

K-PROFI

international edition

Our quality promise to plastics processors

- › Trendsetting know-how
- › Success stories from Europe
- › Magazine Made in Germany

The family-run company Jakob & Partner has focused its injection molding production on small and medium series made of PEEK, PPSU, PVDF, PPS, PES and LCP. Klaus Wießler and Sandra Jakob-Wießler are convinced:

**“Our specialty
cuisine has its
own appeal”**

Why **Egeplast** is investing in a new extrusion hall. How **Argus** inspects granulates. Why **2R** relies on its laboratory for injection molding projects. How **WKV** quickly became a successful thermoformer. What **“PRS Europe”** showed. And how Dr Martin Bussmann assesses the **market for biopolymers**.

Fakuma

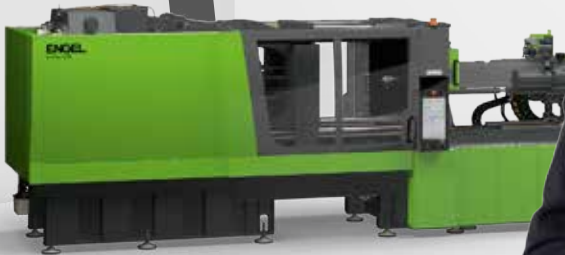
15 - 19 October 2024

get connected -
with solutions for your success



Learn more:
engelglobal.com/fakuma

Come and
visit us!
Hall A5,
Booth 5203



ENGEL
be the first

Infrastructure, laboratory and various specialists

Dear reader,

Without the hobby of founder Ludwig Widl, WKV Kunststoffverarbeitung in Hohenwart would not exist today: a thermoforming machine was needed to form the cockpit of a model airplane out of plastic. Widl built the first one himself from a milking machine, and then the garage tinkerer developed into a successful thermoforming specialist: Gabriele Rzepka reports from page 6. As a medium-sized developer and injection molder of technical parts for the automotive industry, 2R Kunststofftechnik in Schweitenkirchen relies on its comprehensively equipped laboratory. Rudolf Fernengel, Dirk Fernengel and Eva Wilhelm explain why: page 16.

“Our specialty kitchen has its appeal,” say Sandra Jakob-Wießler and Klaus Wießler. As Sabine Rahner learned in Haitersheim, the family business Jakob & Partner has geared its injection moulding production towards small and medium series made from high-performance materials such as PEEK, PPSU, PVDF, PPS, PES and LCP and can still produce large series economically: page 24. “One size fits all has long been passé,” concludes Dr. Martin Bussmann in an interview about bio-based and biodegradable plastics. Karin Regel also found out why the ambitious growth forecasts have not yet been confirmed: page 32.

Infrastructure for gas, water, electricity, fiber optics and industry places many demands on plastic pipes, including country-specific ones. Egeplast meets them with its “egeGigaFab”, a flexible and modern extrusion process. Karin Regel visited Torsten Ratzmann in Greven: page 36. Although, or perhaps precisely because,



the recycling industry is still not doing well, the “PRS Europe” recycling trade fair in Amsterdam was extremely popular with focused visitors. Exhibitors expressed some hope for improvement to Karin Regel: page 40.

The “Fakuma” in Friedrichshafen, the largest plastics trade fair in the DACH region in 2024, starts in mid-October. We are already looking forward to the innovations that we will be reporting on in the next issue of K-PROFI international. See you in Friedrichshafen?

Markus Lüling, Editor-in-Chief

lueling@k-profi.de, Tel. +49 (0)9123/9609-10

Drying.
Dosing.
Conveying.
Storing.
Crystallizing.

Equipment designed
for efficient solutions
in the plastic industry

Labotek

www.labotek.com

In this magazine

TECHNOLOGY

Dipl.-Ing. Gabriele Rzepka

From model aeroplane manufacturer to thermoforming specialist

How a garage tinkerer developed into the successful plastics processor WKV 6

Dipl.-Ing. (FH) Karin Regel

Results in just one minute

Why masterbatch manufacturer Argus relies on fast granulate detection 12

PORTRAIT

Dipl.-Ing. Markus Lüling

"All I believe about the data sheet is the issue date"

How 2R scores as a development and production partner for injection moulded parts with more than just a fully equipped laboratory 16

COMMENTARY

Dipl.-Ing. Markus Lüling

Not everything is rocket science

Why the standard processes of injection moulding technology are not economically exhausted 23

STRATEGY

Dipl.-Ing. (FH) Sabine Rahner

"Our speciality cuisine has its appeal"

How Jakob & Partner is positioning itself for the future with small and medium-sized series made from high-performance materials 24

Dipl.-Ing. (FH) Karin Regel

Open at the front, open at the back – simply a pipe

How Egeplast has responded to the booming fibre optic expansion in Europe and is equipped for the future 36

INTERVIEW

Dipl.-Ing. (FH) Karin Regel

"One size fits all" is long gone

How Dr Martin Bussmann, biopolymers expert, assesses the bioplastics market situation 32

TRADE FAIRS AND EVENTS

Trade Fair Calendar 25

Dipl.-Ing. (FH) Karin Regel

A small spark of hope

Recycling trade fair PRS Europe in Amsterdam breaks exhibitor and visitor records despite poor industry spirits 40

Dipl.-Ing. Markus Lüling

"Characterised by digital solutions"

What customer benefits Engel brings to the future of injection moulding 43

Dipl.-Ing. (FH) Sabine Rahner

A look into the future of injection moulding

The solutions Wittmann is developing for digitalisation, the circular economy and energy efficiency 44

COLUMN

Dr.-Ing. Arno Rogalla

You have to know when to quit! 50

Cover photo: Jakob & Partner



OCTOBER 15 - 19, 2024 . HALL B1 . BOOTH 1212

ROMIRA

Technical Polymers and Blends

ROWA
MASTERBATCH

Color, Additive and Multifunctional Masterbatches

ROWALACK

Special Lacquer Systems,
Top Coats, Pigment Preparations

info@rowa-group.com . +49 4101 706 06

TRAMACO

Chemical Foaming Agents, Additive Masterbatches, Adhesion Promoters, Primers

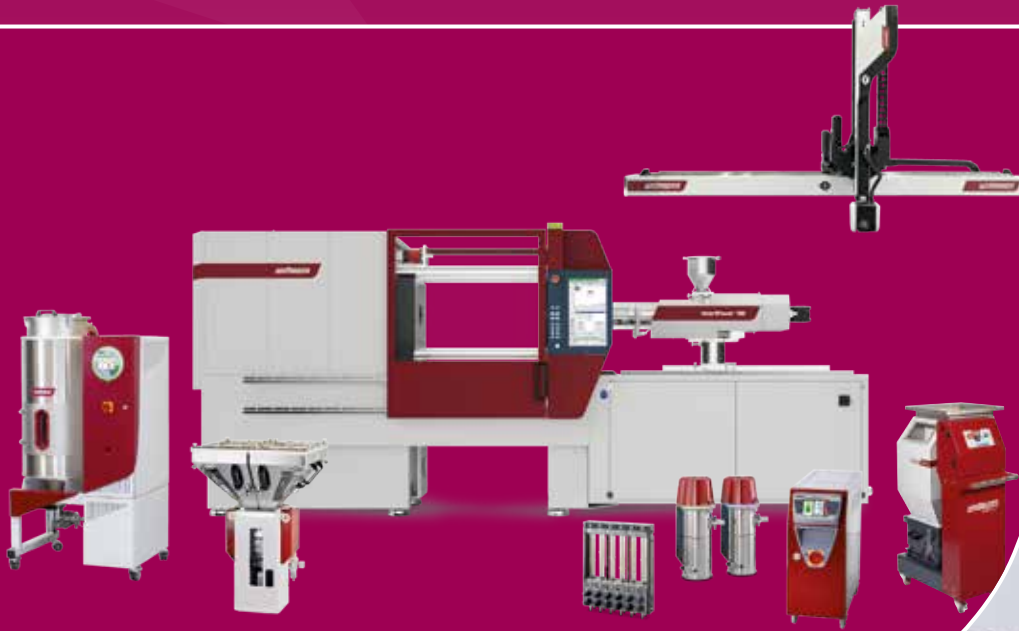
ROWASOL

Liquid Colors and Dosing Systems

ROWA

Production and distribution of TRAMACO, ROMIRA and ROWA Masterbatch products as well as own developments for the North and Central American markets

Wittmann



Your One-Stop-Shop

It's all WITTMANN.



Visit us at the Fakuma 2024
in Hall B1, Booth 1204

www.wittmann-group.com

From model aeroplane manufacturer to thermoforming specialist

How a garage tinkerer developed into the successful plastics processor WKV

What does model aeroplane construction have to do with a thermoforming specialist? In the case of WKV Kunststoffverarbeitung GmbH from Hohenwart, everything, because: Without the hobby of founder Ludwig Widl, the company would probably not exist today. In 1987, after retiring, the former railwayman wanted to devote himself exclusively to his hobby and build a unique model aeroplane. A thermoforming machine was needed to mould the pilot's cockpit from plastic. The tinkerer built the first one himself from a milking machine. But that was just the beginning.

Text: Dipl.-Ing. Gabriele Rzepka, Editor K-PROFI



Harald and Armin Widl (from left) are the second generation to manage the company.

Interest in the one-offs grew among model pilots, and so in 1991 a professional machine moved into Widl's garage – an Illig UA 100. The sons and current managing directors Harald and Armin Widl remember this time with a smile: "Of course, the machine was not fully utilised with the hobby productions. That's why our father looked around for other customers." These came from the automotive tuning, kitchen and textile machinery industries. Soon the garage was far too small, the company consisting of Mr and Mrs Widl grew and moved its production to Rohrbach in 1994. Harald Widl explains: "There was a real surge in orders with the first CNC machine in 1996. We bought two Geiss thermoforming machines and grew to 15 employees." In 2012, the space in Rohrbach became too small. The company moved to a greenfield site in Hohenwart, north-west of Munich, because there was enough space there for future expansion.

Sophisticated hall concept

This benefited the Widl brothers' major construction project in 2023. More and more machines and more and more components required more space. The two entrepreneurs took advantage of this to optimise the workflow within the company. An extension has now expanded the production area from 6,100 to 9,700m². Electricity is supplied by a 480 kWp photovoltaic system and covers around 40 % of the energy requirements.

The centrepiece of the new hall concept is the thermoforming production facility. To the right and left of this is a hall with CNC machining centres. From these, it continues into one assembly hall each. For fire safety reasons, the tool and semi-finished product warehouse is completely separated from production and is located directly opposite the thermoforming production area. The finished and assembled components are transported to two lorry docks via a shared outgoing goods area. Harald Widl explains: "We have put a lot of thought into creating short, efficient routes. The experience from the previous locations has been incorporated here." The individual sections of the hall are separated from each other and insulated so that the heat from the thermoforming machines is not spread across the entire production area and the background noise from the CNC machines does not disturb the employees in assembly. Here, the room air is completely replaced twice an hour to protect employees from solvent vapours from the gluing processes.



"By storing our moulded components along the wall, we save space and protect sensitive component surfaces,"

explains Armin Widl.

Since the opening of the new halls, the storage of the deep-drawn components has also changed. They are now lined up next to each other on the wall. Armin Widl explains the reason for this: "We mould many components with a protective film on the surface, as otherwise the high-gloss surfaces would quickly become scratched. After the moulding process, some of the components still shrink considerably. If they are then stacked on top of each other, the surfaces scratch more quickly. Stacking them along the wall saves space and protects the sensitive surface." Thanks to the generously dimensioned new halls, the necessary space is available.



The milling machines are optimised for the requirements of thermoformed components and are accessible from two sides.

The element for the construction machine housing consists of 75 % rABS, with only the top layer made of super-matt virgin material.

"Our machines have to be quick to set up, because we also manufacture very small batch sizes to order,"

knows Harald Widl.



The variety of customers has increased significantly over the years. Today, the company has around 50 employees and manufactures housings for construction machinery, robotics and medical technology as well as interior and exterior panelling for caravans and aviation. In 2023, the thermoformer had a turnover of more than EUR 9 million. The machine park has grown considerably. There are now four Geiss T10s in the halls. Armin Widl adds: "We still have the UA 100 from 1990 in operation, which is still doing its job. We use it for spare parts production."

Otherwise, the Geiss machines dominate the picture, complemented by seven 5-axis CNC milling machines, four tandem portal milling machines and three rotary table systems – all from HG Grimme. The milling machines are optimised for the deep-drawing process. They open on two sides so that the workers can easily load them and then remove the milled parts. As a result, the distances from the workbench to the CNC and then to the finished part boxes are short for the employees.

Structured production processes

During the visit, all four Geiss machines are in action. Two adjacent T10s are currently processing ABS. A component for a construction machine housing is produced from a 1,310 x 960 x 6 mm sheet in a cycle time of 236 seconds. Production manager Enrico Schulz explains: "We produce matt, the grain must not be damaged. That's why we have to heat up slowly over a longer period of time, otherwise the gloss level will go up."





After the moulding process, the components are stored upright against the wall in the milling halls so that the distances to the CNC machining area are short.

The forklift cover made of ABS-PMMA only has a low inherent rigidity.



Next door, the other T10 produces a forklift bonnet from 1,230 x 1,000 x 6 mm ABS virgin material with UL certification for the USA. Immediately after the moulding process, an impact shear positioned between the machines removes the clamping edges of both components. WKV collects the trimmings together in a container, as both components are pure ABS. The rapid separation of the sheet edge is important, as the component distortion due to shrinkage is high even with ABS – not to mention PP or PE. Armin Widl explains: “We would have problems with the components during vacuum clamping at the milling holder if we left the edge of the sheet in place.”

From thermoforming production to CNC machining. The moulded components are stacked along the wall and await further processing. One of the tandem machines mills a battery cover for an electric forklift truck from ABS-PMMA. From the wall, it goes into the milling machine and then into the transport box. A conveyor belt runs between the tables of the tandem CNC, collecting the resulting chips and transporting them into a container.



The glued-in lower shell provides the necessary stability.

GRAVICOLOR 310

Gravimetric batch dosing & mixing unit for injection moulding, blow moulding and extrusion processes.

Please visit us
Hall B1, Stand 1111
15th - 19th October 2024




motan

ZERO LOSS

www.motan.com





An employee applies the adhesive to the forklift bonnet with a glue gun to glue the yellow bonnet to the grey inner part.



The glued seams then harden.



Once the two elements have been glued together, it is the turn of the lights.

The thermoforming specialist now mounts numerous milling holders on frame constructions that are built as ribbed structures. Armin Widl explains why: "This makes the milling holders much lighter, and we use much less material in their production."

Once the components have passed through CNC machining, they are sent to assembly. There, three deep-drawn parts and 21 other elements are used to create the complete bonnet for the forklift truck. The high-gloss yellow bonnet has very little inherent rigidity. For this reason, an employee uses a glue gun to apply the adhesive to the lower shell of the forklift bonnet and glues it to the top. The metal brackets and lights are then glued in place.



The fully assembled forklift bonnets are lined up against the wall.

Materialize the Best.

Visit us at the **Fakuma in Friedrichshafen**. From **October 15 to 19, 2024** you will find us in hall A3 at booth 3209.

We achieve the best for you – from idea to series. As experts for innovative high-performance plastics, we produce high-quality plastic resins and compounds for even the most demanding applications. More info at www.barlog.de/en



BARLOG
Plastics

Mehr aus Polymer.



Sales Manager David Pittroff, Production Manager Enrico Schulz, Armin and Harald Widl (from left to right) stand proudly in front of one of the four T10s. The last one only arrived a year ago.

Colourful product range

In addition to caravan and construction machinery components, WKV also has some real eye-catchers to offer. For an Automated Guided Vehicle (AGV), the company manufactures all thermoformed elements from ABS UL94 V-0 and PMMA. A total of eight individual parts, some as transparent panels for a light strip, together with the steel body ensure the attractive appearance.

The production of the gun case for the VW Golf and VW Passat, which is used by the police, was a truly exotic project. Four deep-drawn parts made from an ABS-PC blend had to be produced with a tolerance of 0.1 mm. The insides of the deep-drawn elements of the box are flocked and then painted. The Hohenwarters assembled a total of 100 individual parts such as springs, hinges, screws and an aluminium reinforcement plate in the outer flap to create the final gun case. Harald Widl describes the challenge: "The closing mechanism of the outer flap had to engage simultaneously at the back and front with the push of a hand and at any outside temperature. The aluminium plate was necessary to achieve the required rigidity."

A completely different component is a control console for Atlas made of grey ABS with a shadow gap. The elements are negatively moulded so that the required contours can be precisely reproduced, and the shadow gap can be milled. In this way, components can be produced very close to the injection moulded look.

The weapon box for police vehicles is made up of 100 elements.



