

today

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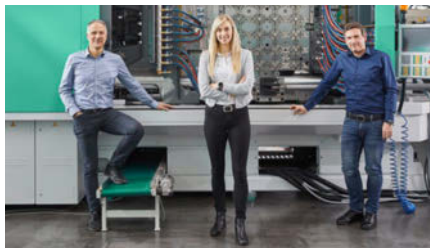
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The planetary roller screw drive manufactured by ARBURG in-house has twice the power density of more cost-effective ball screw drives.





Dear Readers,

In the past few months, we have benefited from the many opportunities offered by digitalisation. However, one thing was and is clear:

personal interaction is important and cannot be permanently replaced!

Accordingly, face-to-face events will continue to play a significant role – as was demonstrated in April, at Chinaplas in Shanghai. Our stand was very busy and many projects were set in motion.

When it came to the Technology Days 2021, it was clear to us that they would definitely only take place as an in-person event, with a COVID-compliant concept. We really did everything we could to make the Technology Days happen, but of course the safety of our customers, partners and employees came first and we had to cancel the event at short notice.

Apart from these challenging event-related considerations, things have been (and continue to be) so busy that

we have barely had a chance to turn round recently – unlike our newly refined rotary table machines and our unique planetary roller screw drive, which we will present to you in more detail in this issue.

You will also find out which features we have recently added to the “arburgXworld” customer portal and how our customer HellermannTyton – one of the platform’s early adopters – is using the various apps to increase efficiency within the company. Other customers have also ventured into new territory with us – whether with turnkey systems, moving into ceramic injection moulding, or testing the freeformer for patient-specific tablets.

Maybe you too will find inspiration?

We hope you enjoy reading this issue of “today”.

Michael Hehl
Managing Partner

Power density counts

Planetary roller screw drive: Five-year guarantee

ARBURG's strategy, which has been extremely successful over the years, includes keeping all core competencies in-house. This also applies to the unique planetary roller screw drives fitted to electric and hybrid ALLROUNDERS. The company is so proud of the quality of this high-end component that its guarantee has now been increased to five years.

Like all important ALLROUNDER components, planetary roller screw drives are specifically designed and further developed by ARBURG for injection moulding. In-house production is carried out sustainably at ARBURG's headquarters in Lossburg. "Our robust servo-electric direct drives paired with liquid-cooled servo motors are ideal for high-end injection moulding tasks," explains Werner Faulhaber, Divisional Manager Development. "They offer maximum operational reliability and work with high precision over a long service life. Especially when it counts – that is, when the machine is running at full load!" The extremely dynamic direct drive reliably delivers the huge injection and clamping forces required.

Higher power density

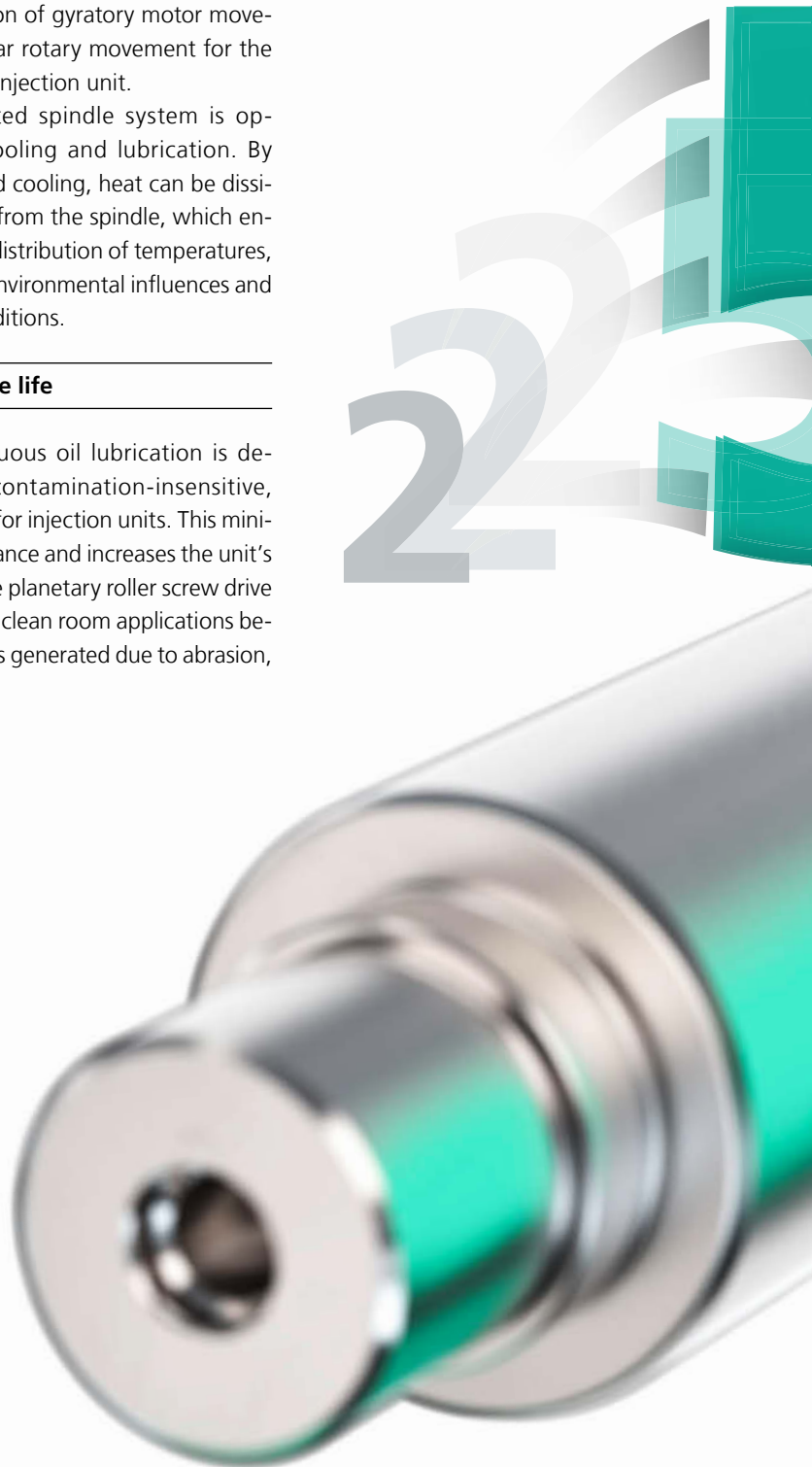
A concept known as 'power density' plays a central role here. This is the ratio of the load capacity (resilience) to the size of the drive element. The power density of planetary roller screw drives is up to 100 per cent higher than that of less expensive ball screw drives. The direct drive is placed in the motor extension and is characterised by a high load capacity and load-resistant power transmission. The result is high precision and high dynamics along with the

quiet conversion of gyratory motor movement into linear rotary movement for the clamping and injection unit.

