (ASH),

ARBURG electro-mechanical dosage (AED) and the energy-saving system (AES) with frequency-controlled drives. Taking a hydraulic ALLROUNDER 570 S with a clamping force of 2,000 kN and a size 800 injection unit as an example, we can see the savings potential this offers.

If this machine operates with a cycle time of 50 seconds and 6,000 operating hours at 40 cents per kilowatt hour, savings of up to 8,000 euros per year can be achieved with AES. So the option pays for itself within just a few months, with the effect becoming even more noticeable as the machine size increases.

In the area of heating energy, a fully insulated cylinder module offers additional savings potential of up to 40 per cent depending on the process, which corresponds to up to 2,000 euros per year for the same machine under identical con-

ditions. The investment is therefore recouped within only about three months. Again, the larger the machine, the greater the economic effect.

Software reduces energy losses

Software features as well as hardware help to save money – for example, through intuitive control features and assistants. These include automatic switch-on/to-standby, automatic lowering of the cylinder temperature, deactivating electric motors and heating when the machine is at a standstill, and process optimisation by adjusting important machine parameters.

The new aXw Control EnergyAssist, for example, enables controlled, economical heating for all cylinder module, mould and temperature control unit heating

zones, saving money and avoiding power peaks with every heating process.

Energy efficiency can be retrofitted

Even existing machines can often be upgraded to a better energy standard. For example, full insulation of the cylinder module or the AES can also be retrofitted, making it possible to achieve values similar to those of new machines. In this way, older electric motors can be upgraded to a higher efficiency class. This alone can achieve savings of around ten per cent, making a payback period of around 1.5 years realistic. In Germany, there are various subsidy options for energy optimisation measures, for example, and ARBURG can provide its customers with comprehensive advice on these.

Digitalising production also helps to save energy. So every new machine is equipped

as standard with the "4.service" control assistant, enabling remote maintenance. And the ARBURG host computer system ALS also provides indirect energy-saving benefits by optimising the machine utilisation planning, for example.

Advice complements technology

ARBURG also supports its customers before and after the purchase by providing comprehensive advice so that opportunities for optimisation can be identified and their own production can become more efficient as a result. With individual energy advice on site, for example, or consumption measurements at production cells for more transparency on energy requirements, or as a basis for various certifications. ARBURG's designated experts can be reached via a central e-mail address (energy@arburg.com).

Save energy and money: energy-saving lamps are an efficient way to do this, as are ARBURG products and services.

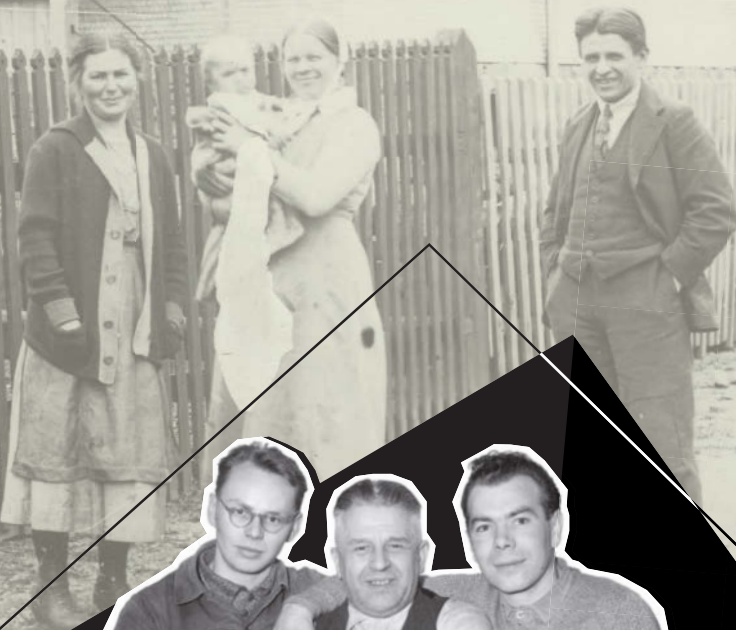
Energy efficiency seminars, which teach practical ways of saving energy in the injection moulding process, complete the offering. Wir sind da – We are here for you. Also when it comes to saving energy.



100 YEARS

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WIR SIND DA.