Economical and flexible

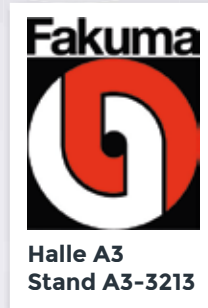
The variety of products already gives an idea: Numerous set-up processes are the order of the day for the thermoforming specialist. The batch sizes start at just a few parts and usually do not exceed 2,500. "Our machines have to be able to be set up quickly. We manufacture to order. If a customer needs five parts, we produce them and then it's the next order's turn," says Harald Widl, giving an insight into day-to-day production. The entrepreneur sees the great advantage of thermoforming in the high flexibility of the process. Different variants of a component can be produced without tool changes, as CNC machining means that differently arranged drill holes, windows and recesses can be realised quickly. "A customer often wants to rearrange the switch-on button or the switch assignment after the field tests. That's no problem at all, we just have to adapt the milling programme accordingly, that's all," explains Armin Widl. Harald Widl makes it clear with confidence: "In terms of tolerances, we can keep up with injection moulding. However, thermoforming is much more economical for small batch sizes."

The brothers already have further plans for the future. They want to optimise the gluing processes in assembly. They are focussing on speed and repeat accuracy. However, the really big investments are not yet on the cards. After all, the new hall construction is still fresh, and the newest of the four T10s was only launched a year ago. "We are a family business. It's not possible to realise a new project of this size every year. We design our plans to fit our production conditions and our market for at least ten years. This has worked well in the past, and we have planned in these dimensions for the expansion of our production site," says Harald Widl, describing the company philosophy. ■

www.wkv-gmbh.de

www.geiss-ttt.com

The control console is moulded in a negative shape to maintain the precise shadow gap.



EXPAND YOUR CAPABILITIES



Your competent partner in
plastics processing mixing,
dosing, conveying and drying
Made in Germany

www.koch-technik.com



Results in just one minute

Why masterbatch manufacturer Argus relies on fast granulate detection

Colour adjustments are the order of the day at Argus and are carried out by the experienced team of colourists.

Photo: Argus

The time factor plays a major role in quality assurance. Recognising production errors at an early stage means having room to react in order to meet delivery deadlines. In addition, the time in which any production errors are avoided determines costs and rejects. Quality assurance is therefore a top priority at masterbatch and compound manufacturer Argus Additive Plastics GmbH. It begins with the incoming goods inspection and ends with application tests, laboratory checks and product data sheets for the customer. In Büren, quality can not only be ensured, but also proven. To this end, the granulate manufacturer recently invested in a semi-automated offline testing device that precisely analyses a random sample of around 100 g within just one minute and immediately issues a test certificate.

Text: Dipl.-Ing. (FH) Karin Regel, Editor K-PROFI

Around 28,000 tonnes of plastic pellets, mainly masterbatches but also compounds, leave the factory premises in Büren in the Paderborn district for customers worldwide. "We mainly supply customers in Europe, but we also have many customers in third countries who rely on our high quality," reports Verena Habig from the Sales & Marketing team at Argus. The company primarily processes polyolefins, mainly PE and PP, as well as various technical polymers and biopolymers.

Prior to extrusion, the polymers are stored in one of the 36 outdoor silos with a total capacity of 2,000 tonnes and are transported from here to one of 18 extrusion lines. As high mixing quality is essential for all

During the factory tour, Michael Luksin uses a granulate sample to show how quickly the measurement is completed with the Purity Scanner V from Sikora and what the result looks like.

"We are so flexible that we can react quickly and easily if a customer requires different configuration or a different colour of masterbatch," emphasises Michael Luksin.



Photo: K-PROFI



Photo: Sikora



Photo: Sikora

“Every year, we produce around 28,000 tonnes of masterbatch and a smaller proportion of compounds for our customers, primarily from the EU,” says Verena Habig.

granulates produced by Argus, only co-rotating twin-screw extruders from the machine manufacturers Coperion, Leistritz Extrusionstechnik, Theysohn Extrusionstechnik, KraussMaffei and Noris Plastic are used. “Our extrusion lines are designed to be so flexible that we can quickly change them over to a new recipe. We can manufacture our products with both strand and underwater pelletising,” explains Michael Luksin from the technical service department.

In addition to quality assurance, flexibility is a topic that comes up again and again during on-site discussions with K-PROFI. “Especially when our customers need a masterbatch with a different configuration or colour quickly, for example, we have to and can react to this,” Michael Luksin is certain. “We specialise in customised developments, which we can handle with our experienced development team on the one hand and our broad range of analytical expertise on the other.”

The 190-strong team is also flexible when it comes to the order quantity and the area of application of its granulates. “We always produce exactly the quantities that the customer needs, from a few kilos to several hundred tonnes,” reports Verena Habig, adding, “We have a very broad base and supply almost every industry, from the pipe, profile and sheet industries to the automotive sector and manufacturers of nonwovens, artificial turf and films.”



Photo: Argus

A total of 18 twin-screw extruders are available, as high mixing quality is essential in additive production.

Mould making

Single nozzle easyFILL EH 4010

AVAILABLE
IMMEDIATELY



FRIEDRICHSHAFEN

15. – 19.10.2024

Hall A2, Stand 2313 + 2316

meusbürger

Standards for your success.

Discover more at:

www.meusbürger.com

Whenever the plastic granules, whether masterbatch or finished compound, are intended for sensitive applications, special purity is essential. Spots, flaws, black specks or colour contamination are a no-go for light-coloured or even transparent products: if the raw materials are also used in film or filament production, flaws can cause production problems. In blown film production, for example, the smallest foreign bodies can cause the film bubble to burst, and in filament production for spunbonded non-wovens or artificial turf, they can cause the nozzles to clog and the filaments to break. "Under certain circumstances, this can lead to a production stoppage and production rejects, which every processor wants to avoid," says Michael Luksin.

Argus operates a small cast and blown film line, a nonwoven line and a small injection moulding machine in its technical centre in order to be able to test whether new recipes are suitable for the specific application when developing them. "We can test all the masterbatches and compounds we produce ourselves in the application." If the application tests are positive, the ordered quantity of granulate is produced. No product leaves the company without a test certificate. "For final acceptance, we carry out standard tests such as MFI, bulk density, density and – if possible – additive content determinations for each batch produced as part of constant production monitoring in the laboratory.

We also determine specific quality parameters depending on the product," says Michael Luksin.

Regular monitoring also takes place during the processing of a production order. Granulate samples are sent to the laboratory at regular intervals, where they are first subjected to a visual inspection. For around two years now, the semi-automatic Purity Concept V laboratory testing device from Sikora in Bremen has supplemented the visual inspection. "The device can do everything the human eye can do, only better and more precisely," explains Felix Wendt, Area Sales Manager at Sikora.

It is extremely easy to use: 100 g of granulate from production are placed on the sample table, the start button is pressed and off you go. The material is scanned, analysed and all impurities, such as black specks, are detected. "After just one minute, we can see exactly how many defects of what sizes are present in our sample," Michael Luksin demonstrates a test run during a tour of the plant. With just one click, he then receives a test certificate with all the information about the size and number of contaminants as well as a picture gallery of all detected contaminants. "All detected contaminants are marked on the scan image and at the same time highlighted in colour on the sample carrier using a beam-er," explains Felix Wendt. "Now the user can zoom in and out of the monitor image



Photo: Sikora

"Our Purity Concept V can not only test granulates, but also flakes, films, sample test plates or test rods for impurities," emphasises Felix Wendt from Sikora.

as required and click on individual contaminants. These can then be localised on the sample carrier using the crosshairs and, for example, separated with tweezers and subjected to a more detailed analysis."

The data material can even be read in again afterwards and each analysis can be repeated as often as required. Specific sample routines can be stored in the system, which further facilitates quality assurance and ensures comparability. "For our customers, the new analysis option means a high degree of security, as we naturally only release and deliver material that passes our strict checks," reports Michael Luksin.

Felix Wendt adds an advantage of the random sample analyser: "The Purity Concept V can not only test granulates, but also flakes, films, sample test plates or test rods for impurities, which makes its use very flexible." When asked about the limits of the system, Michael Luksin replies: "Due to the measuring principle with optical cameras, defects in crystalline materials are only recognised on the surface. This limitation does not apply to transparent products." Felix Wendt adds: "Customers ask us for a near-infrared option in the system in order to recognise which foreign contamination is involved. The system does not yet cover this at present." ■

www.argus-additive.com
www.sikora.net

In addition to the 36 outdoor silos, further silos are installed indoors for the intermediate storage of the finished granulates.



Photo: Argus

Powerful. Just 6 better.



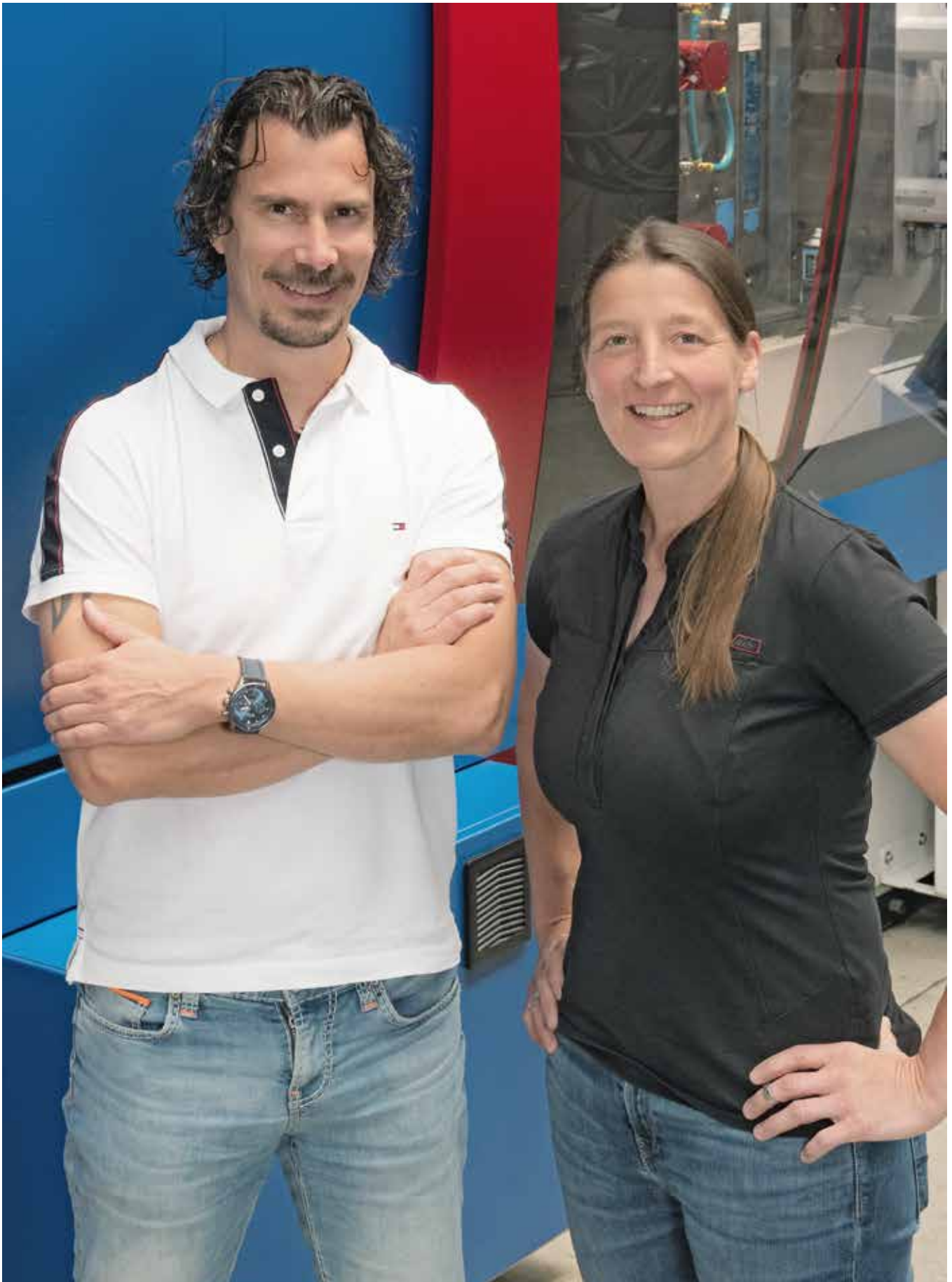
more at
Fakuma
2024

The next Generation.
Temperature
Control Units
Thermo-6

With the Series 6, we have made good things even better. Now, with the new housing size 62, we are creating an even more powerful unit that is completely convincing – and power potential for future tasks.

hb-therm.com

HB-Therm®



Left page:

All injection moulding machines for 2R are painted in the company colours blue and red. Dirk Fernengel and Eva Wilhelm (from left) have taken over responsibility from Rudolf Fernengel and his brother Richard.



With 55 years of experience in plastics, Rudolf Fernengel is still involved in 2R's development projects.

“All I believe about the data sheet is the issue date”

How 2R scores as a development and production partner for injection moulded parts with more than just a fully equipped laboratory

“I really want to know the physical properties of a material. Only then can I give a customer comprehensive advice,” explains Rudolf Fernengel. The 81-year-old co-founder of 2R Kunststofftechnik GmbH & Co. KG in Schweitenkirchen considers a comprehensively equipped laboratory to be a significant competitive advantage, even for a medium-sized injection moulding company. As a developer and manufacturer of technical parts and assemblies for the automotive industry, 2R has recently mastered the generational change as well as the entry into integrated moulded part handling and the management of larger assembly projects. An on-site visit to senior partner Rudolf Fernengel, Managing Director Dirk Fernengel and Head of Technology and IT Eva Wilhelm.

Text: Dipl.-Ing. Markus Lüling, Editor-in-Chief K-PROFI

2R, located a good 30 km north of the Bavarian capital within sight of the A9 motorway, develops and produces technical injection moulded parts in large and small series, prototypes and pre-series parts with 200 employees in 3-shift operation. The product range comprises over 700 different parts with shot weights between 0.1 and 4,000 g. Ultrasonic and vibration welding, pad printing and laser labelling as well as component assembly complete the range.

2R derives 95 % of its business from mobility – cars, lorries and motorbikes. In addition, the company supplies smaller volumes for the construction, lifestyle, sport and leisure and electrical industries. The production spectrum includes visible and functional parts for interiors, bodywork, chassis and engine compartments in large and small series. Munich, Landshut, Dingolfing or Ingolstadt – the distances to the development centres and plants of BMW and Audi are short. There are good reasons for the close cooperation between the family business and the Munich-based car and motorbike manufacturer BMW.

“BMW was the best thing that could have happened to me”

Rudolf Fernengel, born in 1942, remembers: “At the end of the 1960s, after completing my apprenticeship and internships at Bayer and Hoechst, I was actually a junior technician at the Volkswagen plant in Wolfsburg,” he says. “After two years there, my boss said to me: ‘You’ve only ever known Volkswagen. I have a hunting friend in Munich who works for BMW and is looking for a plastics specialist. You should go there.’”

It was only after some hesitation that Rudolf Fernengel decided to change car brands. Today, he looks back with gratitude: “I didn’t really want to. But BMW was the best thing that could have happened to me.” In just a few minutes, he recalls countless projects from the 1970s that saw thermoplastics penetrate further and further into cars, replacing metal and thermosets: Ignition distributors, glove compartments, battery covers, film hinge accelerators made of PP,



As Head of Technology and IT, Eva Wilhelm took over from Rudolf Fernengel in 2020 in the cross-departmental management of operations, workflows and processes.

fan blades made of PP-GF, radiator grilles made of ABS, the first galvanised exterior parts, foam seats made of polyurethane. “People are fascinated by plastic,” he quickly realised, “although back then the specification in the drawings for the moulded parts simply said: ‘Plastic black hard’.”

In 1978, Rudolf Fernengel and his brother Richard decided to set up a processing company. Rudolf and Richard – hence 2R – started in a barn just outside Munich with two machines and, after strong growth, moved

to the “green field” in Schweitenkirchen in 1990, where the company grew steadily and expanded its premises.

Continuously growing company

Today, 2R operates tie-bar-less injection moulding machines from Engel with clamping forces of between 300 and 4,000 kN, most of which are 2,600 kN victory models, some of which are equipped with two components. “We can install larger moulds and mould changing is easier,” says Eva Wilhelm, emphasising the main advantage of the tie-bar-less machines. A 13,000 kN Engel duo two-platen machine was added in 2016 for the production of acoustic lids. With the help of a specially modified quick-clamping system (and magnetic clamping plates on the largest machine), the approximately 10 to 15 mould changes per day can be completed more quickly. “Engel always says we are a special customer. The main difference between our machine park and others is that we operate around two thirds of the machines with degassing screws,” reports the Head of Technology and IT.