The patented spindle system is optimised for cooling and lubrication. By means of liquid cooling, heat can be dissipated directly from the spindle, which ensures an even distribution of temperatures, regardless of environmental influences and operating conditions.

Longer service life

The continuous oil lubrication is designed as a contamination-insensitive, closed system for injection units. This minimises maintenance and increases the unit's service life. The planetary roller screw drive is also ideal for clean room applications because no dust is generated due to abrasion, for example.



ts!



Explainer video

In a planetary roller screw drive, roller bearings revolve around a spindle much like planets revolve around the sun.



A shining example

Fresenius Kabi: Medical technology produced efficiently and sus

For 25 years, Fresenius Kabi has been working very successfully in the medical sector in Błonie, Poland. ARBURG and its Polish subsidiary have supported the company from the start of its medical technology production with machines, systems and know-how.

The company now manufactures around 1,200 different medical products and components in Poland with shot weights of between 0.4864 and 150 grams. These are deployed worldwide as ready-to-use units in the treatment of patients with severe or chronic diabetes, cancer or kidney disease.

ALLDRIVE for the highest requirements

“To meet the demand for maximum precision combined with the shortest cycle times, we mainly use electric ALLROUNDERS with high-end moulds from leading mould-makers in Germany and Switzerland,” says Sylwia Maćków, Injection Moulding Engineering and Toolshop Manager at Fresenius Kabi in Błonie. The ALLDRIVE machines with clamping forces of up to 4,000 kN are in operation 24 hours a day, seven days a week, delivering the highest quality with constant production efficiency. Low emis-

sions are cited as a further advantage for production in the clean room.

Focus on sustainability

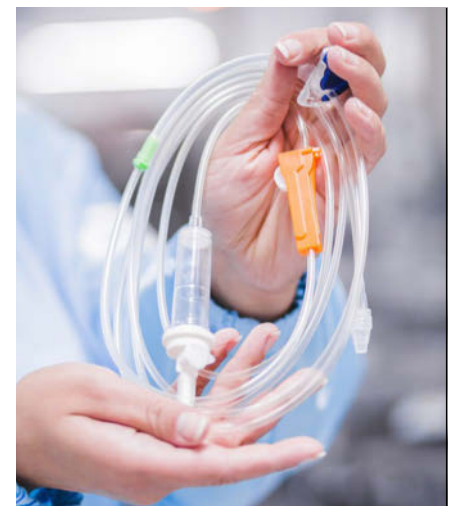
Emissions and their reduction are key issues at the plant in Błonie, as Sylwia Maćków explains: “We operate our machines with energy we produce ourselves, which makes their use even more effective.”

She lists other measures for sustainable and resource-saving production including highly efficient heat generation, the use of waste engine heat to generate heating and cooling, the consistent use of water as a refrigerant, and the improvement of the energy efficiency of buildings – adding that this all contributes to a smaller ecological footprint.

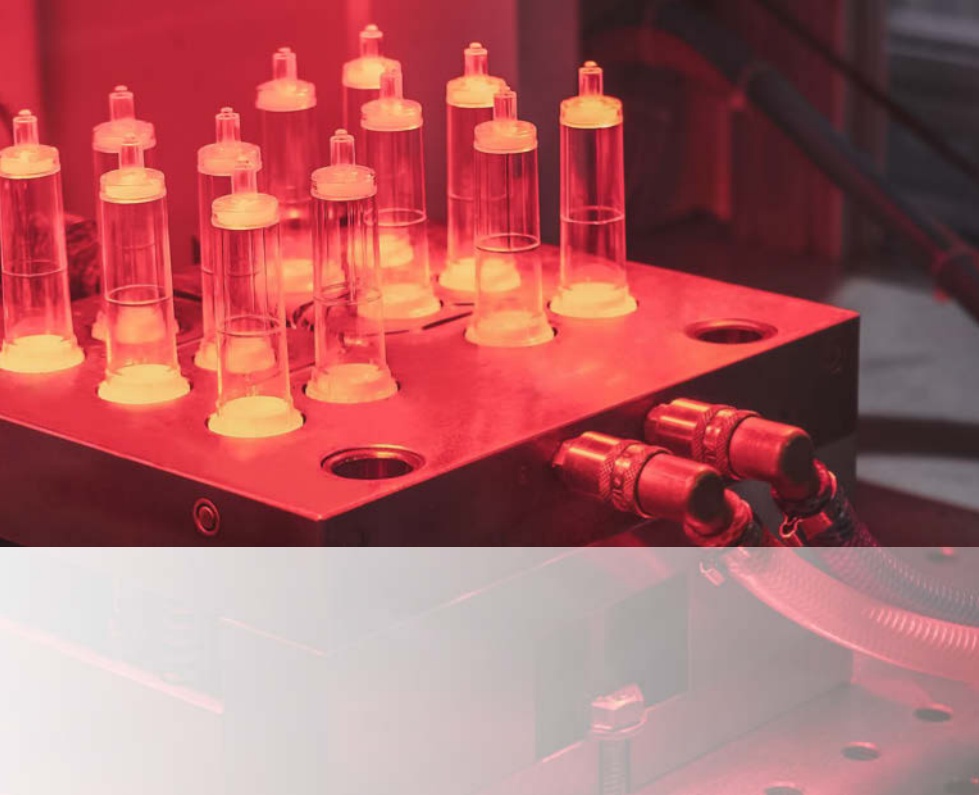
Components for infusion sets

One of the most important items produced on a large scale and used worldwide is an IV set with high-quality pump segment and integrated free-flow protection for specific use in volumetric infusion pumps from Fresenius Kabi. The product consists of various individual parts such as drip chambers, liquid filters and precision roller clamps. Most of these are made from ABS, PP, PS or POM on ALLROUNDERS and

are completed and assembled downstream with additional components such as flexible, transparent tubing systems. They are then packaged and sterilised in accordance with medical requirements. MULTILIFT robotic systems and six-axis robots automate simple removal processes and also take over upstream and downstream work steps such as insertion and loading, feed-



Fresenius Kabi in Błonie also uses vertical ALLROUNDERS (large picture above) to produce components for infusion sets (small picture above).



tainably – with ALLROUNDERS



Photos: Fresenius Kabi

The ALLROUNDERS produce around the clock in the clean room at Fresenius Kabi in Błonie (picture left).

ing for quality control, and assembly and packaging tasks.