“Degassing doesn’t work for everything, but I can process almost any material without drying and still be streak-free.” With the special screws, 2R gets “a certain percentage of moisture” out of the granulate. “This does

affect the dosing time and I may lose a little cycle time,” admits Eva Wilhelm, but expects future potential for degassing in the process due to the increasing use of recyclates. “Everyone is talking about recyclates, some customers are also specifying materials, but overall, the actual use is still very small. And saving on energy-intensive pre-drying is an advantage in any case.”



As second-generation Managing Director, Dirk Fernengel is responsible for the company’s finances, among other things.

The injection moulding company supplies itself with the many engineering plastics, including PA, via octabins. No single type justifies silos or a central drying plant, which is why 2R dries decentrally and close to the consumer, unless a degassing screw is in use. New moulds come from five to six permanent partners in mould making, while 2R takes care of mould maintenance in-house. The 500 or so active moulds from which 2R supplies the OEMs during production and continues to fulfil its supply obligation for at least 15 years after the end of production are stored in one of the many extension buildings.

Consistent steps towards automation

In terms of quality assurance, the general tolerance band monitoring in the control system and, depending on the availability of the “iQ tools” on the individual Engel machines, the company has come quite far, reports Eva Wilhelm: “iQ weight control” for shot weight consistency, “iQ clamp control” for adjusting the clamping force and “iQ hold control” for optimising the holding pressure time during start-up. Cavity pressure measurement is only used when necessary, usually in test moulds and rarely in series production moulds.

Interior covers for installation on car windscreens must also fulfil high requirements in the event of a crash.





Shells for pressure plates for high-voltage storage systems are installed several times in each battery pack.



The pressure plates, which are produced on several injection moulding machines, are completed with fastening elements and dimensionally checked in an assembly system.

“In the last three years, we have invested a lot in integrated moulded part handling, pad printing and laser marking and automated component assembly,” says Eva Wilhelm, looking at what has changed recently. “Some things you just have to start with. We have the financial and capacity resources to move things forward and improve things. There are so many technical possibilities,” she says, visibly satisfied. The worries in the assembly department that tasks could be lost have also turned into the opposite: “Employees now come to me themselves with ideas about which process steps could be automated.”

Acoustic covers in frameless doors accommodate the door panelling, loudspeakers, wiring harness and various sensors. They are an important product from 2R in 14 variants.



From two-wheelers to aerospace and automotive projects

Eva Wilhelm, a trained two-wheeler mechanic and aerospace engineer, joined 2R in autumn 2015 as a development engineer for customer projects after working as a project manager at a research institute in Ingolstadt. Her first major project at 2R was a lightweight carrier, known as an “acoustic cover”, which separates the wet and dry areas between the body shell and door panelling and accommodates the door panelling, loudspeakers, wiring harness and various sensors. In total, the acoustic cover is available in 14 variants for six different vehicles. This involved the purchase of the largest 13,000 kN machine and the introduction of PUR foaming technology for sealing foam beads.

Eva Wilhelm became Head of IT Management in 2018 as an internal deputy until “Rudi Fernengel handed over the technology sceptre to me in 2020.” At 2R, technology means the cross-departmental management of operations, workflows and processes. “Management by walking around” is her motto, she realised. With her IT experience, she completed the TISAX certification for secure information exchange in the automotive industry in 2023. “That went better than expected because we had been working to a very high standard of IT security for a long time,” she recalls, “certification is not just about doing, you have to invest quite a lot of time in documentation. You have to look at everything again – network, hardware, behaviour. It really makes sense to do that.”

In general, Eva Wilhelm has a lot to gain from certifications – 2R lists certificates according to ISO 9001, ISO 45001, CQC, IATF 16949, ISO 14001, OHSAS 18001 and TISAX. “Everyone has to decide for themselves how much effort they put into them”, but it is important to “extract what is useful for your own company” from each certification. In the past, documentation was only done for the purpose of certification. Her experience is: “If you provide regular training and documentation alongside your day-to-day business, certification itself is still time-consuming, but it pays off in the end.”

Customer advice with data and findings from the in-house laboratory

The in-house laboratory at 2R is unusually well equipped. “I have maliciously said to some raw material manufacturers: ‘I only believe the issue date on your data sheet,’” laughs Rudolf Fernengel, “that may be a bit

mean, but you have to be very careful with the materials,” he says with conviction. “We want to be able to put plastics through their paces. Whether SEM or IR, tensile, bending or notch impact testing, microtome sectioning, DSC or TGA – material analyses are very important. We have even developed special test specimens to determine the weld

line strength of highly reinforced plastics, for example,” emphasises Rudolf Fernengel, “when we carry out the tests ourselves, we know where we stand.” Nevertheless, he is not yet satisfied with the laboratory equipment: “What I’ve really been missing here for years is an automatic torsion machine with which I can measure the shear modulus. The shear modulus is one of the most important parameters in the plastics sector. After a long search, I have now found someone to build us a new machine.”



2R keeps around 500 active moulds in a brand-new tool warehouse – for current models as part of the supply obligation for at least 15 years after EOP.



With efficient utilisation of space, 2R has divided an assembly system over two floors: From the upper floor (photo), the metal parts are separated, aligned and fed downwards via profiled hoses.

“When we have discussions about the best possible reinforcement of a moulded part and have the choice between CF and GF, for example, the transfer between production and the laboratory helps enormously – for speed and for gaining knowledge,” Eva Wilhelm has found, “we can then make reliable statements for our customers very quickly. To fulfil certain requirements, including brand-specific requirements, we want to be able to comprehensively compare materials with each other – on the test specimen, but above all on the finished component,” she emphasises. “I really want to know the physical properties of a material. Only then can I advise a customer comprehensively,” Rudolf Fernengel is convinced, “it’s important to stay on top of developments. The physical and technical properties must be absolutely transparent. Only then can I make reliable statements.”

Qualifications and certifications for the automotive industry

2R’s dependence on mobility has not proved to be a disadvantage so far. “The volatility is not as great as you might think,” reports Eva Wilhelm, “a lot of things balance out – due to the supply of various national and international assembly plants, direct and indirect supply, products that run in variants through many models, the lower cyclicity of medium and high-priced models and also because we are completely independent of the drive type with functional and visible parts.”

Qualifications and certifications are also not a major problem. “Many people say that the automotive industry is the devil’s plaything because it imposes so many requirements on suppliers. I say: It depends on the scale. We can handle the effort because we can divide it up between 200 people,” Eva Wilhelm is convinced, “smaller competitors can’t do that – neither in terms of capacity nor the ability to refinance the effort.”

Clear focus on development projects

“On the one hand, we have pure production orders with fixed specifications and, on the other, development projects as a service provider,” says Eva Wilhelm, categorising the main orders at 2R. “With development projects, we feel more comfortable as a development and manufacturing service provider because we have a say in moulded part optimisation, toolmaking, material selection and process design, even when it comes to automation, joining and assembly technology. We then provide a fixed point of contact for the coordination of larger projects such as entire assemblies.”

In addition to its manufacturing expertise, 2R also contributes simulations, the production of prototypes and numerous testing options to research and development projects. Eva Wilhelm appreciates the collaboration with the teams at the OEMs: “There are real partnerships – primarily between technicians. Because the technicians always want a solution to a task or a problem in order to create a cool product. Our sales department and the customer’s purchasing department can then agree on the financial aspects.”



2R uses its own SEM to get to the bottom of fibre orientation in injection-moulded parts, for example.

TURN ON

GRAFE® We provide secret ingredients that turn successful recipes into timeless classics.
GRAFE - Turning Good into Great.

FUTURE IN PLASTICS
turn-on.grafe.com



With a tensile, bending and notch impact testing machine, SEM, DSC, Mflow, IR, climate chamber, 3D profilometer and digital microscopy, 2R has extensive in-house mechanical, physical and chemical testing technologies.

Fully automated production of battery elements and acoustic covers

One example of the successful automation of assembly and testing processes is the production of a pressure plate that is installed in the high-voltage storage system of battery-powered electric vehicles. Two half shells are injection moulded, clipped together to form a package, threaded bushes are pressed in by induction and certain dimensions are checked by camera. 2R has set up these previously manual tasks as downstream processes. For large-volume derivatives, automation with fully automatic workpiece handling via a 6-axis robot from Yaskawa handles all downstream steps directly at the injection moulding machine. For other sizes or quantities, a separate assembly system with flexible tables and fixtures takes over the tasks. The system is spread over two floors for efficient space utilisation: The metal parts are stored, separated and aligned on a platform and fed downwards via specially profiled hoses.

Successful collaboration between two generations

"From time to time, the two of us old guys are still around, especially when it comes to new developments and new materials, I like to be close at hand," comments Rudolf Fernengel. Commercial responsibility, which was in the hands of his brother Richard for decades, was taken over by his son Dirk a few years ago. "Dirk put his hands into the polymer melts already as a child," smiles Rudolf Fernengel about his nephew's close relationship with the company.

Dirk Fernengel looks beyond financial and social responsibility: he is primarily responsible for the supply of raw materials and never misses the opportunity to scrutinise processes himself, identify potential for optimisation and suggest or directly implement improvements.

"Erfahrung schreibt man mit zwei R" – this is the slogan of 2R, its literal translation being "Experience is written with 2R". The founders' experience was also in demand outside the company. For example, Rudolf Fernengel served as head of the jury for the SPE Central Europe Automotive Award for over 30 years and was able to explain the achievements of each entrant to both the members of the jury and the participants at the awards ceremony in a clear and concise manner. "Plastic still fascinates me today. I've never had to work in my life, I've always just pursued my hobby. And that is plastics." He has also noticeably infected his nephew Dirk Fernengel and his successor Eva Wilhelm with this enthusiasm. ■

For 3D scans, even of large-volume parts, 2R has two scanners from Zeiss and GOM.



Not everything is rocket science

Why the standard processes of injection moulding technology are not economically exhausted



At the beginning of June, mainly injection moulding experts were invited to the Technology Day of Enesty GmbH from Hartha in Dresden – managing directors and managers from medium-sized companies, plant managers from large corporations and self-made entrepreneurs. The hosts, who are active in temperature control and tool technology, replaced the traditional lecture programme with an entertaining play.

In three acts, the actors brought neither drama nor comedy to the stage of the Lingnerschloss, but staged the development of a product, the construction of the necessary mould and the establishment of the injection moulding process using the product idea of a 2-litre plant pot as an example.

Experts from various technology companies served as actors, accompanying the product inventor through all the key steps with a wide range of considerations. Regardless of the suppliers, brands and service providers involved, the pros and cons of alternative technologies were weighed up and discussed in detail, including questions from the audience.

A broad spectrum of topics was covered, ranging from irrefutable physical correlations to “questions of faith”: product idea and product design, mould construction with simulation, gate position, hot runner technology and cooling concept, machine equipment and automation concept, temperature control strategy with water recooling and treatment, process monitoring and quality assurance, as well as a possible conveying backdrop. It quickly became clear that all fields of action deserve attention, as they influence product quality, CO₂ footprint and economic efficiency.

The discussions during the art breaks and after the event showed that not all processors have worked intensively on each of the many details in their projects. On the one hand, this proves that most of the processes in the companies run smoothly even without meticulous screening and that the moulded part quality is obviously right. On the other hand, it can be assumed that there is still enormous economic potential in the optimisation of supposed “standard processes”.

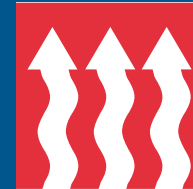
The experts credibly stated ROI times of a few months for individual measures – whether as initial equipment or retrofitting – and only a few weeks for some. Even if the respective measures pay off in months, they are worth considering. Not all considerations are based on complex digital tools or even artificial intelligence. Many subtasks can be analysed using common sense, individual steps for improvement can be discussed with experts and thus tackled in a systematic and structured manner. You don’t need “rocket science” to realise economic potential in standard processes! *Markus Lüling*

For over 45 years we have been developing and manufacturing special machines, cooling machines and temperature control units for all customer requirements. Our focus is on highest efficiency, maximum running time and comprehensive project support in the foreground.



COOLING

Radial cooling machines
Pump tank units
Split cooling machines
Outdoor installation
Carbonate precipitation
Compact cooling plants
Container cooling plants



TEMPERATURE

Thermal oil plants
Large-scale temperature control
Water temperature control units
Temperature control systems
Gas tempering systems



SPECIAL MACHINES

Water treatment
Carbon. precipitation plants
Flow meters
Heating/cooling combinations
Clean room technology
Inspection and test equipment
Plant conditioning



MADE IN GERMANY

EXTRUDER- AND TOOL TEMPERING



Visit us on
October 15th – 19th 2024 at the
Friedrichshafen Fakuma trade fair
stand A4-4212

Weinreich
KÜHLEN UND TEMPERIEREN

Weinreich Industriekühlung GmbH
Hohe Steinert 7
D-58509 Lüdenscheld

Tel.: +49 2351 9292-92
info@weinreich.de
www.weinreich.de



“Our speciality cuisine has its appeal”

How Jakob & Partner is positioning itself for the future with small and medium-sized series made from high-performance materials

PEEK, PPSU, PVDF, PPS, PES and LCP – Jakob & Partner GmbH in Heitersheim tends to process the high-temperature-resistant exotics among engineering thermoplastics. It is in the nature of things that specialities are usually associated with small or medium quantities. Managing Director Sandra Jakob-Wießler and Operations Manager Klaus Wießler report on how the Baden-based company is gearing its production towards this, how it can simultaneously realise large series economically and which aspects are decisive when recruiting skilled workers.

Text: Dipl.-Ing. (FH) Sabine Rahner, Editor K-PROFI

Photo: Jakob & Partner

Managing Director Sandra Jakob-Wießler and Operations Manager Klaus Wießler operate a plant in Alsace in addition to the headquarters in Heitersheim (pictured).



Typical components from Jakob & Partner's diverse range: 2K component made from high-performance plastics (left) and pump technology application.



"Technical plastic parts have been with us for almost 45 years, when my father Hans-peter Jakob started building tools and producing injection moulded parts in 1980," says Sandra Jakob-Wießler, explaining the company's many years of experience. In the meantime, the toolmaker and injection moulding company has evolved more and more from a pure component manufacturer to a system supplier and has expanded its portfolio of services to include downstream steps such as printing, ultrasonic welding, component assembly and so on. The requirements came with the applications, for example from pump technology. "There are always new media that need to be transported. From water, ink and various gases to aggressive media for the chemical industry. We manufacture the components from the right plastic for this," says the Managing Director. Other industries served, such as measurement, sensor and laboratory technology, also have specific requirements. Sandra Jakob-Wießler sums up what makes Jakob & Partner special: "The many small series that we realise, not many do that. Our strength in the processing of high-performance plastics and the variety of materials themselves are also special. Even our customers describe us as a speciality kitchen."

Sandra Jakob-Wießler: "We manufacture many small series from high-performance plastics and are proficient in a wide range of materials. We are a speciality kitchen for our customers."



TAILORMADE MASTERBATCHES!

We bring high quality coloring solutions.

Come and visit us
at Fakuma!
Hall A4 - Booth 4208
October 15 - 19, 2024



www.finke-colors.eu



Finke
Pigmente · Flüssigfarben · Masterbatche



Photo: K-PROFI

On a daily average, around a third of the 32 injection moulding machines are set up. Up to 13 set-up processes per day have to be carried out.

Efficiently equipping and setting up

Around 1,200 moulds are stored in Heitersheim. "However, we produce an even greater variety of parts thanks to our numerous operations," emphasises Operations Manager Klaus Wießler. On a daily average, around a third of the 32 injection moulding machines are set up, with up to 13 set-up processes per day. "We rely purely on setters who change the tools and set up the materials, as well as on set-up specialists who then start and optimise the injection moulding process." Jakob & Partner uses the Arburg host computer system (ALS) as the central tool for order and production planning: "The two most important interfaces are material preparation and mould preparation. All important information is collated in the ALS: quantities, storage locations, availability, etc. Our dryers adjust the material quantities and any

additives accordingly," says Klaus Wießler. The high-performance materials are pre-dried in small containers for several hours in multi-chamber dryers. In these containers, the hygroscopic granulate is fed directly into the Fasti small batch dryers from Koch-Technik, which are installed in the feed zone of the injection moulding machine. "This allows us to start directly at the injection moulding machine without any further waiting time," says the plant manager, explaining the advantage.

Paperless mould making

All orders for any maintenance or repair work on the moulds are also generated via the master computer system. "Pushing paper back and forth is a thing of the past. The shift supervisor is informed about the status in the ALS," says Klaus Wießler. The history



Photo: K-PROFI

Around 1,200 moulds plus additional inserts are stored in Heitersheim and cover the broad production spectrum for high-performance plastics.

of each mould is stored in the ALS. The employees log and document all maintenance and repair work. The tool history makes it possible to track exactly how many shots the mould has already completed, how often which components have been replaced, what signs of wear are present, etc. "Almost all moulds are the property of the customer. That's why we created this process," emphasises the Managing Director.