Top marks for technology and service

Plans are in place to further automate production in Błonie near Wrocław in future. An ARBURG host computer system (ALS) is also currently being implemented.

Sylwia Maćków is not only enthusiastic about ARBURG's product portfolio, but also about the service: "Thanks to regular machine inspections, there are virtually no problems despite our complex production solutions." The service team also helps with process optimisation, so that the company can reliably maintain its high level of productivity.

"With ARBURG, we get a combination of sound design and advanced technolo-

gy based on decades of experience," says Sylwia Maćków. "And what counts for us is a partner who shares our high-tech aspirations and makes sure that our production runs smoothly!"

INFOBOX

Name: Fresenius Kabi

Founded: 1996

Locations: Błonie near Wrocław, Poland

Production area: 12,600 square metres, of which 9,000 square metres clean room

Employees: Around 1,300

Products: Parts and components such as disposables, infusing and tube feeding sets, and port systems

Industry: Medical technology

Machine fleet: 83 ALLROUNDERS

Contact: www.fresenius-kabi.com

Climate protection? Of course!

CDP score: Successful debut for ARBURG

Now ARBURG has it in black and white. The category “B” score from the Carbon Disclosure Project (CDP) officially confirms that the company performs better than average in the areas of climate protection, ecology, and CO₂ emissions compared with other industry players.

The Carbon Disclosure Project (CDP), an international non-profit organisation founded in London in 2000, collects and publishes global environmental data from companies and institutions on the three topics of climate change, water and forests.

Component of “arburgGREENworld”

For ARBURG, the CDP score, like the sustainability report published in February 2021, is an important component of the “arburgGREENworld” program, which bundles all activities in relation to resource conservation and the circular economy. The CDP classification was based on the company’s answers to a



detailed list of quantitative and qualitative questions on minimising emissions.

More than satisfied with the result

A “B” score places ARBURG on the so-called “Management Level”. This means that it has implemented coordinated measures on climate issues and is continuing to develop its own strategies in this regard. The company is thus ranked higher than the European corporate average (C Level) and the mechanical engineering average (D Level).

“ARBURG participated in the Carbon Disclosure Project for the first time and we are more than satisfied with the result,” says Bertram Stern, Sustainability Manager at ARBURG. The score confirmed that ARBURG is doing very well with its activities towards sustainability and environmental

protection – topics that have played an important role throughout the company for decades. It also pointed out potential for further improvement in this respect.

Incentive for further improvements

With regard to the goals resulting from ARBURG’s CDP score, Bertram Stern comments: “We will remain at Management Level B in 2021 and, where possible, develop further. We will try to further reduce any emissions that we can directly influence and to integrate a sustainability strategy into our supply chain management that is specifically geared towards our suppliers.”





Better safe than sorry!

TKW Molding: Complex automations only with ARBURG

TKW Molding GmbH and ARBURG have been working together closely in the field of turnkey systems since 2020. This collaborative partnership has developed at a very dynamic pace: as of spring 2021, four turnkey systems have already been installed or are in the planning stage, with more to follow in the near future.

The company, which belongs to the Austrian Henn Group and is based in Blankenhain, Germany, manufactures vehicle belt systems, components for seating groups, and steering wheel parts.

In addition to high-precision, automat-

ed production, subsequent steps such as optical parts inspection, separate set-down according to cavity, and intelligent and highly autonomous packaging of the articles in special cardboard boxes are of crucial importance for TKW and its automotive customers.

In the injection moulding division, a two-manufacturer strategy is pursued, but the complex automation tasks are placed exclusively with ARBURG and its turnkey team. As Benito Hinkeldein, Managing Director of TKW Molding, points out: "ARBURG is the right point of contact for us at project level due to its comprehensive expertise. The turnkey specialists



For TKW Managing Director Benito Hinkeldein, the production of the small cantilever with movable hinge (large picture) is a "lighthouse turnkey project" in terms of flexibility and complexity.

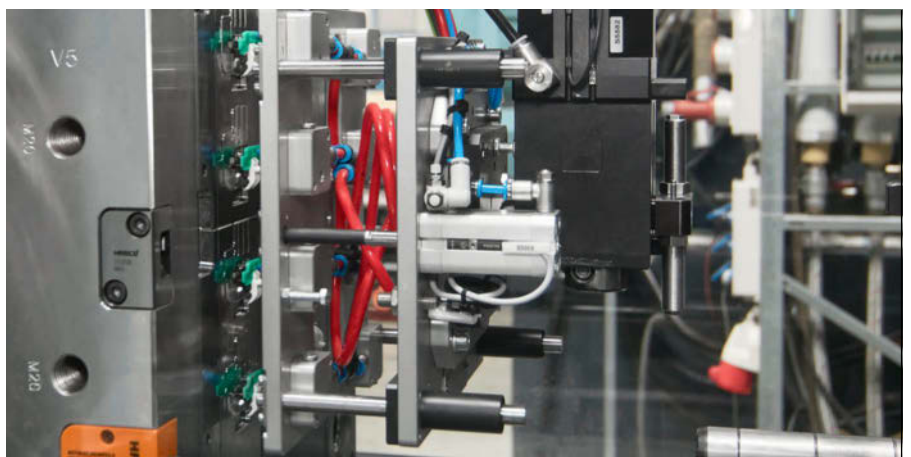


have always responded very quickly to our requests and implemented requirements in full. When it comes to full automation combined with highly specialised technical solutions, we feel we are in very good hands.”

ARBURG’s turnkey systems are used to produce items such as covers for belt adjusters (snap-on covers), moving parts for integration in belt buckles (cantilevers) and airbag housings. The process spectrum ranges from multi-component and assembly injection moulding to fibre direct compounding (FDC) for lightweight, fibre-filled moulded parts. The automation includes all downstream work steps related to quality assurance and packaging.