Although the tool shop is fully equipped (even with a laser welding system), it is currently limited to maintenance and repairs. "Our goal and our wish is to build more of our own moulds again. However, we lack the skilled labour. We currently employ five people in toolmaking, including the two trainees. For many months, I have also been looking nationwide for two to three more tool mechanics specialising in mould making,

Our best solution for all your applications.

We design and manufacture hot runner systems for automotive, thin wall packaging, beverage & home, beauty & personal care, medical & healthcare, technical & electronics industries.

Fast color change, short cycle times, processing of PCR compounds and Biopolymers, maximum design flexibility, fast start-up production, high process and product repeatability:

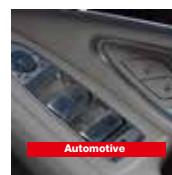
we offer the technology that Best matches your needs.



Hall A1
Stand 1215

oerlikon
hrsflow

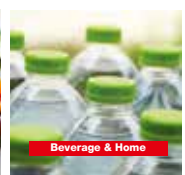
HRSflow GmbH
Am Prime-Parc 2A - 65479 Raunheim
germany.hrsflow@oerlikon.com
www.hrsflow.com



Automotive



Thin wall packaging



Beverage & Home



Beauty & Personal care



Medical & Healthcare



Technical & Electronics

Expertise in every sector

Jakob & Partner itself trains tool mechanics specialising in mould making to counteract the shortage of skilled workers.

but to no avail. We are therefore consistently pursuing the path of training ourselves. This year, we have again found a trainee for the mould making department. The two journeymen are also home-grown,” says the plant manager with satisfaction.

Necessity is the mother of invention

Jakob & Partner utilises various concepts in order to secure its personnel needs in production. The classic approach is the independent training of process technologists. “We currently have two apprentices in their second and third year and have fortunately also been able to find a new apprentice for the autumn,” says Klaus Wießler happily. That alone is not enough. As part of the “Off to the South” campaign, the company is promoting itself in injection moulding regions such as East Westphalia and the Ruhr area. “We live here in the beautiful border triangle, in the direct neighbourhood of Switzerland, Alsace, the Lake Constance region and also Austria. The region is attractive. And our speciality cuisine attracts many a technician or skilled worker. We have already been able to attract young people to us,” reports the operations manager.

But the Baden team’s ideas are not yet exhausted. They have initiated an additional further training concept within the company. “We call it a specialist career at Jakob & Partner. The target group is our workers with technical understanding. They can make it to fitter within three years,” says Sandra Jakob-Wießler. To this end, the company has divided the training programme into six stages with theoretical and practical components, including training at suppliers. “Of course, we guide our employees closely. As in a traditional training programme, they write a daily log, which we discuss. Whether they complete the six levels in the three years is of secondary importance. Anyone who needs longer to take on the next level is given the time to do so, for example to learn German even better,” reports Operations Manager Wießler. Although the idea was only born three years ago, three employees have already successfully completed this further training programme. “It’s a question of mentality, the team and leadership. For us, this path is successful.”



Photo: K-PROFI

EMS-GRIVORY – Development partner for innovative polyamide solutions



EMS-GRIVORY offers the widest range of polyamides worldwide. Our high-performance polymers are well known globally under the trade names Grivory®, Grilamid® and Grilon®.

Just as varied as our polyamides are their application areas. They can be found in the automotive, electro and electronics, industry and consumer goods, optics, medicine and packaging sectors.

We provide a comprehensive package of high-performance and high-quality products as well as excellent advisory services from sales and development. Please contact us!

EMS production has been CO₂ neutral worldwide since 2021.

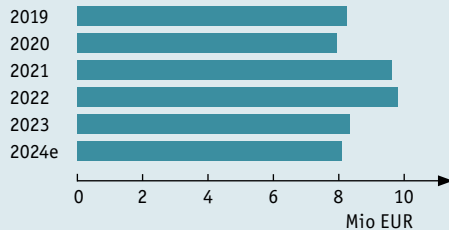
Your development partner for innovative solutions

EMS-GRIVORY, Via Innovativa 1, 7013 Domat/Ems, Switzerland
Tel. +41 81 632 78 88
www.emsgrivory.com, welcome@emsgrivory.com

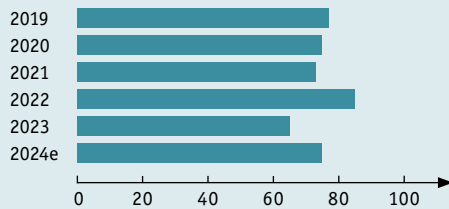
EMS
EMS-GRIVORY



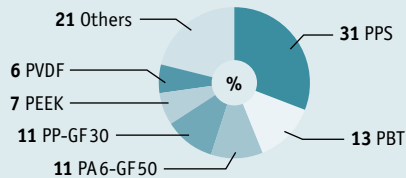
Turnover



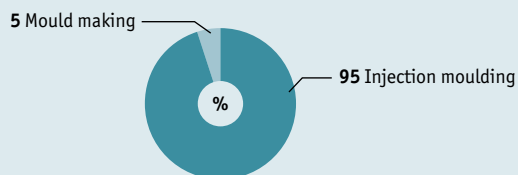
Employees



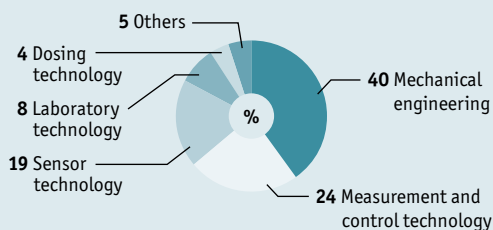
Processed plastics



Portfolio



Customer industries



Source: J. P. Jakob & Partner GmbH; Illustration: K-PROFI

Partial automation for small and medium-sized series

Jakob & Partner currently employs 75 people. "We work with a relatively large number of workers because full automation is not worthwhile due to the small quantities – for example, for inserts that have to be fed in by hand or for subsequent steps such as deburring, checking and leak testing," says the Managing Director. Order batch sizes start at 250 or 500 pieces, medium series range up to 50,000 pieces. Despite this, the company has been able to implement increasingly semi-automated processes for two years. "Of course, this is only possible with these quantities if we carry out the automation, including the complete control technology, ourselves. We design and build the systems in such a way that we can quickly convert them to a new product. We now buy all Arburg injection moulding machines including Multilift handling, as this is the interface where we start with our own automation," explains the plant manager. Deburring is one of the work steps that the company carries out largely automatically. Workers are only occasionally required to pierce holes, for example. Components for pump technology in particular must be absolutely burr-free to ensure that no residue comes off and enters the media circuit. "We will continue to expand our own automation expertise so that, as a specialist, we can continue to map the variety economically," emphasises Klaus Wießler.

Klaus Wießler with a display holder for a laboratory technology housing: "Our order batch sizes start at 250 or 500 units, medium series go up to 50,000 units."



Photo: K-PROFI

The company implements flexible automation, such as deburring directly on the injection moulding machine, in-house, including control technology.

Larger quantities from the plant in Alsace

In addition to its headquarters in Heitersheim, Jakob & Partner also operates an injection moulding plant in Neuve-Église, Alsace. Founder Hanspeter Jakob put out feelers to neighbouring France early on at the request of a customer at the time, founding Jakob Plastic France (JPF) in 1995 and steadily expanding it. Today, the plant serves as an extended workbench with 24 injection moulding machines, some of which are fully automated, including 2K and 3K systems. With similar structures to those in Heitersheim and its own mould construction. The Alsatian site focuses on two- and three-component injection moulding, insert and overmoulding applications, assembly activities in the clean room and the production of larger series of 70,000 units and more, including disposable tubes



Photo: K-PROFI

for laboratory technology. “We can juggle the capacities at both sites flexibly, both in terms of injection moulding machines and personnel. The site in Alsace is an hour’s drive away. Many customers appreciate

this back-up option in terms of risk management. Production relocations in the event of a power failure or fire could be realised immediately,” says Operations Manager Klaus Wießler, explaining the advantage.

NEXT GEN

**HIGH-PRESSURE METERING
REINTERPRETED AND REVISED
FROM THE GROUND UP**



Hennecke
Polyurethane Technology



**BLUE INTELLIGENCE
TECHNOLOGY**



**HX PUMP
SERIES**



**MT-A & MT-E
MIXHEADS**



**FIXJET AND
FLEXJET SL
INJECTORS**



**FOAMATIC CONTROL PLATFORM
WITH FOAMATIC**



**WORLD'S FIRST METERING
MACHINE CONFIGURATOR:**

www.hennecke.com/configurator



Family business in the second generation

On the other hand, Sandra Jakob-Wießler and her husband Klaus Wießler are not considering relocating to Eastern Europe or similar, as other companies are publicly debating. “Of course we keep an eye on profitability. We compensate for rising labour costs by automating production, among other things. We are helping to strengthen Germany as a business location,” says the Managing Director, formulating her main argument. Klaus Wießler adds: “We are a family-run company that cares deeply about the region, the location and the close relationship with our customers. We know our employees and their families. That in itself is a strong argument for us. Trust, appreciation, respect – we live by these values. Signalling an exodus would be fatal. Nobody would understand that, including us as entrepreneurs.”

Sandra Jakob-Wießler joined the company 20 years ago, initially worked in various departments and has been the sole Managing Director since 2016. “My father is still a partner and supports us as a technical advisor. He has retired from other areas. This long transition with his knowledge is very valuable.” Since 2010, the company has grown steadily, from 20 or 30 employees to 75 today, says the entrepreneur: “What my father used to be able to oversee well has become so big that we have installed a second management level in

Pump technology components must be absolutely burr-free. Workers are only occasionally needed at the injection moulding machine to pierce holes, for example.



Photo: K-PROFI

recent years.” Her husband Klaus Wießler adds: “We were lucky that we were able to create the new structures in part with long-standing and highly skilled employees. We are now very well positioned with a young team of internal and external managers.”

Foundation for the future in place

The new structures have “laid the foundations for the future”, says the Operations Manager. Step by step, the goals are now being realised. This includes further streamlining the processes. “This has always been an important topic for us. In future, we want to go even deeper with our own lean officer, because we see great potential here,” reports Sandra Jakob-Wießler. Conserving resources and energy efficiency are permanent key tasks. The compressed air system was recently modernised with new compressors and pipes. Photovoltaics have been expanded to such an extent that they cover around a tenth of the electricity requirements. In general, Jakob & Partner is supplied with “green” electricity. The energy-intensive material drying process was equipped with a time control system. “And then there are lots of little things that are often underestimated but have a big impact overall. We sensitise our employees accordingly, even at the risk of being seen as bean counters,” says Klaus Wießler.

The company has taken its first steps towards digitalisation with the Arburg host computer system, among other things. “The networking and connection of other departments will of course continue,” says the Managing Director. Klaus Wießler adds: “Industry 4.0 is absolutely the right way to go, and everyone has to be on board. It is important that we don’t overburden the people who have to implement and operate this. I think the timeline is too short in some cases.”

How specifically do the two managers at Jakob & Partner see the future? “The frequency and speed with which we have had to deal with crises over the past four years is an incredible challenge. Whether it’s the coronavirus pandemic or current geopolitical conflicts. We have to constantly react and find solutions. We therefore don’t have

Twelve workstations are used for assembly work, leak and flow tests, ultrasonic welding and other downstream steps.



Photo: K-PROFI



Photo: K-PROFI

Before being used in small-volume dryers on the injection moulding machine, the high-performance materials are pre-dried in small containers in multi-chamber dryers for several hours.

Ready to go without waiting: The hygroscopic granulate is pre-dried before it enters the small batch dryers on the machine.

a vision for the next 20 years, but we do have certain ideas for the next five years,” says the Operations Manager. “We are continuing on our path towards becoming a system supplier, expanding automation and aiming for moderate growth. Above all, we are working consistently to help shape the upcoming technological leaps,” emphasises the Managing Director. 

www.jakob-partner.de



Photo: K-PROFI



erema.com/thenewera

THE NEW ERA OF RECYCLING

Odour optimised, energy efficient, recyclable. And for specific applications: super clean and food contact compliant. Recycled pellets of the future can do more. Get more out of your post consumer material flow with innovative EREMA technologies featuring digital assistance systems. More quality, more productivity. For a better end product. Take the new energy saving dual filtration solution INTAREMA® TVEplus® DuaFil® Compact, for example, as well as proven ReFresh® anti odour technology and the smart predictive maintenance tool Predict:On. **Enter this future right now with EREMA. Enter the new era of recycling.**

VISIT US AT:
FAKUMA | Germany, Friedrichshafen
October 15–19, 2024
Hall A6, Booth A6-6314

“One size fits all” is long gone

How Dr Martin Bussmann, biopolymers expert, assesses the bioplastics market situation



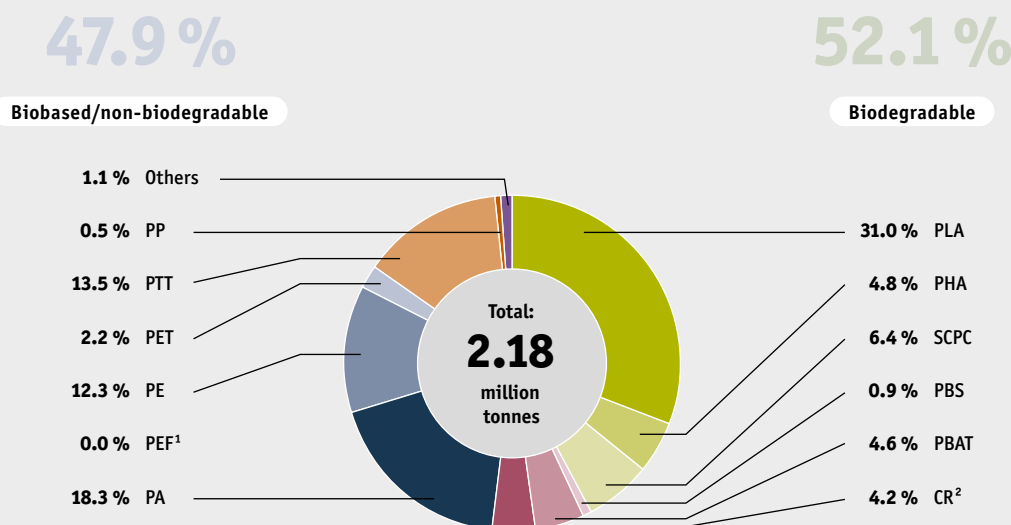
Dr Martin Bussmann has many years of experience in bioplastics, including work at BASF and Neste.

Photo: Bussmann

Bioplastics are nothing new – on the contrary: bioplastics are the earliest mass-produced plastics. After all, the Hyatt brothers opened the first factory for the production of celluloid, a thermoplastic material based on cellulose, back in 1860. Nevertheless, bioplastics, a class of materials that today includes far more than plastics made from natural raw materials, have not really caught on to this day. In the last 15 years in particular, bioplastics have been promised enormous growth potential, but this has not yet been materialised. K-PROFI spoke exclusively to biopolymer expert Dr Martin Bussmann about this.

Dr Martin Bussmann has been involved with basic chemicals from renewable sources for a long time due to his many years of work in the field of bioplastics at BASF and at Neste, a leading manufacturer of sustainable fuels and oils as well as renewable material flows for the chemical and plastics industries. He recently gave the presentation “Plastics based on renewable raw materials – a universal problem solver?” at the 32nd International Colloquium on Plastics Technology organised by the Institute for Plastics Processing in Aachen.

Global production capacities of bioplastics in 2023 by material type



1) PEF is currently in development and predicted to be available at commercial scale in 2024

2) Regenerated cellulose films

K-PROFI: How do you explain the fact that the growth forecasts for bioplastics have been so high for years, but have not yet been realised?

Dr Martin Bussmann: Against the background of ecological discussions, the demand for bioplastics should be growing much faster than it is, that is correct. Initially, depending on the type of plastic, changes in property profiles and regulations hindered their increased use.

To explain this in more detail, I will initially only refer to bioplastics, which are made from renewable raw materials but do not differ in their chemical structure from plastics made from fossil raw materials. The so-called drop-in solutions are just as good or bad as conventional plastics in the use and end-of-life phase. However, their production reduces CO₂ emissions. In times when every company has to reduce its CO₂ footprint, they are very interesting and therefore in high demand.

Are bioplastics made from 100 per cent renewable raw materials?

In Germany, any plastic that is made from more than 50 per cent renewable sources is referred to as a biopolymer. A distinction is made between two categories – those that have a measurable proportion of bio-based plastics and so-called bio-attributed plastics. The latter are assigned a certain proportion of biopolymers according to the mass balance method and this is also certified. Prominent examples of products with bio-attributed plastics can be found at dummy manufacturer Mam from Austria, life science expert Eppendorf and Tchibo's new Qbo coffee capsule system. The latter company calls its product the first climate-neutral capsule system. The environmental impact was offset together with partner myclimate and its climate protection projects.

Don't such projects have a slight aftertaste?