Cantilever: Small and flexible

The automated production of cantilevers using the two-component assembly injection moulding process is a “lighthouse project” in terms of flexibility and complexity. According to Benito Hinkeldein, the component with a flexible hinge is respon-

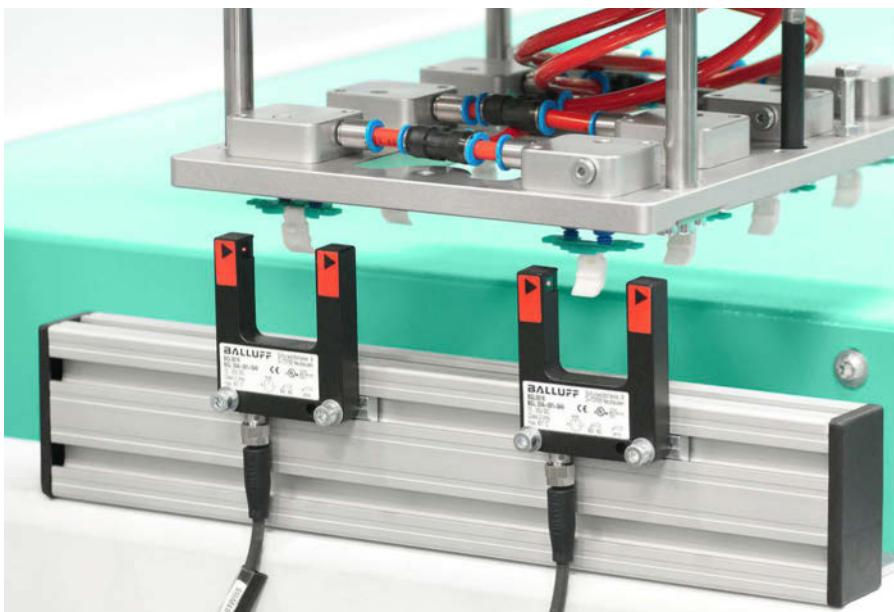


sible for the correct operational sequence in the belt buckle when the red belt button is locked or unlocked.

The requirements for the turnkey system are correspondingly challenging. The task was to fully automate the injection moulding and removal process and to integrate: 1) the inspection of the cantilever for completeness and function using two forked photoelectric sensors, 2) the downstream set-down, and 3) the separate collection

Small, filigree cantilevers are produced on a two-component ALLROUNDER 520 S using the assembly injection moulding process. A MULTILIFT V robotic system removes the parts from TKW’s 8-cavity mould (pictures above).

of NOK and startup parts in the protected area – and all this with the smallest possible space requirement.



The downstream steps include checking the cantilevers for completeness and function using two forked photoelectric sensors (picture left).

Lots of technology in not much space

The solution offered by ARBURG's turnkey specialists consisted essentially of a hydraulic two-component ALLROUNDER 520 S with a clamping force of 1,600 kN and two small injection units in sizes 100 and 70 that were adapted to the part size. This was supplemented by a MULTILIFT V robotic system with a load of 15 kilograms in the longitudinal installation. A container changer with pipe manifold for small load carriers is used for cavity-separated set-down, and a QA drawer above the roller conveyor of the container changer for the separate collection of test parts.

This arrangement saved a lot of space, especially widthwise. The 8-cavity mould for the small, filigree articles was created in TKW's own mould construction facility.

Goal: Nine million parts per year

The start-up phase of the system installed in 2020 ended with the production release by the Tier 1 customer in May 2021. "We plan to run the system in three shifts in future. The aim is to produce around nine million parts a year," says Benito Hinkeldein.

At TKW, ARBURG is synonymous with functionality, flexibility, precision, and output. "These are precisely the qualities that count for our automotive customers too," Benito Hinkeldein adds. "This enhances both our delivery and QA performance, and thus our reputation." TKW collaborates with ARBURG on complex automation tasks. This enables the joint development and implementation of unique systems that are both fully automated and highly flexible, and realised in close coordination with the company and its customers. "The first successful projects that we implemented showed us that ARBURG was the right partner for us – and will remain so in the future."

INFOBOX

Name: TKW Molding GmbH

Founded: 2008

Locations: Blankenhain, Germany

Employees: 120

Products: Safety-related components, technical plastic parts

Industries: Automotive, pharmaceuticals, cosmetics

Machine fleet: 60 injection moulding machines, including 18 ALLROUNDERS with eleven MULTILIFT robotic systems

Contact: www.tkw-molding.com

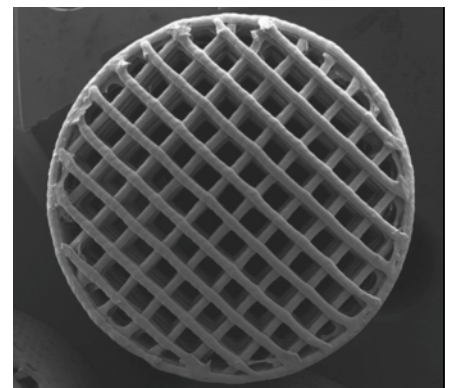
Tailor-made

Merck: freeformer for patient-specific tablets – even with multiple



Photos: Merck

Can 3D printing be used to produce tablets economically and so flexibly that they can be tailor-made for each patient? This is the question posed by a few smart people who have made curiosity their profession: Merck scientists who use a freeformer for their tests in the lab. Exactly the right machine for the job, as it soon turned out.



Merck, one of the world's oldest pharmaceutical and chemical companies, already uses several additive manufacturing processes for product development. Until now, this was mainly to get to the prototype or clinic sample faster and to accelerate the time-to-market. "But personalised treatments are also a big topic at the moment," says Dr Thomas Kipping, Head of Drug Carriers at Merck

in the Life Science division. The aim here, for example, would be to combine several active ingredients in one tablet, adjust their quantity to the patient's weight and release them in an optimally dosed manner over a defined period of time. In order to delve deeper into the subject of tablets, the team led by Dr Thomas

Merck researchers, Dr Thomas Kipping, (right), and Nabil Lamrabat, appreciate the advantages that the freeformer offers as an open system (large picture above). The electro-microscopic image shows the grid-like structure of a tablet that is 30 per cent full (small images above).

le active ingredients

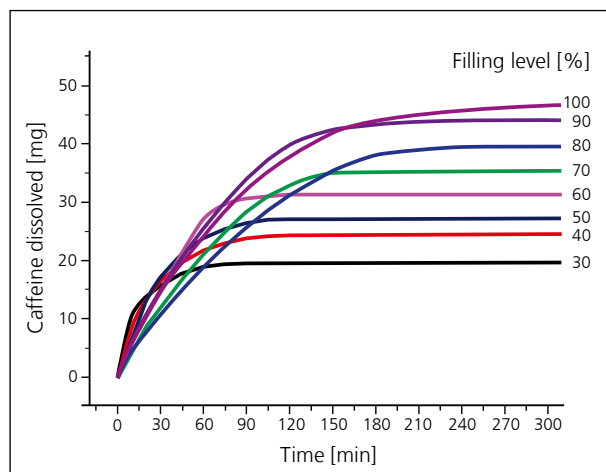
Kipping initially hired a freeformer from ARBURG for one year.