No, they don't. In view of the common goal of reducing CO₂ but having ideal products for the use phase, I believe that certificate trading is a good alternative. The mass balance processes are certified by independent institutes such as TÜV Austria and DIN Certco and will therefore also play a greater role in mechanical recycling processes in the future.

How do you rate the biodegradable plastics material group?

To put it bluntly: A pig cannot be a giraffe and a biodegradable plastic cannot be a material that has the same property profile as a conventional plastic. As a rule, the types differ significantly in terms of density, shrinkage and ultimately price. In short, biodegradable plastics cannot replace injection-moulded types for the production of toys or packaging as a drop-in. Added to this is the sometimes confusing and dishonest discussion about degradation mechanisms.

We need to make a clear distinction between home-compostable, industrially compostable, soil-degradable and marine-degradable plastics. We should also avoid types that decompose, but only into the smallest particles. Then we are talking about microplastics, which cannot be desirable either.

So we shouldn't use biodegradable plastics?

No, I wouldn't say that either. There are applications in which biodegradable plastics make sense. Good examples are agricultural



battenfeld-cincinnati
a Davis-Standard Company

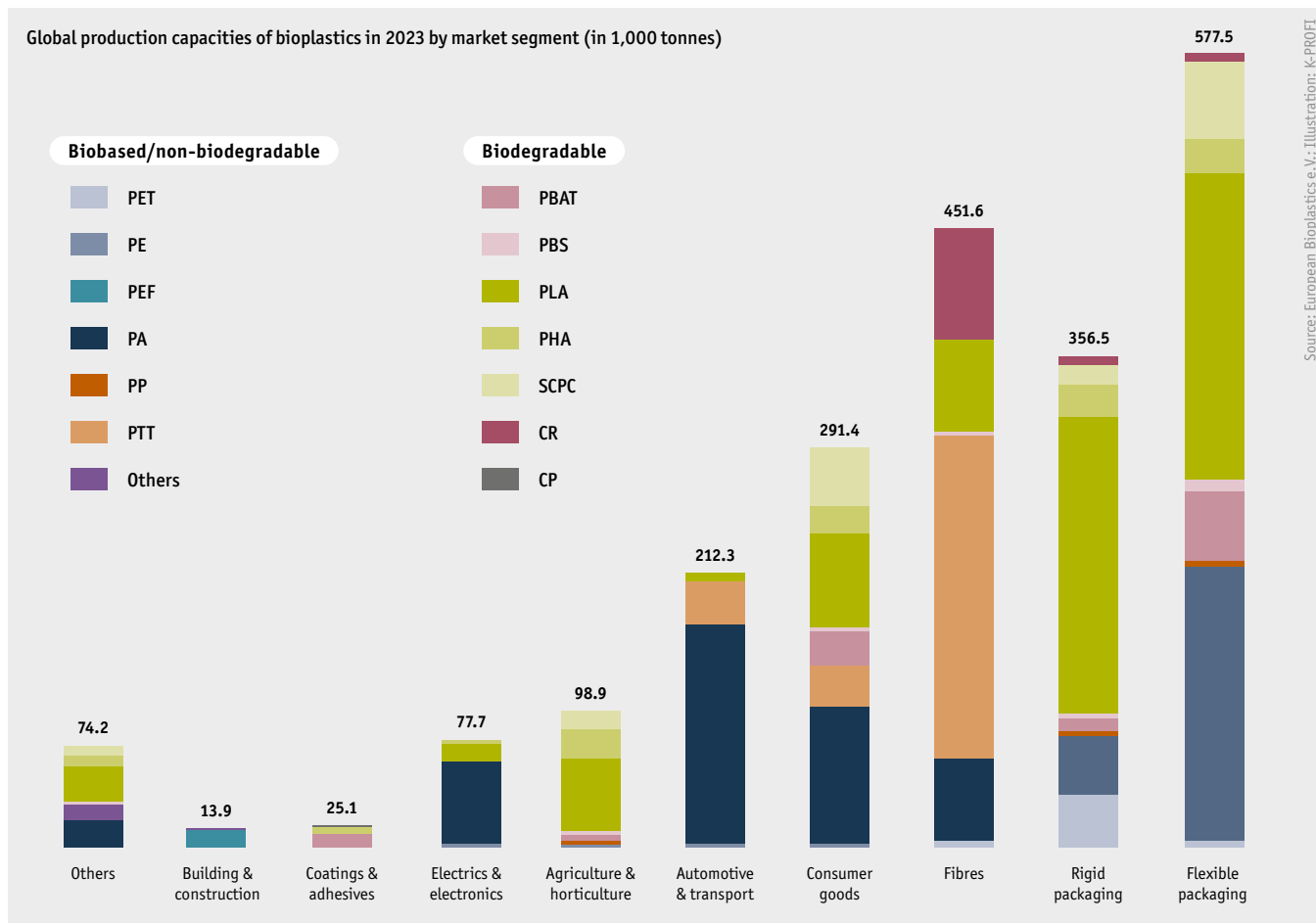
Solutions for circular economy –
Process engineering for efficient plastics extrusion of tomorrow.

PO Pipe Extrusion – 2.7 m Line

- Die head helix II 2800 with optimelt system
- Extruder solEX NG 120-40 up to 2500 kg/h
- Newly designed vacuum and cooling tanks
- Low energy consumption
- Processing of recycled material
- Highest specific output

www.battenfeld-cincinnati.com

Global production capacities of bioplastics in 2023 by market segment (in 1,000 tonnes)



films, tea bags and organic waste bags. There are already very well-known and functioning examples. See fruit and vegetable bags in Italy, which had to be biodegradable from one day to the next and all conventional plastic bags were banned. In addition, users are required to use the “shopping bag” for the clean disposal of household organic waste. Similar scenarios exist in France and China. Germany is finding it very difficult, especially as many projects here are still failing due to the regulations.

In my opinion, the biodegradability of plastics should not be the solution to consumer misbehaviour. We still need much more education and ultimately probably also controls and penalties for incorrect behaviour. After all, plastics don’t just fly into nature on their own.

Isn’t a lot already being done to educate consumers?
I am aware of various campaigns.

That’s essentially true, but unfortunately not all campaigns make sense. For example, the “Wir für Bio” campaign is a step backwards in my opinion. It clearly campaigns against organic waste bags and in favour of paper packaging in the German organic waste bin. But the good old newspaper that many people still wrap their organic waste in is harmful to the soil and groundwater. The printing inks usually contain many toxins.

What is the solution, also in view of the fact that bioplastics are almost always in competition with food cultivation?

There is no single solution. “One size fits all” is long gone. We need clear legislation and then, as an industry as a whole, we have to weigh up very soberly which group of materials is the best for each specific application. In my opinion, all materials have their *raison d’être*: plastics made from fossil raw materials, bio-based materials, bio-attributed materials and, of course, paper, which is often postulated as the more ecological alternative.

And yes, the raw materials for bio-based plastics are often in competition with food cultivation, but here too there are solutions that are already being utilised at Neste.

What do you expect in the next ten years?

We are definitely living in very interesting times. The industry is constantly realigning itself and the balance of power is constantly shifting. I wouldn’t be surprised to see a return to plastic packaging, and I would be delighted if the battle between “plastic and paper” came to an end. Basically, I hope for sensible regulations and thus clear rules that are then implemented in reality. The Plastic Waste Directive (PPWR) and the End-of-life Vehicles Directive (ELV) are good steps in this direction. In any case, it remains exciting.

Thank you very much, Dr Bussmann.

*The questions were asked by
 K-PROFI editor Karin Regel.*

Trade Fair Calendar

Trade fairs related to plastics processing in 2024 and 2025

All information without guarantee. Short-term cancellations or postponements are possible at any time.

ColombiaPlast	Bogota, Colombia	23.09. – 27.09.2024	www.colombioplast.org
Fachpack	Nuremberg, Germany	24.09. – 26.09.2024	www.fachpack.de
Taipei Plas	Taipei, Taiwan	24.09. – 28.09.2024	www.taipeiplas.com.tw
PackPrintPlas Philippines	Manila, Philippines	10.10. – 12.10.2024	www.k-globalgate.de
Oman Plast	Muscat, Oman	15.10. – 17.10.2024	www.omanplast.net
Fakuma	Friedrichshafen, Germany	15.10. – 19.10.2024	www.fakuma-messe.de
Vietnamplas	Ho Chi Minh City, Vietnam	16.10. – 19.10.2024	www.chanchao.com.tw/vietnamplas
Compamed	Dusseldorf, Germany	11.11. – 14.11.2024	www.compamed.de
SPS	Nuremberg, Germany	12.11. – 14.11.2024	sps.mesago.de
Shanghai World of Packaging	Shanghai, China	18.11. – 20.11.2024	www.swop-online.com/en
Formnext	Frankfurt/Main, Germany	19.11. – 21.11.2024	www.formnext.de
Plastics and Rubber Indonesia	Jakarta, Indonesia	20.11. – 23.11.2024	www.plasticsandrubberindonesia.com
PlastEurasia	Istanbul, Turkey	04.12. – 07.12.2024	www.plasteurasia.com

ArabPlast	Dubai, UAE	07.01. – 09.01.2025	www.arabplast.info
Afroplast	Cairo, Egypt	16.01. – 19.01.2025	www.afroplast.com
Plast Alger	Algier, Algeria	24.02. – 26.02.2025	www.plastalger.com
JEC World	Paris, France	04.03. – 06.03.2025	www.jec-world.events
MECSPE	Bologna, Italy	05.03. – 07.03.2025	www.mecspe.com
ICE Europe	Munich, Germany	11.03. – 13.03.2025	www.ice-x.com/europe
Plast Imagen	Mexico City, Mexico	11.03. – 14.03.2025	www.plastimagen.com.mx/en
Circular Valley Convention	Dusseldorf, Germany	12.03. – 13.03.2025	www.cvc-duesseldorf.com
Plastics Technology Expo	Rosemont IL/USA	18.03. – 20.03.2025	www.plasticstechnologyexpo.com
Plastics & Rubber Vietnam	Ho Chi Minh City, Vietnam	18.03. – 20.03.2025	www.plasticsvietnam.com
Plastico Brasil	Sao Paulo, Brasil	24.03. – 28.03.2025	www.plasticobrasil.com.br
Hannover Messe	Hanover, Germany	31.03. – 04.04.2025	www.hannovermesse.com
Plastics Recycling Show	Amsterdam, The Netherlands	01.04. – 02.04.2025	www.prseventeuropa.com
Plastics Live	Coventry, UK	02.04. – 03.04.2025	www.plasticlive.co.uk
Chinaplas	Shenzhen, China	15.04. – 18.04.2025	www.chinaplasonline.com
Control	Stuttgart, Germany	06.05. – 09.05.2025	www.control-messe.de
Moulding Expo	Stuttgart, Germany	06.05. – 09.05.2025	www.moulding-expo.com
Plasttechnik Nordic	Malmö, Sweden	07.05. – 08.05.2025	www.plasttechniknordic.com
Cirplex	Klagenfurt, Austria	13.05. – 15.05.2025	www.kaerntnermessen.at
KPA	Bad Salzflun, Germany	13.05. – 15.05.2025	www.kpa-messe.de
Kuteno	Bad Salzflun, Germany	13.05. – 15.05.2025	www.kuteno.de
Compounding World Expo	Mumbai, India	14.05. – 15.05.2025	www.compoundingexpoindia.com
Plastics & Rubber Thailand	Bangkok, Thailand	14.05. – 17.05.2025	www.plasticsrubberthailand.com
Plastpol	Kielce, Poland	20.05. – 23.05.2025	www.targikielce.pl/en/plastpol

Open at the front, open at the back – simply a pipe

How Egeplast has responded to the booming fibre optic expansion in Europe and is equipped for the future



Managing Director Torsten Ratzmann is proud of the two awards "Factory of the Year for Outstanding Series Production" and MX Award in the category "Best SME and Customer Orientation".

Dr Tobias Hallmann and his team have put their heart and soul into creating a state-of-the-art plant for glass fibre protection tubes in Greven that is second to none.

By no means! "There are no simple products," says Torsten Ratzmann, Managing Director Operations and Innovation at Egeplast International GmbH, based in Greven. After all, the motto today is to realise intelligent infrastructures with plastic pipes. The aim is to select the right pipe system not only for every application "gas, water, waste water, electricity, telecommunications, industry", but also for every user and for every country-specific standardisation. Then there are the exotics: Pipe systems for aquaculture, feeding systems, mining or as cooling pipes for car charging stations. Expertise is always required to manufacture customised products quickly and to a high standard. Reason enough for Egeplast to build the "egeGigaFab", a new, ultra-modern hall for additional extrusion lines. During an on-site meeting with K-PROFI, the Managing Director and Dr Tobias Hallmann, Head of Global Industrial Engineering, explained the developments that turn supposedly simple pipes into problem solvers.

Text: Dipl.-Ing. (FH) Karin Regel, Editor K-PROFI

"Harmonisation within the EU would make many things easier for us pipe manufacturers," says Torsten Ratzmann. Whether it's the colour, a colour strip, the wall thicknesses of pipes or their pressure classes, each country has its own country-specific standards and regulations, so that pipe manufacturers like Egeplast not only have to master an enormously wide range of products in production, but also have to keep them in stock. NOS – never out of stock – is a top priority for him. "For us, it's all about speed. With intelligent products, our customers can save time

and reduce their construction costs even further. The time factor plays a major role here," explains the Managing Director.

In Greven, 380 employees ensure that 50,000 tonnes of PE are turned into tubes, pipes and large-diameter pipes with diameters between 7 and 1,600 mm on over 30 extrusion lines every year. Almost 3,000 km of pipes leave the factory premises every month, 60 % of which go to Germany and 40 % to neighbouring European countries and a small proportion to the Far East. "For example,

we supplied a large sea pipe for Monaco and manufactured the pipes for the spaceport in French Guyana," says Torsten Ratzmann, naming more distant destinations for "his" pipe products.

Water must be protected

Many examples show just how important high-performance, i.e. sufficiently dimensioned and tight pipework systems are. Water often plays a major role in this. Water in the pipe and outside the pipe. Typical applications include fresh water and waste water systems that need to be renewed in municipalities, built in new neighbourhoods and created in previously less developed regions around the world. "We develop our pipes in such a way that they can be laid quickly and easily – regardless of the laying technique used – and are also easy to connect and maintain via the corresponding manholes," explains Torsten Ratzmann. In addition to the extrusion lines from Battenfeld-Cincinnati and KraussMaffei for pipe production, Egeplast also operates several bending and forming machines at the site, which are used to produce fittings for complete systems.

“Water is a valuable commodity that must be protected from leaks and contamination,” says the Managing Director. Last year, for example, Radiotelevisione Italiana reported that Italy was experiencing ever greater water losses due to leaking pipes, making the country increasingly vulnerable to periods of drought. 42 % of the water transported by the outdated systems no longer reaches the consumer. “Preventing leaks is one thing, finding them is another,” Torsten Ratzmann knows from practical experience. Egeplast therefore offers water pipes not only with a protective jacket layer, but also with a conductive layer. This means that a simple voltage measurement can be used to narrow down quite precisely between which measuring points the leakage needs to be located and repaired.

Pipes last 50 years

Protective jacket layers that ensure the tightness of the pipe are a must in order to guarantee the cleanliness of fresh water. There must be no contamination from outside. “If, for example, flooding occurs – as happened recently in Saarland and in the Ahr valley – the water supply must be guaranteed.” Conversely, the environment must be reliably protected from contamination from the pipe, for example in the case of pipelines in chemical parks. “We ensure that pipes can remain in the ground safely and leak-free for at least 50 years,” says the Managing Director, describing the quality of the pipes. “We want water of drinking water quality to be and remain a matter of course for all consumers, and not just in Germany. That’s why we are always delighted when local authorities, waterworks or planning offices involve us in new projects at an early stage so that we can contribute our expertise to the full extent.”

Fibre optic expansion is booming in Europe

Egeplast can also contribute its expertise to the expansion of the fibre optic network in Germany and Europe. Pipes for fibre optic cables are something special: they consist of several small pipes in different colours and diameters, depending on the network operator and country, which are combined into a pipe bundle and coated in the next production step. Glass fibres are blown into the pipe bundle, which contains up to 25 individual pipes. “The glass fibres must be able to



Photo: K-PROFI

Dr Tobias Hallmann (left) and Torsten Ratzmann show the different pipe dimensions and laying methods. In this case, the PO conduit for power cables with a diameter of 110 mm is wound onto a giant drum.

be blown several hundred metres into the tubes, which is why the tubes must be particularly smooth and circular,” says Dr Tobias Hallmann, explaining the quality requirements for the so-called microducts – the tubes that must protect the glass fibres for at least 50 years.

Fibre optic technology is regarded as the technology of the future for digital data transmission and, according to experts, will be expanded worldwide in the coming years. While in countries such as South Korea, Japan, Iceland and Spain, the proportion of fibre optic connections in stationary broadband connections is very high at over 80 %, some countries, including Germany, Austria, Belgium and other European countries, are lagging far behind. “A lot will be built here in the coming years,” Torsten Ratzmann and Tobias Hallmann are certain. Egeplast is prepared and is currently producing the aforementioned pipes for the growth market on various extrusion lines that were already in place and have been relocated to the new hall. New acquisitions are also planned in the long term, as the new hall still has sufficient space available.

Every month, around 3,000 km of pipes leave the factory premises in Greven, either cut to length and stacked or coiled, depending on the pipe dimensions and customer requirements.



Photo: Egeplast

Internal raw material silos have the advantage of constant temperatures, which makes the extrusion process more energy-efficient. Egeplast has therefore also opted for this solution in the new hall.



Photo: Egeplast



Photo: K-PROFI

Each pipe line in the new hall is up to 100 metres long. The long cooling lengths ensure energy efficiency and pipe quality.

Nothing off the peg

The project manager responsible for the construction of the new hall was and is Dr Tobias Hallmann, who, together with his team and a great deal of passion, brought in “all the experience we already had in the company”. The result is one of the most modern pipe factories in the whole of Europe, which also represents a milestone in the history of the family business, as it is the largest investment in over 116 years of company history. “The expansion of the fibre optic network is booming. We already supply many network operators and want to expand the business further,” says Tobias Hallmann, explaining the main reason for the new building.

Production in the new hall begins – as always – with granulate silos, in this case 24 silos with a capacity of 26 tonnes each. “We deliberately opted for in-house silos again. The granulate is stored here all year round under constant conditions,” explains Dr Tobias Hallmann. In winter, the silo room is heated with waste heat from the production hall so that the granulate is always fed to the extruders at a constant temperature – an energy-efficient solution.

Special coupling station solution: Motan realised a fully automated and quietly operating coupling station for the new hall, via which the PE raw materials are transported from the silos to the extruders.

Before the granulate arrives at the extruder, it passes through the fully automated coupling station, which was realised by Motan and is specially adapted to the requirements. “We didn’t buy anything off the peg, but customised everything to our specific requirements. This also means that we didn’t buy complete solutions, but components that we connected with our own interfaces,” reports Tobias Hallmann, not without pride. The room for the vacuum conveying lines is soundproofed to minimise the noise level



Photo: K-PROFI

in production. The same applies to the water-cooled motors used, which produce little noise and dust and therefore also ensure good working conditions for employees.

Other special features of the new hall are the lengths of the extrusion lines. “By cooling the pipes slowly, we ensure low energy and water consumption on the one hand and high pipe quality on the other,” explains Tobias Hallmann. The microducts produced are not coiled, but deposited in a special way and transported via a logistics system either to a storage location or directly to the next step, where several tubes are brought together to form the desired coated glass fibre protection tube. “With our new egeGigaFab, we are roughly doubling our previous production output for glass fibre protection tubes.” Of course, the company also remembered that the expansion of the fibre optic network is a finite process. Dr Hallmann adds: “If fewer fibre optic ducts are needed in around ten years’ time, then we can just as easily produce other pipes here, and we have taken these considerations into account in our planning.”

Sustainability in pipe production

The fact that future-orientation and safeguarding the future are a matter of course for Egeplast is something the company proves time and again. “As batch sizes are getting smaller and smaller, even for pipes,

production has to be very flexible,” continues Torsten Ratzmann. This is why the processor developed the Quick Switch automatic pipe dimension change system back in 1998, which is still in use on many lines today. “Today, we also use the Fast Dimension Change (FDC) system from Battenfeld-Cincinnati.” The pipe dimension can be changed at the touch of a button during ongoing production, so that the line does not have to be shut down and only a short cone piece of recyclable scrap is produced during the changeover. In addition to flexibility, the changeover systems contribute to sustainability in production. Current pipe systems for 525 kV power cables or multilayer pipes that can withstand up to 30 bar and are therefore suitable for transporting hydrogen, the gas of the future, are also already part of Egeplast’s product range. “We are well equipped in every aspect.”

Proud of two awards

Egeplast is also investing in the future with and for its employees. “We have a training quota of 10 % and are happy to welcome every trainee who wants to stay with us after completing their apprenticeship,” says

Microduct bundles can – as here – consist of seven small tubes, but also of up to 25 individual tubes, depending on what the network operator requires.



Photo: K-PROFI

Torsten Ratzmann. This is because the shortage of skilled labour is also clearly noticeable in Greven, with weekend staffing in particular sometimes posing a challenge in production, which runs 24/7. “We involve our employees in the change processes and always offer them the opportunity to contribute their ideas in addition to qualification and further training opportunities.”

Obviously with success. Egeplast has been honoured with two awards in recent years: in 2022, the pipe manufacturer received

the “Factory of the Year for Outstanding Series Production” award and in 2023 the MX Award in the “Best SME and Customer Orientation” category. The internal value creation programme ImPROVe, which includes disciplined adherence to quality processes and commitment to further training, played a major role in the awards. “This primarily benefits our customers, but also the region and the people in the region,” the Managing Director is convinced. 

www.egeplast.de

SIKORA
Technology To Perfection

INLINE INSPECTION, SORTING & ANALYSIS OF PLASTIC PELLETS



PURITY SCANNER ADVANCED

Unique in the marketplace

- Down to 25 μm – detects the smallest contaminants
- Combination of optics and X-ray – spots optical impurities & metal contamination
- Stainless steel vibration chute – operates wear-resistant for clean material transport
- Modular design – up to 3 optical cameras



Polymer Testing World Expo 2024
Brussels, Sept. 11-12, Booth T760

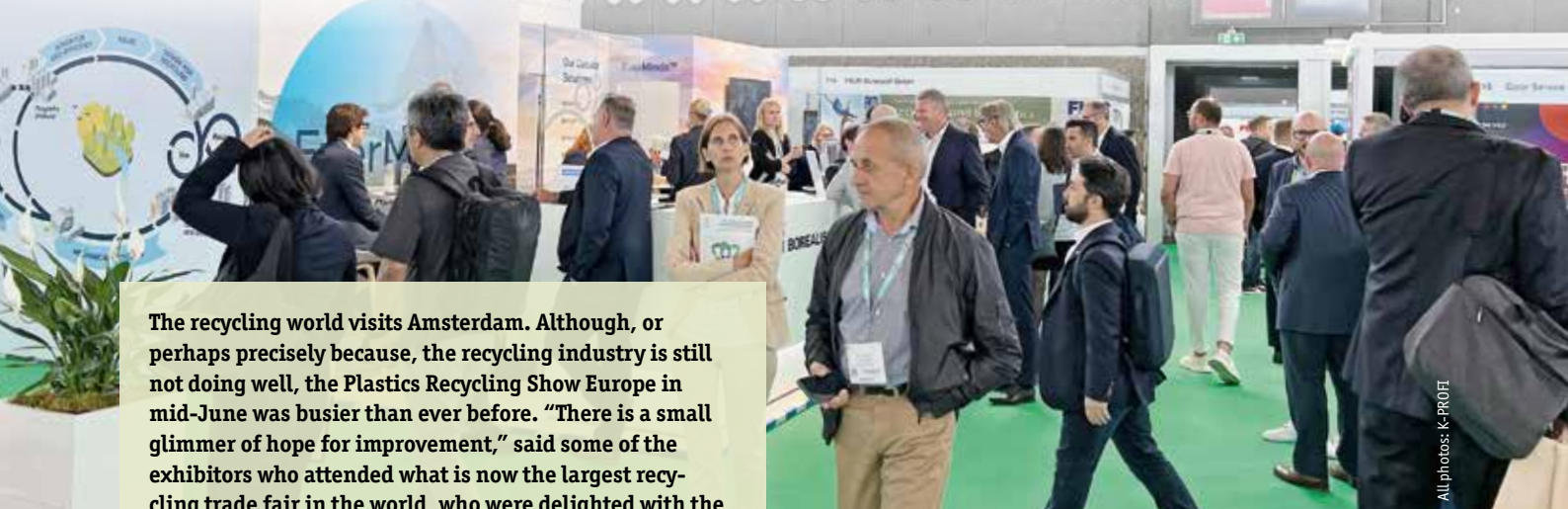


www.sikora.net/purifyscanner

A small spark of hope

Recycling trade fair PRS Europe in Amsterdam breaks exhibitor and visitor records despite poor industry spirits

The Borealis Circular Cascade



All photos: K-PROFI

The recycling world visits Amsterdam. Although, or perhaps precisely because, the recycling industry is still not doing well, the Plastics Recycling Show Europe in mid-June was busier than ever before. “There is a small glimmer of hope for improvement,” said some of the exhibitors who attended what is now the largest recycling trade fair in the world, who were delighted with the enormous popularity and the focussed visitors. After all, the growth of the trade fair impressively demonstrates the importance of the topic: it won’t work without plastics recycling and it won’t work without cooperation!

Text: Dipl.-Ing. (FH) Karin Regel, Editor K-PROFI

Organiser Crain Communications certainly had more than a little bit of hope for a successful new trade fair when it launched the Plastics Recycling Show in 2016. However, the start, still in Brussels at the time, was bumpy. Two suicide bombings at Brussels-Zaventem Airport and in the centre of Brussels caused the postponement of the PRS, which had just been launched. In 2017, the trade fair moved to Amsterdam, where, with the exception of the break due to coronavirus, it takes place annually and is growing steadily. While only half a hall was needed to accommodate the number of exhibitors that came to Amsterdam in 2017, Crain’s needed four halls this year to provide enough space for the 480 exhibitors, including 155 new exhibitors. According to the organiser, so many exhibitors have already booked for next year and the ninth edition of the trade fair that the PRS will move to the “showcase halls” 1 to 5 of the RAI exhibition centre.

More than 10,000 visitors for the first time

More than 70 renowned speakers gave their presentations in the conference centre, where the awards ceremony, which was launched in 2018, also took place. Prizes are awarded annually in six categories for innovative products, machines and technologies. An ambassador for the recycling industry is also honoured – this year two of them: Erica Canaia, CEO of Italian company Fimic, and Vicente Olmos Jorge, CEO and founder of Spanish company Sintac Recycling. Of course, the many exhibitors also attracted many visitors. With 11,273 visitors, PRS 2024 broke the 10,000 mark for the first time. The spark has long since been ignited and the organiser’s hopes have been confirmed.

With 480 exhibitors and 11,273 visitors, PRS Europe in Amsterdam broke all records.

Closed-loop solutions presented

There is also finally hope again for the industry and its mature recycling technologies and materials. Although the players are still waiting for regulations within the EU that stipulate the use of recycled goods in all plastic products, there seems to be light at the end of the tunnel after the sharp slump in sales of both recycled goods due to low virgin material prices and suitable machine technologies due to the uncertain sales situation and high interest rates. After a long pause in investment, which the machine manufacturers were at least partially able to make up for with unfinished old projects, they are slowly starting to feel a revival.

Mark Hellweg, who has been exhibiting at PRS with his company Hellweg Maschinenbau from Roetgen since the very beginning, comments: “The trade fair is unique. We receive concrete enquiries for specific recycling tasks. There are experts here.” With what he describes as his “willingness to touch hot potatoes”, many interesting projects are realised. A few years ago at the trade fair, Mark Hellweg received an order from Teijin Carbon Europe to develop a granulator for aramid fibres from bulletproof vests. The granulator is now being used successfully in everyday production. “Customised solutions are our business, which is why we are satisfied overall despite the weakening market situation.”

Ahmet Faruk Cavusoglu, Business Development Manager at MTM Plastik Recycling & Packaging from Gaziantep in Turkey, also praises the special spirit of the trade fair: “Everyone here speaks the same language, and everyone has the same interest in making recycled products a matter of course.” His company produces PE and PP regranalates as well as end products such as bags and pouches from these and exports around 50 % to neighbouring European countries. HSR Verpakkingen from the Netherlands is presenting a closed recycling loop for

IBCs, drums, canisters, buckets and strapping bands made from polyolefins in Amsterdam. “We have already realised closed-loop solutions with around ten customers, and there is a lot of interest here,” explains Commercial Manager Danny van Roekel. After all, large companies in particular can secure their feedstock in this way.

Award for chair made from recycled materials

While post-industrial material is used in this case, Hoffmann + Voss is involved in a closed loop with post-consumer material – a very special product: sterilisation wipes made of PP are collected after use in hospitals, processed by a processor into clean agglomerates and then processed by Hoffmann + Voss into an injection mouldable compound, which is then used for the production of chair seats and backrests. Blue Finn is the name of the blue chair from Dutch furniture manufacturer Vepa, which consists of at least 85 % of this recycled material and is 100 % recyclable. The chair also impressed the jury at the PRS and was awarded the “Household & Leisure Product of the Year” prize in Amsterdam.

Quality standards are rising for recomponds

“Challenges are fun”, Frauke Hoffmann, Sales and Marketing Manager at Hoffmann + Voss, reports on increasingly complicated enquiries about recycling options, particularly from the non-automotive sector, which the compounder can meet with customised formulations. More and more manufacturers want to use recycled materials for increasingly sophisticated products. This increases the demands placed on recycled pellets, as



Mark Hellweg reported on very specific enquiries at the trade fair, which resulted in some orders for special applications, such as the shredding of aramid fibres from bulletproof vests.

many exhibitors at PRS confirmed, including Kim Meulenbroecks, Innovation Manager at Dutch processor Renewi. “We rely on modern technologies, including NIR sorters from Tomra, to meet the high quality requirements of our customers for PP and PE regrannulates.” And Grazia Aruta, Account Manager Chemical at Milliken Europe, says that the company “uses reactive additives to produce injection mouldable PP compounds to enable a better and faster process while improving the mechanical properties of the end product.”

Melt filters for recycling tasks

Machine manufacturers are also prepared for the demand for higher-quality recycled pellets and recomponds. For example, Ettlinger, a member of the Swiss Maag Group, offers the continuous Eco melt filter, which is particularly suitable for PET and PA

Bywyd receives the “Product of the Year” award in the household and leisure category for the blue chair made from used PP sterile cloths. Karen Laird from Crain Communications, Jan Willem Slijkkoord and Robert de Bruijn from Bywyd and Antonino Furfari, Managing Director of PRS Europe (from left to right).



EVOSYS
LASERSOLUTIONS

Fakuma 2024
15 - 19 October
Hall A4
Stand 4306

Laser Plastic Welding

The ideal
joining technique
for plastic parts!



Evosys Laser GmbH, Germany
www.evosys-group.com



Cas Cornelis (left) and Danny van Roekel from HSR show a canister for which their company has set up closed recycling loops.

applications and can remove both solid and elastomeric contaminants. The melt filters from the Italian company Fimic are designed for polyolefins and heavily contaminated PCR goods. Regional Sales Manager Paolo Stocco explains: "In addition to the high levels of contamination that our filters can handle, their speciality is that they only require one screen. The large filtration surface allows the customer to operate at low pressure and low temperature. This avoids degradation and achieves high material quality." The new Discharge Pro control system from the Powerfil business unit in the Austrian Erema Group ensures particularly low melt losses during filtration. Business Unit Manager Robert Obermayr explains: "Thanks to the control system, our laser filter works more stably, reacts automatically to material fluctuations and thus reduces melt losses by up to 50 per cent."

Single-stage extruder for recompounds

Coperion has developed the ZSK Filco filtration compounder specifically for the recycling of PCR and other heavily contaminated polymers, which enables filtration and compounding in a single production step. Marina Matta, Team Leader Process Technology Recycling, explains: "In the new solution, the used plastic is first melted in a ZSK, homogenised and degassed, then discharged from the ZSK, passed through a filter and fed back into the same extruder. Fibres and reinforcing materials are now incorporated to produce a high-quality compound in a single system. This single-stage process also significantly reduces energy consumption



Paolo Stocco from Fimic is certain that processors can improve the quality of their recompounds with the melt filter from a single source.

compared to the existing two-stage processes." She is delighted with the keen interest from the industry, which is also reflected in a full schedule at the Coperion test centre.

It all comes down to material control

"Although our system is generally only used after the extruder, it is no less important for the quality of any plastic pellets," says Felix Wendt, Area Sales Manager at Sikora. The demand for certified pellets is becoming ever louder, which is difficult to guarantee with fluctuating incoming goods, which is unavoidable with post-consumer goods. The material quality can be checked and documented using the random sample inspection in Purity Concept V.

Marie José Wolters, Head of Sales at start-up Veridis from the Netherlands,

The next PRS Europe will take place on 1 and 2 April 2025 at the RAI exhibition and congress centre in Amsterdam.

Marie-José Wolters and the Veridis team present their Madscan system in Amsterdam, which carries out a random sample check of materials via DSC analysis.