Promising tests with caffeine

For the trials, the model active ingredient used was caffeine, which was homogenised together with the special PVA (polyvinyl alcohol) polymer Parateck®MXP and additives such as binders and flavour markers in a twin-screw extruder. This is where the first advantage of ARBURG Plastic Freeforming (APF) became apparent: the freeformer can directly discharge the extruded and granulated material without it having to be further processed into filaments, for example, and subjected to thermal or mechanical stresses again.

Variably adjustable properties

In addition, the open system makes it easy to vary various process parameters. For example, tests were made with filling levels between 30 and 100 per cent (see graph). "We found that the active ingredient is distributed very uniformly in the tablet. By changing the filling level, we can precisely control how much is released and over what period of time," enthuses Dr Thomas Kipping. This enables extremely accurate dosing. Another option would be to design a "two-component tablet" and combine several active ingredients in this way. The stability requirements of the additively manufactured product were also examined and found to be good. This is because the tablets must not break during downstream process steps such as coating, packaging and transport.



The filling level of the tablets can influence the release of the active ingredient.

Many ideas for the future

"The test results are very positive overall," summarises Dr Thomas Kipping. "We are currently thinking about how we can put the freeformer to best use and are in close contact with ARBURG and potential partners." Clearly, there is no lack of good ideas or potential.

INFOBOX

Name: Merck KGaA
Founded: 1668 by Friedrich Jacob Merck
Locations: Corporate headquarters in Darmstadt, Germany, 60 production locations worldwide
Turnover: 17.5 billion euros
Business areas: Development and manufacture of new medicines, medical diagnostics
Employees: 20,000
Industry: Life sciences
Machine fleet: Various additive manufacturing systems, including a freeformer
Contact: www.merckgroup.com



Things are happening!

arburgXworld: New features for the customer portal

The digital ARBURG world is constantly evolving: the packages for the customer portal were recently redesigned, its attractive digital services expanded, and a new app for process analysis added. Whether you are a beginner or a professional when it comes to digitalisation, “arburgXworld” can be tailor-made to meet a wide range of customer requirements.

“We respond very flexibly to our customers’ wishes,” explains Benjamin Franz, who heads the new Digital Solutions organisational unit in ARBURG Sales. “In addition to the four redesigned packages, we are further expanding our free digital services. And from June 2021, the new ‘aXw App AnalyticsCenter’ will also be part of arburgXworld’s offering.”

Packages for beginners to professionals

ARBURG has once again significantly upgraded the four packages. The free “Basic” version now also includes all

“SelfService” features. Additional fee-based services that save even more production and working time can be found in the “Premium” package. Building on this, there is the “Premium Connect” package with the “MachineDashboard” and “AnalyticsCenter” apps, which can be used to obtain online and mobile information about your machine fleet. Last but not least, “arburgXworld” can be individually tailored to customer’s specific requirements with the “Enterprise” package.

New: “aXw App AnalyticsCenter”

A newly developed app is available in the form of the “AnalyticsCenter”, which is specially designed for monitoring injection moulding processes. The app allows users to record their desired parameters over defined periods of time. This means that everything required for an analysis tool is at hand. A clear dashboard displays production data from the connected machines via charts. This provides a quick overview of important indicators such as dosing time, injection time, cycle time and material cushion. The

With its many apps and features, the arburgXworld customer portal has everything you need when it comes to digitalisation.

charts can also be zoomed in and out and individual curves can be faded in and out using filters. The “AnalyticsCenter” is ideal for documenting mould sampling, tests and processes, for example.

For more information on the customer portal and to register, please visit the ARBURG website at www.arburg.com/en/arburgxworld.



arburgXworld

Real power user

HellermannTyton: "arburgXworld" used in many ways

HellermannTyton GmbH in Tornesch, Germany, is one of the first power users of the "arburgXworld" customer portal. The company now uses many of the apps and features to streamline its production and service operations. Marco Michel, Head of Production, and Stefan Kirst, Head of Maintenance, describe how HellermannTyton has been getting on with the portal.

today: How far have you got with digitalisation in your company?

Marco Michel: We have been working

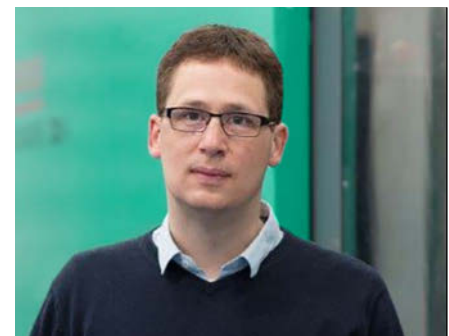
work much easier and faster. In the Shop app, for example, we can see the availability of spare parts and get information about delivery capacity. Having maintenance data stored on the customer portal and service reports documented are also practical aspects. For other machines, we have to provide all this data manually.

today: Which "arburgXworld" apps and features do you use the most?

Stefan Kirst: Besides "Basic Services" and the Shop for ordering spare parts, we make particular use of the "MachineCenter" app for a quick overview

today: Are you planning to use other features in the future?

Marco Michel: We will continue to move forward with digitalisation. As far as "arburgXworld" is concerned, we would like to be able to interact directly with the machines using a mobile end device at a later date. After all, this is a living system and it is getting better all the time. We are talking to ARBURG about this and other improvements. We feel very well looked after here.



with solutions for the areas of warehousing, ordering, accounting, controlling, ERP and PDA for some time now. One of the solutions we previously used from ARBURG was COPYLOG for data back-up. We are currently working on the topic of AI in production.

today: Since when have you been using the "arburgXworld" portal and how do you use it?

Stefan Kirst: We've been using the tool for about two years. It makes our

of the machine fleet. Since March 2021, the "MachineFinder" and "DataDecoder" apps have been added. On the one hand, this helps us with the configuration of the machines, together with the material database and plastification data. In future, this will also be useful for selecting new machines. On the other hand, important parameters of a machine dataset can now be displayed and documented.

Marco Michel (left) and Stefan Kirst are enthusiastic about the possibilities offered by the customer portal.



Extending our lead!

Lars Langner: Freshening up a winning formula

The vision of Lars Langner, ARBURG's new Divisional Manager Service, is not only to meet customer expectations in the future, but to exceed them. His strategy is to freshen up a winning formula, i.e. to combine tried and tested elements with new innovative ideas. In January 2021, he took over the position from Eckhardt Witte, who was retiring.

today: Mr Langner, ARBURG's Service department has always been rated very highly by customers. Will this remain the case in the future?

Langner: There is indeed a very high level of satisfaction with our Service department. But we should not rest on our laurels. We can only develop further by taking our customers' requirements seriously and continuing to expand our pole position with constant innovations.

today: What value does Service place on digitalisation?

Langner: The Service department is also seeing further digitalisation. We have a very well-functioning tool in the form of the "arburgXworld" customer portal, which offers numerous apps and features for Service as well. Digitalisation also helps with the customisation of our services. A good example of this is our ARBURG Remote Service (ARS). All ALLROUNDERS are supplied with an IIoT gateway as standard, which greatly simplifies remote services and data evaluation. Once the

customer has actively enabled the system, data can be exchanged with the service hotline in a highly secure manner. This will make even more proactive measures possible in future – predictive maintenance being the keyword.

today: Regardless of digitalisation, will the classic service still have a reason to exist in the future?

Langner: There will always be a need for in-person servicing on site. Machine inspections, component replacements, calibration, machine inductions and even compliance with legal measures all require a visit from a service technician today, and will continue to do so in the future.

today: Does this mean that Service must further customise its approach to customers?

Langner: The technical complexity of the machines is increasing and their value is growing. So it is clear that our customers also need a more specialised partner. In other words: services and technicians, as individual "business cards", also play a part in upholding ARBURG's excellent image.

today: How do you think Service will define itself in the future?

Langner: We will have an even more specialised team that can deliver services in a more customer-specific way. In addition, we will see AI (artificial intelligence) increasingly taking over simple tasks from customers and service technicians. We will be there when the evaluation of in-

creasingly complex datasets helps with the customisation of servicing and spare parts services. And we will see the interaction with industrial additive manufacturing realised, for example, for the production of spare parts on demand.

today: How will you meet this challenge?

Langner: By expanding the number of our service technicians as well as the range of services we offer. After all, the machines currently in production still need to be kept in optimal condition for a long time to come. One thing is certain: customer loyalty and customer satisfaction remain crucial factors for us.

On-air experts

arburgXvision: Live internet TV broadcasts in demand

Right at the beginning of the year, ARBURG scored a direct hit with its new interactive internet TV series “arburgXvision”, which consists of ten programmes per year. The live events are enjoying an ever-expanding fan-base. As of May 2021, there were 2,300 registrations.

“With the new digital format, our aim was to present an important technology or service topic in a compact, competent, practical, and, above all, entertaining manner,” says Dr Christoph Schumacher, Head of Marketing and Corporate Communications at ARBURG. “Every last Thursday of the month, viewers can expect an exciting mix of expert presentations, link-ups, and discussions. It was important for us to

involve and energise the audience during the two-hour live broadcast.” In addition to the detailed technical questions from the audience, the interactively embedded surveys are always fascinating and informative. The results from around 1,000 professionals from Germany and abroad are a good reflection of industry trends and assessments. Another highlight is the Media Centre, where all programmes are available.

Mix of topics and live feeds

The broad spectrum of topics appeals to professionals from many fields. The series debut looked at “0 ppm production of plastic parts”. Subsequent programmes covered topics such as machine

utilisation rates, production optimisation, additive manufacturing, turnkey solutions, and digitalisation.



arburgXvision

“Besides the first-hand expert knowledge, the live feeds are another factor in the success of our programmes,” states Dr Christoph Schumacher. Not only do the link-ups provide fascinating live insights into the Customer Center, Training Center, ARBURG’s production facilities, and customer injection moulding shops, they also present a lot of interesting facts in a practical setting.

It is never too late to register at www.arburgxvision.com. This not only gives you access to future programmes, but also to the Media Centre.



arburgXvision



The sophisticated digital format “arburgXvision” is a directing challenge (bottom left): Segments with experts in the ARBURG studio in Friedberg (top) alternate with live feeds, e.g. to the ARBURG Prototyping Center in Lossburg (top left).



So far and yet so near

Webinars: Global digital events with real added value

Since the spring of 2020, a wide variety of hybrid and digital events have sprung up around the world as an alternative to in-person events, whether in Asia, Europe, or America. ARBURG has staged many webinars and new digital formats during this time. Always guided by the principle of offering quality and added value.

The parent company and subsidiaries thereby create the opportunity for customers to build up online expertise on a wide range of specialist topics and to stay in contact with ARBURG. The concept works: cutting-edge information and fascinating applications, presented by experts in a limited time frame, are in demand all over the world. In addition to the interactive "arburgXvision" TV shows (see page 18), webinars on the "arburgXworld" customer portal and powder injection moulding (PIM), held for customers around the globe, have been particularly well received.

Online: Technology Days highlights

The ball was set rolling by the cancelled Technology Days 2020. ARBURG published videos and lectures about the planned highlights on its website. "In China, we presented these highlights to our customers in person four weeks later," recalls

Andrea Carta, ARBURG Divisional Manager Overseas Sales. "The webinar was so well received that several more have since been held, including on topics such as automation and the circular economy."

Numerous digital events worldwide

Webinars are also a valuable tool for Michael Stark, National Sales Manager of ARBURG Inc. in the US: "The whole world has learned to make better use of remote learning. Our customers have recognised their efficiency, with participation and engagement increasing significantly." Especially in large countries, there is the added aspect that online events can save time and costs for long journeys.

This is also confirmed by Alfredo Fuentes, Managing Director of ARBURG Ltda. in Brazil: "Customers really appreciate our webinars. Interest in specific technical topics is gratifyingly high."

The ARBURG team in the Czech Republic, for example, is also very active. "We set up virtual events with a TV service provider and were able to show many topics directly on our machines and robotic systems in the showroom. Our customers can also find Czech tutorials on YouTube," explains Daniel Orel, Managing Director of ARBURG Spol. Other exciting digital events were offered by many other subsidiaries as well as the parent company.

Wide range of ARBURG webinars:

In the Czech Republic, a TV service provider was hired to show customers the topics directly on the machine (picture left). The PIM webinars by ARBURG experts were held several times in order to reach customers and interested parties worldwide (picture on the right).

Stephan Doehler, who is divisional manager responsible for sales in Europe, states: "Our extremely positive experiences have shown that webinars are a great addition to in-person events. This is a tool we will certainly hang on to and develop further."