Robert Obermayr from Powerfil presents the Discharge Pro control system for laser filters, which is designed to halve melt losses compared to other models and received the "Recycling Machinery Innovation of the Year" award at the ceremony.

is pursuing the same interest. "We have developed Madscan, a DSC analysis specifically for recycling streams. Within two hours, our system measures a random sample of 50 g and provides precise information about all the types of plastic it contains, including subtypes, regardless of colour, which can also be black, or contamination." In this way, each input stream can be precisely characterised and a decision can be made as to which further processing is suitable in order to ultimately produce a high-quality regenerate. ■

www.prseventeurope.com;
www.bywyd.nl; www.coperion.com;
www.erema.at; www.fimic.it;
www.hellweg-granulators.com;
www.hoffmann-voss.de; www.hrs.nl;
www.maag.com; www.milliken.com;
www.mtmplastik.com.tr; www.renewi.nl;
www.vepa.nl; www.veridis.tech



“Characterised by digital solutions”

What customer benefits Engel brings to the future of injection moulding

“The future of injection moulding will be shaped by digital solutions,” CTO Dr Gerhard Dimmler told more than 300 participants at the opening of Engel’s first “Digital Days”. Accordingly, digitalisation is of strategic importance for the injection moulding machine manufacturer: “We are convinced that we will only succeed in generating customer benefits with a holistic approach to digitalisation.” At the specialist event at the Schwertberg and St. Valentin plants in mid-June, several international injection moulding companies reported on their experiences with the implementation of digital solutions in their production.

Text: Dipl.-Ing. Markus Liling, Editor-in-Chief K-PROFI

Dr Gerhard Dimmler named digital twins, the monitoring and control of processes and production in real time, data classification for integration into overarching optimisations and artificial intelligence (AI) as key fields of action. Despite the many internal and external digitalisation efforts, Dimmler emphasised: “We don’t want to become a software company, we want to remain a solution provider and provide the right information in the right place at the right time.” Engel now has around 20 digital products in various expansion stages, most of which can be used for all brands of injection moulding machines in the production phase.

In his presentation, Dr Johannes Kilian, Head of Process and Application Technology, focused on the benefits of digital tools in areas such as product development, injection moulding machine control and the production environment. He identified customer benefits in the four phases of the product life cycle. For example, Intercable was able to halve the time required for the initial set-up of a process by exchanging data between simulation and machine. In the sampling phase, Dallmer Drainage Technology was able to reduce the clamping forces applied to its wide range of moulds by up to 35 % with “iQ clamp control”. In series production, the “iQ weight control” tool is used, which Engel has been continuously developing for ten years and has improved weight consistency in production by 85 % at Braun, for example. During production, the “iQ process observer” visualises the process status and makes concrete suggestions for its improvement. As a pilot customer, Schöfer now uses it to find a solution to problems on the machine 30 minutes faster. In the maintenance and service phase, Engel offers the AI-based “Engel part finder” tool for spare parts management. Pilot customer Greiner Packaging reports time savings of around 50 % when identifying and ordering the right spare part.

In customer reports, Dariusz Barton from SolidPlast in Poland explained how he had used digital tools to bring transparency to injection moulding production, set up and start up faster and reduce SPC costs. Yiannis Voulzatis from BIC Violex in Greece reported on steady increases in productivity in eleven years of cooperation with Engel. With intelligent process monitoring, the company has achieved 40 % fewer rejects, a 3 % higher OEE and energy savings as a result of clamping force reductions. Piercarlo Balducci from Interroll in Switzerland focused on the benefits of intelligent systems for process optimisation as a solution to staff shortages.

At five stations in the technical centre, experts from Engel and partner companies presented further practical benefits of digital tools in sampling, production and maintenance. These included MES systems and comprehensive planning tools, the further development of the CC300 machine control system in terms of ergonomics, assistance and personalisation, paperless production with optimisation of production through data-based decisions, the opportunities and possibilities of AI in the injection moulding industry and possible efficiency increases in the service process with remote support and digital tools. 

www.engelglobal.com



At Engel’s “Digital Days”, more than 300 visitors learned about the practical benefits of digital tools in mould trials, injection moulding production and maintenance.

Photos: Engel

A look into the future of injection moulding

The solutions Wittmann is developing for digitalisation, the circular economy and energy efficiency

How can an injection moulding company with its hodgepodge of machines, robots and peripheral devices from different suppliers and control system generations be digitalised and networked from end to end? Wittmann chooses the approach of modular digital solutions. More than 1,000 visitors to the Wittmann Competence Days experienced what is already possible today and what is to come in the future over two days in Vienna in June 2024. From the automatic calculation of the product carbon footprint to AI-supported service – K-PROFI summarises some of the highlights.

Text: Dipl.-Ing. (FH) Sabine Rahner, Editor K-PROFI



Photos: K-PROFI

"Proud of what we have achieved," expressed Dr Werner Wittmann, who founded the company 48 years ago.



Michael Wittmann (left) and Rainer Weingraber reported on promising developments and positive signs on the market: "Incoming orders are picking up."

Wittmann 4.0: The centralised display of the entire production cell on a single screen eliminates the need to switch between several (peripheral) devices.



How is data stored? More precisely: Which data should be stored and communicated for which case and in which structure? This requires standards. The Asset Administration Shell (AAS) is an instrument for connecting physical industrial products with the digital world, i.e. creating a digital twin. Dr Mikula Thiem from VDMA used these connections to prepare the audience for the future world of data-driven business. Manufacturing-X, a global initiative to build industrial data ecosystems, aims to create a federated data space. This is still a dream of the future. Dr Thiem's key messages: "Digitalisation will be an important growth market in the coming years" and "There will be even more regulation in the future."

The EU wants to introduce the digital product passport as early as 2026. "This will happen and data will have to be collected," emphasises Michael Wittmann, Managing Director and co-owner of the Wittmann Group. "Data transparency will become increasingly important in the future," Andreas Schramm, Managing Director of Wittmann Battenfeld Germany, is also convinced.

Strengthening the circular economy

Another point: the EU wants to become climate-neutral by 2050. To this end, the focus is shifting to the so-called Product Carbon Footprint (PCF). Knowing the carbon footprint of individual products is a prerequisite for deriving measures to reduce greenhouse gas emissions. Wittmann enables the automatic calculation of the PCF and integrates this as a new functionality in its MES TEMI+.

The calculation is based on the energy consumption of the cell and the shot weight. Michael Wittmann knows more: "Energy only accounts for around 15 per cent of the PCF in Germany and only 5 per cent in Austria due to the electricity mix. The biggest influence is the material, its production, but also its delivery. Transport routes play a major role. This also shows how important the circular economy and the use of post-industrial recycles are." In line with this, an Ingrinder work cell demonstrated how PCF can be reduced through inline recycling of the sprue and thus the direct supply of material.

Anyone working with post-consumer recycles (PCR) can never be completely sure that the quality is right. This was the idea behind equipping the Gravimax dosing unit with near-infrared sensors. "The sensor detects the grade purity and whether it is the right material. This technology is also used in sorting systems. It is not yet economically viable for our application, but it will continue to develop. The secure supply of recycle has a future," says Michael Wittmann.

More energy efficiency

With the expansion of renewable energies, direct current grids are becoming increasingly important. Wittmann already designed the DC injection moulding technology for K 2022, which is now ready for series production. The experts have now presented the addition of temperature control units. With the Temprow plus DC, direct current generated from photovoltaics can also be used directly for mould temperature control without



Over two days, more than 1,000 visitors from 37 countries attended presentations and a machine exhibition in the event hall in Vienna.

conversion losses. How is the market acceptance of DC injection moulding technology? “Generally speaking, it’s still in its infancy. After all, this infrastructure issue is associated with investments. However, it will gain more momentum with increasing grid failures when companies realise that they need to become self-sufficient more quickly,” Rainer Weingraber, CEO Wittmann Battenfeld, is convinced.

Start up quickly and safely

Wittmann is aiming to simplify the commissioning and operation of work cells with the digital mould data sheet. Within a work cell networked with the Wittmann 4.0 Router, the complete networking of all devices opens up the opportunity for plug and produce. The injection moulding machine recognises the mould the second time it is set up and sets the optimum process parameters stored in the mould data sheet, not only on the injection moulding machine, but also on the robot and the peripheral devices involved. The networking realised within such a “Smart Work Cell” is based on the OPC UA communication protocol and Euromap standards.

24/7 helpdesk with AI

Preserving the experience of long-standing hotline employees while offering a 24/7 service that “never sleeps” – Wittmann relies on artificial intelligence and presents AIM4help, a knowledge-based expert

system for technical enquiries and troubleshooting. The AI is trained with all documentation, descriptions, technical documents, tables and error analyses that Wittmann has created over the entire history of the company. “We are currently still feeding AIM4help internally and training the module in German and English. We use OpenAI’s Large Language Model in the form of a private neural network. We get amazingly good results, for example when creating robot programmes and also when translating into other languages,” reports Michael Wittmann. Visitors were able to try out the AI-supported helpdesk live.

Wittmann also presented the future of digitalisation with a concept study on modern and intuitive interaction options with injection moulding machines and removal robots. Holoverse opens up voice and gesture control via augmented reality with the Unilog B8 injection moulding machine control system and the R9 robot control system. “We are currently testing this mixed reality application with Microsoft HoloLens glasses with selected customers,” reports Michael Wittmann.

Small, smaller, nano

Creating nanostructures with micro injection moulding – not a thing of the future, but already a reality, as could be seen in Vienna. The demo plates injection moulded during the Competence Days depicted the entire world map in relief on the size of a fingernail, with all Wittmann locations worldwide. Two aspects are crucial. “The MicroPower from Wittmann is the only micro injection moulding machine that injects a thermally homogeneous mass. It therefore achieves extremely high precision and repeatability in terms of material shrinkage,” explains Martin Ganz, CTO of NanoVoxel GmbH from Vienna. NanoVoxel is responsible for the nanostructures of the quadruple mould used. In order to be able to reproduce these exactly, point two is important: a high-precision 3D printing process, such as the one NanoVoxel uses with two-photon polymerisation (2PP). “We combine the knowledge of nanotechnology with injection moulding and have specialised in the rapid production of injection moulds,” says Ganz. NanoVoxel GmbH, founded in May 2022, is a full-service provider for industrially manufactured micro parts based on 2PP micro 3D printing technology, which works with a detail accuracy of 200 nm. ■

www.wittmann-group.com

www.nanovoxel.com

www.vdma.org

A look into the future of injection moulding with mixed reality glasses and voice activation of machine and robot actions.



NanoVoxel CTO Martin Ganz used a microscope to show the nanostructures of the relief world map injection moulded to the size of a fingernail.



Sources of supply/suppliers directory

The A to Z of the plastics and rubber industry

Air filter technology



NESTRO Lufttechnik GmbH
Paulus-Nettelnstroth-Platz
D-07619 Schkölen/Thüringen
Tel.: +49 36694 41-0
Fax: +49 36694 41-260
info@nestro.de
www.nestro.de

Certification



We certify the plastics industry
Tel.: +49 931 4104-310, Fax: -320
cert@skz.de, www.skz.de

Cleaning granules



Völpker Spezialprodukte GmbH
Fabrikstraße 1, D-39393 Völpke
www.voelpker.com

CNC machining and thermoforming technology



Biesse Deutschland GmbH
An der Leibi 10, D-89278 Nersingen
Tel.: +49 7308 96060
info@biesse.de, www.biesse.com

Coupling systems



WENZ Kunststoff GmbH & Co. KG
TALKOB® & MOULDPRO®
Tel.: +49 2351 459040
info@we-ku.de, www.we-ku-shop.de

Cutting mills



Hellweg Maschinenbau GmbH & Co. KG
Vennstrasse 10, D-52159 Roetgen
Tel.: +49 2471 4254
info@hellweg-maschinenbau.de
www.hellweg-maschinen.de



TRIA GmbH
Carl-Friedrich-Benz-Str. 1
D-47877 Willich
info@triaplastics.de
www.triaplastics.de

Dedusting



NESTRO Lufttechnik GmbH
Paulus-Nettelnstroth-Platz
D-07619 Schkölen/Thüringen
Tel.: +49 36694 41-0
Fax: +49 36694 41-260
info@nestro.de
www.nestro.de

Design, product development and simulation

Konstruktionsbüro Hein GmbH
Marschstr. 25
D-31535 Neustadt
Tel.: +49 5032 63 15 1
info@kb-hein.de
www.kb-hein.de



Dosing and mixing systems



PROCESS CONTROL GmbH
Meschinen für die Kunststoffindustrie
Industriestr. 15, D-63633 Birstein
Tel.: +49 6054 9129-0
info@processcontrol-gmbh.de

Drying and conveying technology



LABOTEK DEUTSCHLAND GmbH
Nöllenhammerweg 10-16
D-42349 Wuppertal
Tel.: +49 202 747585-0
info@labotek-de.com
www.labotek.com/de



WENZ Kunststoff GmbH & Co. KG
Tel.: +49 2351 459040
info@we-ku.de
www.we-ku.de www.we-ku-shop.de

Education and training



Professional training for plastics professionals
Tel.: +49 931 4104-164, Fax: -277
training@skz.de
www.skz.de

Engineering plastics



Wir handeln für Sie!

PRO-plast Kunststoff GmbH
Feldstr. 16 D
D-64331 Weiterstadt/Darmstadt
Tel.: +49 6151 3093-0
Fax: +49 6151 3093-111
info@pro-plast.de, www.pro-plast.com



ROMIRA GmbH
Siemensstraße 1-3, D-25421 Pinneberg
Tel.: +49 4101 706-03
info@romira.de, www.romira.de
ROMILOY® - ROTEC® - LURANYL® - ROMITRON®

Extraction technology



NESTRO Lufttechnik GmbH
Paulus-Nettelnstroth-Platz
D-07619 Schkölen/Thüringen
Tel.: +49 36694 41-0
Fax: +49 36694 41-260
info@nestro.de
www.nestro.de

Extrusion technology



Brabender GmbH & Co. KG
Kulturstr. 49-51
D-47055 Duisburg
sales@brabender.com
www.brabender.com



Coperion GmbH
Theodorstr. 10, D-70469 Stuttgart
Tel.: +49 711 897 0
info@coperion.com
www.coperion.com



Extrudex Kunststoffmaschinen GmbH
In den Waldäckern 16, D-75417 Mühlacker
Tel.: +49 7041 9625-0
Fax: +49 7041 9625-22
info@extrudex.de, www.extrudex.de



LEISTRITZ EXTRUSIONSTECHNIK GMBH
Markgrafenstr. 36-39, D-90459 Nürnberg
Tel.: +49 911 43 06 240
extruder@leistritz.com
extruders.leistritz.com

Granulate-dedusting technology



Förder- und Entstaubungslösungen

D-88285 Bodnegg
www.pelletroneurope.com



Heating and drying cabinets



Will & Hahnenstein GmbH
Bahnhofsweg 22, D-57562 Herdorf
Tel.: +49 2744 93170
info@will-hahnenstein.de
www.will-hahnenstein.de

Heating elements



ERGE Elektrowärmetechnik Franz Messer GmbH
Hersbrucker Straße 29 - 31
D-91220 Schnaittach
Tel.: +49 9153 921 0, Fax: +49 9153 921 117
verkauf@erge-elektrowaermetechnik.de
www.erge-elektrowaermetechnik.de



IHNE & TESCH ELEKTRO-WÄRMETECHNIK
Postfach 1863, D-58468 Lüdenscheid
Tel.: +49 2351 666-0, Fax: +49 2351 666-24
E-Mail: info@itlmail.de
www.elektrowaermetechnik.de



WEMA GmbH
Kalver Straße 28, D-58515 Lüdenscheid
Tel.: +49 2351 9395-0, info@wema.de
www.wema.de

Hot runner intermediate plates



A&E Produktionstechnik GmbH
Gostritzer Str. 63, D-01217 Dresden
Tel.: +49 351 8547 8330
www.a-e-produktionstechnik.de

Hot runner technology

HASCO
hot runner

Tel.: +49 2351 957-0, www.hasco.com

Infrared welding



www.cemas-germany.com

Injection moulding machines



Sumitomo (SHI) Demag
Plastics Machinery GmbH
D-90571 Schwaig
Tel.: +49 911 50 61 0
info@dpg.com
www.sumitomo-shi-demag.eu

Inspection and sorting technology



SIKORA
Technology To Perfection
PURITY SCANNER
Bruchweide 2, D-28307 Bremen
sales@sikora.net, www.sikora.net

Inspection technology



OCS Optical Control Systems GmbH
www.ocsgmbh.com

Laser welding machines



Evosys Laser GmbH
www.evsys-group.com

Lubricants



ELKALUB Hochleistungs-Schmierstoffe
D-72189 Vöhringen (Württemberg)
Tel.: +49 7454 9652 - 0
info@elkalub.com, www.elkalub.com

Lubricants/Waxes



Völpker Spezialprodukte GmbH
Fabrikstraße 1, D-39393 Völpke
www.voelpker.com

Masterbatches



Oberer Westring 3-7, D-33142 Büren
www.argus-additive.com

FBW GmbH

Forstweg 27, D-52382 Niederzier
Tel.: +49 2428 9563000
Fax: +49 2428 9563005
kontakt@fbwgmbh.de, www.fbwgmbh.de



Gabriel-Chemie GmbH
Industriestraße 1
2352 Gumpoldskirchen, Austria
Tel.: +43 2252 63630
info@gabriel-chemie.com
www.gabriel-chemie.com



Treffert GmbH & Co. KG
In der Weide 17, D-55411 Bingen am Rhein
Tel.: +49 6721 403 0
info@treffert.eu, www.treffert.eu

Material conveying systems



Werner Koch Maschinentechnik GmbH
Industriestraße 3, D-75228 Ispringen
Tel.: +49 7231 8009-0
info@koch-technik.de



WENZ Kunststoff GmbH & Co. KG
Tel.: +49 2351 459040
info@we-ku.de
www.we-ku.de www.we-ku-shop.de

Measuring, testing and control technology



Brabender GmbH & Co. KG
Kulturstr. 49-51
D-47055 Duisburg
sales@brabender.com
www.brabender.com



SIKORA
Technology To Perfection
Bruchweide 2, D-28307 Bremen
sales@sikora.net, www.sikora.net

Melt pumps



WITTE PUMPS & TECHNOLOGY GmbH
Lise-Meitner-Allee 20
D-25436 Tornesch
Tel.: +49 4120 706590
info@witte-pumps.de
www.witte-pumps.de

Moisture meters



Brabender GmbH & Co. KG
Kulturstr. 49-51
D-47055 Duisburg
sales@brabender.com
www.brabender.com

Nozzles



herzog systems ag
Feldhofstrasse 65, CH-9230 Flawil
Tel.: +41 71 394 19 69
info@herzogsystemsag.com
www.herzogsystemsag.com

Panel sizing saws incl. software



HOMAG Plattenaufteiltechnik GmbH
Holzmastr. 3
D-75365 Calw-Holzbronn
Tel.: +49 7053 69 0
info-holzbronn@homag.com
www.homag.com

Particle foaming machines



Erlenbach GmbH
Am Rödchen 1, D-56355 Lautert
info@erlenbach.de, www.erlenbach.com

Pipe and hose systems



Michel Tube Engineering GmbH
Tel.: +49 9341 848 55 - 00
www.michel-tube.de

Sources of supply/suppliers directory

The A to Z of the plastics and rubber industry

Plant engineering, assembly and maintenance



KID GmbH Anlagenbau

Assembly/conversion and relocation of granulate conveying systems and peripherals as well as their maintenance; Pipework for complete systems
Hünfelder Str. 73, D-36251 Bad Hersfeld
Tel.: +49 6621 620 630-30
info@KIDGmbH.de, www.KIDGmbH.de

Plastics machining

Grein GmbH

Service: lasering, punching, measuring
Tel.: +49 5651 99144-0
www.lets-cut-it.com/RE



Plastic profiles



COMPETENCE IN PLASTICS
CH-Bischofszell
www.k-profile.com



Polyetheretherketones

BIEGLO GmbH

D-22765 Hamburg
Tel.: +49 40 401130000
www.bieglo.com
www.peek-shop.de



Polyimides

BIEGLO GmbH

D-22765 Hamburg
Tel.: +49 40 401130000
www.bieglo.com
www.polyimide-shop.de



Polyurethane systems



CANNON Deutschland GmbH
Moselstraße 27, D-63452 Hanau
Tel.: +49 6181 50231 00
www.cannon-deutschland.de

Recycling machines



Next Generation
Recyclingmaschinen GmbH
Gewerbepark 22, A-4101 Feldkirchen
Tel.: +43 7233 70107
info@ngr-world.com, www.ngr-world.com

Recycling systems



EREMA - Engineering Recycling
Maschinen und Anlagen Ges.m.b.H.
Unterfeldstraße 3
4052 Ansfelden, Austria
Tel.: +43 732 3190 0, erema@erema.at



Herbold Meckesheim GmbH

RECYCLING TECHNOLOGY
D-74909 Meckesheim, Industriestrasse 33
Tel.: +49 6226 932-0,
Fax: +49 6226 932-495
herbold@herbold.com, www.herbold.com

Refrigeration technology



INDUSTRIEKÄLTEANLAGEN TIEFTEMPORATURTECHNIK STEUERUNGSTECHNIK

L&R Kältetechnik GmbH & Co. KG
Hachener Str. 90a
D-59846 Sundern-Hachen
Tel.: +49 2935 9652-0, Fax: DW - 501
www.lr-kaelte.de, info@lr-kaelte.de

technotrans

technotrans solutions GmbH
Temperierung | Industriekühlung
Werkzeugreinigung | Service
Scherl 10, D-58540 Meinerzhagen
Tel.: +49 2354 7060-0
www.technotrans-solutions.de



Weinreich Industriekühlung GmbH
Hohe Steinert 7, D-58509 Lüdenscheid
Tel.: +49 2351 9292-92, Fax: +49 2351 9292-50
info@weinreich.de, www.weinreich.de

Sensor sorting technology



MAGNETIC + SENSOR SORTING SOLUTIONS

STEINERT GmbH
Widdersdorferstr. 329-331, D-50933 Köln
Tel.: +49 221 4984-0
marketing@steinert.de
www.steinert.de

Size reduction technology



NEUE HERBOLD

Maschinen- und Anlagenbau GmbH
Wiesenstrasse 44
D-74889 Sinsheim-Reihen
Tel.: +49 7261 92480
info@neue-herbold.com
www.neue-herbold.com



TRIA GmbH

Carl-Friedrich-Benz-Str. 1
D-47877 Willich
info@triaplastics.de
www.triaplastics.de



ZERKLEINERN + VERDICHTEN

WEIMA Maschinenbau GmbH

Bustadt 6 - 10, D-74360 Ilsfeld
Tel.: +49 7062 95700
info@weima.com, www.weima.com

Standards



Tel.: +49 2351 957-0, www.hasco.com



Meusburger Georg GmbH & Co KG

Kesselstr. 42, A-6960 Wolfurt
Tel.: +43 5574 6706 0, Fax: +43 5574 6706 11
verkauf@meusburger.com
www.meusburger.com

Technical moulding



Spritzgussteile für hohe Beanspruchung
Komplexe Baugruppen - Eigener Formenbau

WEISS Kunststoffverarbeitung

GmbH & Co. KG
Rudolf-Diesel-Str. 2-4
D-89257 Illertissen
Tel.: +49 7303 9699-0
kontakt@weiss-kunststoff.de
www.weiss-kunststoff.de

Note

This directory gives you a compact overview of first-class suppliers and their product ranges. The clear structure from A to Z and the clear form make it easier for you to locate and to get in touch quickly. The directory is also available on the Internet at: www.k-aktuell.de/bezugsquellen.

For all those who would also like to be listed:

From EUR 320 you can advertise here for a whole year (8 issues) in K-PROFI. Get more information without obligation and request your entry form now! Send an e-mail with the keyword "supplier directory" to trinkaus@k-profi.de.

Temperature control units

technotrans

technotrans solutions GmbH
Temperierung | Industriekühlung
Werkzeugreinigung | Service
Scherl 10, D-58540 Meinerzhagen
Tel.: +49 2354 7060-0
www.technotrans-solutions.de

Weinreich

Weinreich Industriekühlung GmbH
Hohe Steinert 7, D-58509 Lüdenscheid
Tel.: +49 2351 9292-92, Fax: +49 2351 9292-50
info@weinreich.de, www.weinreich.de

Temperature sensors

Dr. Mennicken GmbH

Industrie - Elektronik
Tel.: +49 2338 91860
Fax: +49 2338 918640
www.mennicken.de

Thermoplastic elastomers

ALLOD

ALLOD Werkstoff GmbH & Co. KG
Steinacher Str. 3, D-91593 Burgbernheim
Tel.: +49 9843 98089 0
information@allod.com, www.allod.com
ALLRUNA® Werkstoffe

Ultrasonic welding



www.cemas-germany.com



Die nachhaltige Verbindung
Seemoosholzstrasse 14, CH-9320 Arbon
Tel.: +41 71 680 0805
info@swiss-sonic.ch, www.swiss-sonic.ch

Ultrasonic welding machines



Herrmann Ultraschalltechnik GmbH & Co. KG
D-76307 Karlsbad, Germany
Tel.: +49 7248 79 0
www.herrmannultraschall.com



SONOTRONIC GmbH, Karlsbad
Tel.: +49 7248 9166-0, www.sonotronic.de
Special and standard machines
Ultrasonic systems



WEBER ULTRASONICS
Weber Ultrasonics AG
D-76307 Karlsbad, Germany
www.weber-ultrasonics.com

Vacuum pumps and systems



Busch Vacuum Solutions
Schaunslandstraße 1, D-79689 Maulburg
Tel.: +49 7622 681-0, sales@busch.de
www.buschvacuum.com



Edwards GmbH
Philipp-Hauck-Straße 2
D-85622 Feldkirchen
0800 0001456 or +49 89 99191856
DEvertrieb@edwardsvacuum.com
www.edwardsvacuum.com

Vibration welding



www.cemas-germany.com

On Pulse.

Marketing intelligence for smart business decisions for managers in the European plastics industry from the PIE Information System. Our comprehensive portfolio includes polymer price data and market reports, constantly updated data on global polymer production capacity, analysis tools for price research and comparison as well as breaking news. Everything in our extensive online portal! **Put your finger on the pulse of the industry. Test PIE. Free of charge.**

www.pieweb.com

k.Pi GROUP

You have to know when to quit!

For far too long, managers hesitate to clearly define and strategically position their successors and consistently leave the field themselves. The recent event surrounding US President Joe Biden is a prime example of this.

A man who has shaped world politics for decades, who once again entered the race for the last presidential election as the savior of the Democrats and put all his energy into the last few political years, ultimately failed to clear the way for a strong successor in time. It must have taken numerous discussions in a wide variety of circles to convince the proud President Biden shortly before the end that a new start without

management to be handed over to the next generation, either directly or at short notice. Allowing this to happen is in turn a great achievement for the actually “frustrated” direct successors of entrepreneurs who do not let go.

Or be it overaged divisional managers in corporations who sometimes believe that they cannot do without them. Out of sheer fear of competition, the latter often deliberately ensure in the long term that no overly strong and clever minds can develop alongside or below them. The next generation then “suddenly” has to be laboriously sought out. It is more elegant and sustainable if a manager is or can be systematically developed over a longer period of time.

In any case, the “white men” (this almost never happens with women as managers!) should retire from the hard operational business in good time and remain available to the company as a member of the supervisory board, advisory board or in whatever form until they are no longer actively elected or asked. If you are looking for a sensible age limit for the transition, there is no clear answer. Some “old people” still think with astonishing freshness and flexibility. But do they still have to lead operationally? The biggest challenge is and remains to gently and effectively make it clear to older employees that it is time for a change and that their expertise is still in demand in other ways.

This is exactly what is happening in our industry. In my consulting environment, I currently know entrepreneurial couples who are already planning their succession in their early 50s in such a way that they can retire from active business at the latest at 60 and continue to shape the strategic development of the company for a few more years. I think that’s strong and far-sighted, also in terms of their own quality of life. **K**



*Dr.-Ing. Arno Rogalla is an internationally active interim manager and management consultant in the plastics processing industry:
redaktion@k-profi.de*

him could be the right path for the country and the party after all. Unfortunately, from my personal point of view, too late. By withdrawing two years ago, Vice President Kamala Harris could have positioned herself properly and proven herself – or not! In any case, the party would have developed a strategically clean path. That will certainly be much more difficult now.

This example stands for recurring struggles at management level. Be it the old patriarch and founder who does not want to step down and finally presents his children, who are almost ready to retire, as his successor. It is not uncommon for

The next issue of K-PROFI international will be published at the end of 2024.

Imprint

**K-PROFI international –
Inspiration for plastics processors**

Editors

Dipl.-Ing. Markus Lülting, Editor-in-Chief (responsible)
Tel. +49 (0)9123 9609-10, lueling@k-profi.de

Dipl.-Chem. Toralf Gabler, Specialist Editor
Tel. +49 (0)9123 9609-11, gabler@k-profi.de

Dipl.-Ing. (FH) Sabine Rahner, Specialist Editor
Tel. +49 (0)711 8877248, rahner@k-profi.de

Dipl.-Ing. (FH) Karin Regel, Specialist Editor
Tel. +49 (0)2433 938941, regel@k-profi.de

Dipl.-Ing. Janne Reisch, Esq., Copy Editor
janne.reisch@gmail.com

Dipl.-Ing. Gabriele Rzepka, Specialist Editor
Tel. +49 (0)6172 8689940, rzepka@k-profi.de

Editorial address

Luitpoldstr. 5, 91207 Lauf an der Pegnitz, Germany
Fax +49 (0)9123 9609-29, redaktion@k-profi.de

Publisher

Kunststoff-Profi Verlag GmbH & Co. KG
Saalburgstr. 157, 61350 Bad Homburg, Germany
Tel. +49 (0)6172 9606-0, Fax +49 (0)6172 9606-99
info@k-profi.de, www.k-profi.world

Personally liable shareholder:
Kunststoff-Fachmedien GmbH
Saalburgstr. 157, 61350 Bad Homburg, Germany

Management

Markus Lülting, Ulrike Mau

Advertising management

Gero Trinkaus, P.O. Box 31 24, 29231 Celle, Germany
Tel. +49 (0)5141 99 32 026, trinkaus@k-profi.de

Distribution and reader service

Lisa van Straelen
Tel. +49 (0)6172 9606-23, vertrieb@k-profi.de

Subscription

K-PROFI international is available to plastics and rubber processors as an ePaper or PDF free of charge upon registration. Registration requires some information about the person and the function in the company. Registration is possible at any time at www.k-profi.world/registration

Layout and production

Ingrid Rieß, Therese Stübinger
Tel. +49 (0)9123 9609-12, produktion@k-profi.de

Copyright and publishing law

K-PROFI international and all individual contributions and illustrations contained in the journal are protected by copyright. With the acceptance of manuscripts, the right to publish as well as the rights to translate, to grant reprint rights, to store electronically in databases, to produce offprints, photocopies and microcopies are transferred to the publisher. Any exploitation outside the limits set by copyright law is not permitted without the publisher's consent. The unsolicited sending of contributions and information to the publisher constitutes consent, which may be revoked at any time, to the inclusion of the sent contributions or information in databases maintained by the publisher or by third parties cooperating with the publisher.

Common names

The reproduction of common names, trade names, product designations and the like in K-PROFI international does not justify the assumption that such names may be used by anyone without further ado. They may be legally protected registered trademarks, even if they are not marked as such in K-PROFI international.



© 2024 Kunststoff-Profi Verlag, Bad Homburg, Germany
K-PROFI international is a publication of the KI Group.



Don't miss an issue!

How to get your free subscription to "K-PROFI international"

"K-PROFI international" is new. Do you like the contents? If so, get your free copy of the next issues now! You will receive a hint about the next issue via newsletter. Then you can read the ePaper or download a PDF and print it out. If you work in the plastics industry, you will receive K-PROFI international and our newsletter free of charge. We are publishing four issues per year.

Please register here:
www.k-profi.world/registration

K-PROFI international effectively supports plastics and rubber processors in industrialised and high-cost emerging countries in their efforts to produce more efficiently, save costs and position themselves successfully in competition. To this end, the modern industry e-magazine combines trends from the plastics and rubber market with innovations in plastics and rubber technology to provide impulses, know-how and solutions for plastics processors. Exclusively researched articles about successful plastics and rubber processors provide the reader with valuable impulses for setting a long-term course, ideas for the active use of trends as well as practical information for their decisions.

You can read the current issue here:

ePaper
www.k-profi.world/issue/240301

Download PDF for self-printing
www.k-profi.world/pdf/2403

You can read the past issues here:

ePaper
www.k-profi.world/issue/240201
www.k-profi.world/issue/240101
www.k-profi.world/issue/230401
www.k-profi.world/issue/230301

Download PDF for self-printing
www.k-profi.world/pdf/2402
www.k-profi.world/pdf/2401
www.k-profi.world/pdf/2304
www.k-profi.world/pdf/2303

BENCHMARK
PROCESS STABILITY
OPTIMAL PERFORMANCE
OPTIMAL PRICE
**SLENDER,
RECONCEIVED**
ELECTRIC RELIABLE
MAXIMUM REPRODUCIBILITY
MINIMAL INSTALLATION AREA



15. – 19.10.2024

Hall A3, stand 3101
Friedrichshafen, Germany



WIR SIND DA.

Make way for the new Allrounder 720 E GOLDEN ELECTRIC, our series upgrade with a higher clamping force. Energy efficient and innovative, yet slender too when it comes to installation area and price.

www.arburg.com

ARBURG