A square deal

CUBE team: Efficient solution for many industries

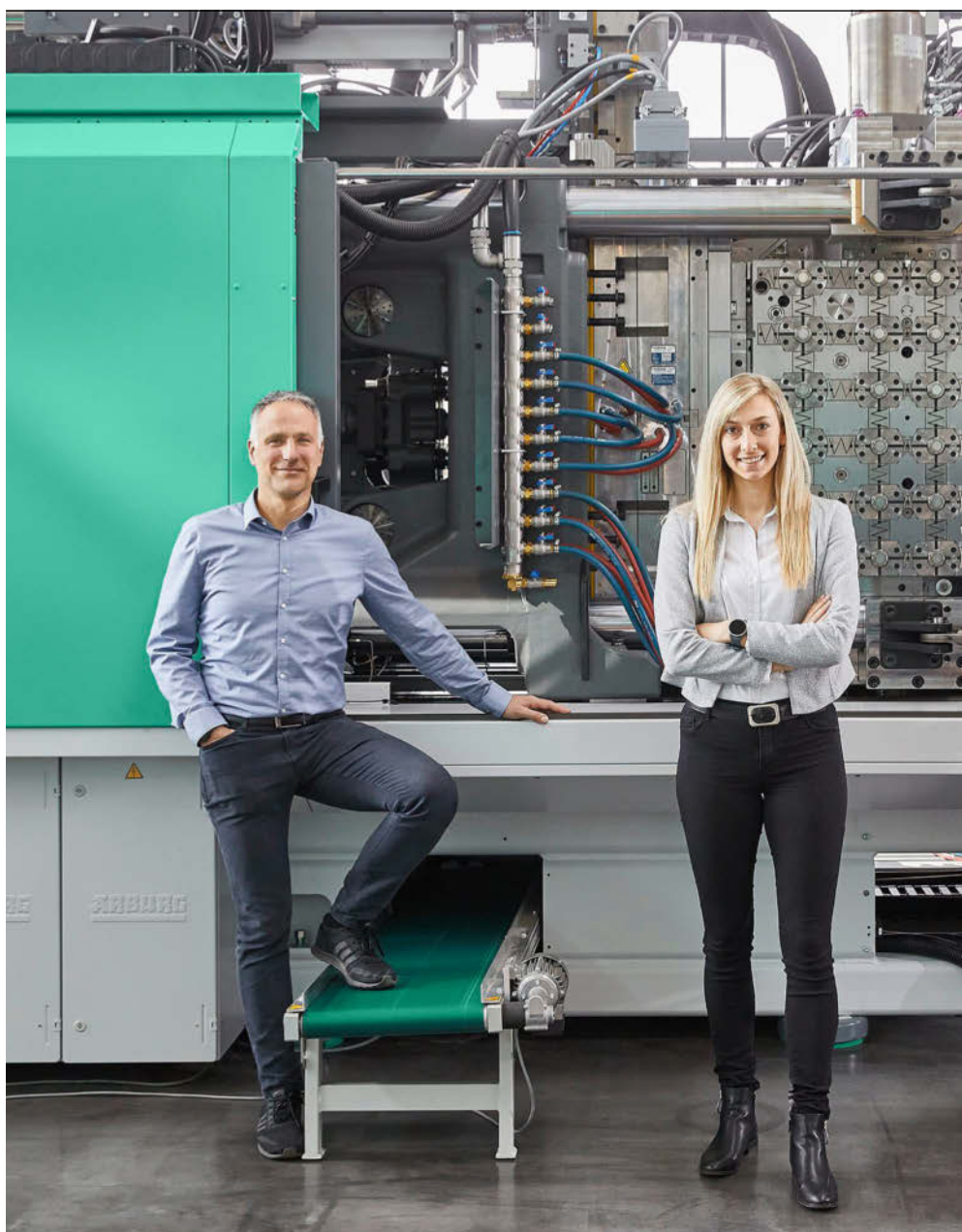
Cube technology offers great advantages in terms of cycle time, productivity and energy efficiency – and is now in demand outside the packaging industry too. This is why ARBURG is continuously developing its ALLROUNDER CUBE series and has now also put together a CUBE team whose experts work together with customers to implement customised solutions.

Market requirements for shorter cycle times, higher productivity and energy efficiency, combined with the positive development of cube technology, led to the development of a separate hybrid machine series in 2016 from an initially modified hydraulic machine: ALLROUNDER CUBE. Now it includes the following three sizes: CUBE 1800, CUBE 2900 and CUBE 4600, a clamping force range from 1,800 to 4,600 kN and tie-bar distances from 570 by 570 to 1020 by 1020 millimetres.

Extended application range

As the next strategic step, ARBURG has installed a CUBE team consisting of Julia Grigas, Sales Manager CUBE Technology, Bernd Eble, Senior Application Manager CUBE Mould Technology, and Marc Wendlandt, Turnkey. The three experts provide customers with all-round support: from the initial enquiry to delivery of the cube system.

Originally, cube technology was mainly





Strong CUBE Team (from left): Bernd Eble, Senior Application Manager CUBE Technology, Julia Grigas, Sales Manager CUBE Technology, and Marc Wendlandt, Turnkey.

used for packaging products, but now the range of applications is much broader. This is because moulds with a high cavity count are also required for large product volumes in other industries, such as medical technology and the personal care sector, and also in the manufacture of technical components. As a result, cube technology has also been in increasing demand in these areas recently.

Reduced unit costs

Julia Grigas explains the benefits: "By doubling the number of cavities for the same machine size, the output quantity is increased while the required space is reduced". In addition, the cycle time is reduced because separate work steps, such as insertion, removal, assembly, and cooling, are performed on the passive cube sides during the injection process without affecting the cycle. So the use of cube technology ultimately leads to a reduction in unit costs.

Bernd Eble, Senior Application Manager CUBE Technology, adds: "Identifying potential applications for cube technology and implementing them jointly with cus-

tomers is another key to sustainably increasing productivity."

A strong partner in FOBOHA

For its CUBE range, ARBURG works closely with mould and die manufacturer FOBOHA in Haslach, Germany – a company with in-depth expertise in cube technology. The modularity of the ALLROUNDER CUBE, in combination with the flexible ARBURG machine controller, enables a high level of flexibility coupled with rapid implementation. "With us, the customer gets individual turnkey systems from a single source," says Marc Wendlandt. "The increasingly important automation concepts are precisely aligned with the mould technology."

The arburgXvision programme entitled "By professionals for professionals – turnkey means: quality from a single source" offers exciting insights into the world of CUBE technology.



arburgXvision



Blazing a trail in ce

Sembach: CIM process for complex, small and difficult ceramic

The name Sembach is well known among the major Tier 1 customers in the automotive sector. This is because company founder Oskar Sembach was one of the inventors of ceramic dry pressing at the start of the 20th century. Another milestone in the company's history was the introduction of ceramic injection moulding (CIM) in 2000 as an addition to the pressing and extrusion processes. ARBURG was significantly involved in this.

The reason for introducing the CIM process at Sembach GmbH & Co. KG in Lauf an der Pegnitz, Germany, was primarily due to greater demands on ceramic components. These are becoming more and more complex and intricate, while shrinking in size.

Automotive and medical technology

Managing partner, Martin Sembach, cites lambda sensors in the exhaust tract as an example: "For faster control behaviour, these must be installed as close as possi-

ble to the motor. In other words, precisely where space is limited and temperatures are very high at over 800 degrees Celsius."

The CIM process is also ideal for medical technology. Here, it can be used to create sophisticated, miniaturised geometries such as endoscope tips or feedthroughs for pacemakers. Bioceramics are well suited for use in the body as they do not trigger any reactions and are wear-resistant and durable too.

Close cooperation with ARBURG

"I stuck my neck out when I bought our first ALLROUNDER because I was hoping for great things from the process," says Martin Sembach. With the help of two employees, he gradually built up his injection moulding knowledge through experiences in the company's own technical centre. When introducing the CIM process, he was also supported by the ARBURG PIM team led by Hartmut Walcher, application technology consultant. The team provided Martin Sembach with advice and support throughout the entire value chain – from

feedstock matching and mould technology to automatic demoulding and debinding.

Up to 25 million CIM parts per year

"Today, we make about 20 per cent of our total turnover from injection moulding," Martin Sembach points out happily. He adds that, across all processes, total production amounts to around 600 million parts per year. In the CIM sector, Sembach operates as a one-stop shop, manufacturing 20 to 25 million products a year with high geometric freedoms and tight tolerances – always with reliable processes and perfect surface finishes.

To ensure high precision and availability, the six ALLROUNDERS are equipped with the "aXw Control ScrewPilot", i.e. a position-regulated screw, and carbide cylinders. All the machines work automatically: from deburring to the aligned set-down of the components on firing plates for downstream processes. The moulds are made in the company's own mould construction facility. In addition to aluminium and zirconium oxide, high-performance ceramics are



Managing partners, Martin and Anna Sembach (picture below), are proud of the complex and intricate parts that their company manufactures using the CIM process (picture left).

ramics

parts



Photos: Sembach

also processed. Parts handling, attributive visual inspections, and measuring inspections are partly carried out in opto-electronic systems specially developed by Sembach – one of many unique features.

“ARBURG is one of the market leaders in the field of machine construction for ceramic processing. They provide me with the expertise and bond of trust that I need for smooth production,” says Martin

Sembach. The managing partner wants to further diversify his production in future, and is looking forward to ARBURG’s support here too.

INFOBOX

Name: Sembach GmbH & Co. KG

Founded: 1904 by Oskar Sembach

Location: Lauf a. d. Pegnitz, Germany

Employees: 230

Products: Parts made of technical ceramics

Industries: Automotive, mechanical and plant engineering, energy technology, household appliance industry, measurement/control/regulation, design, textile machines, medical technology

Machine fleet: Six ALLROUNDERS

Contact: www.sembach.de

Top marks all ro

ALLROUNDER T: Next generation rotary table machines

The need to overmould inserts manually or automatically is constantly growing, especially in the automotive and electronics industries. With its vertical ALLROUNDERS, ARBURG offers the broadest portfolio in the industry for this task. Recently, it has made significant upgrades to its T series rotary table machines, focusing on automation, integration into complex turnkey systems, and ergonomics.

The footprint is often an important issue when it comes to purchasing new machines, and the ALLROUNDER 2000 T was the first machine to be significantly optimised in this respect. ARBURG has now redesigned the clamping unit, machine base, and the control cabinet of two additional rotary table machines.

Compact and yet more space

The extremely compact design offers a significant advantage: compared with the previous sizes 1200 and 1500, the installation areas for the ALLROUNDER 1300 T and 1600 T are 10 and 20 per cent smaller, respectively. What's

The latest vertical rotary table machine is the ALLROUNDER 1300 T, which features an optimised installation area and more space for moulds.



und



The tie-bar-free rotary table concept makes media connections easily accessible.

more, the crane height required for assembling the vertical injection unit has been reduced. As moulds are becoming increasingly complex, the tie-bar-free rotary table concept now offers even more space. This allows the use of larger moulds or the same mould size on smaller machines. In addition, the mould mounting surface is up to 15 per cent larger. Size 1300 T and 1600 T rotary tables can also accommodate significantly higher mould weights of 1,000 and 2,000 kilograms.

Even more ergonomic

For even greater ergonomics, the table diameter is now 100 millimetres larger and the table and working height are around five per cent lower. The transparent middle safety gate on the table and insertion and removal station fitted with a light curtain ensure a high level of safety. As a result, man and machine can work reliably in co-operation during injection moulding.

The rotary tables are generally ser-

vo-electrically driven and, therefore, operate smoothly, and with particular speed and precision. A two - or alternatively three-station rotary table makes it possible to load inserts and remove finished parts during injection moulding – thereby shortening the cycle

time and increasing production efficiency. The optional "aXw Control ScrewPilot", a position-regulated screw, enables controlled injection, while the two-circuit pump technology ensures simultaneous movements. The machines are, therefore, also suitable for special processes such as universal embossing using moulds or secondary axes.

Changeovers were also taken into account when further developing the ALLROUNDER T. Thanks to redesigned cable routing, central interface console and easily accessible media connections, even complex moulds can be set up quickly and easily. The ALLROUNDER 1300 T is also the first rotary table machine available with the GESTICA control system.

From automation to turnkey system

To efficiently manufacture complex products including upstream or downstream work steps in a single production process, the ALLROUNDER T machines can be automated to customer specifications. For example, the vertical MULTILIFT V is available with an assembly adapted to the rotary table machine. The new standardised gate and placement within the ma-

chine installation area allow particularly compact systems to be realised.

Hybrid parts as a trend

One interesting area of application for rotary table machines in connection with electromobility is hybrid plugs or stator packs for electric motors, for example. The integration of functions and increasingly complex components are additional trends. As a result, the demand for automated rotary table machines is steadily growing.

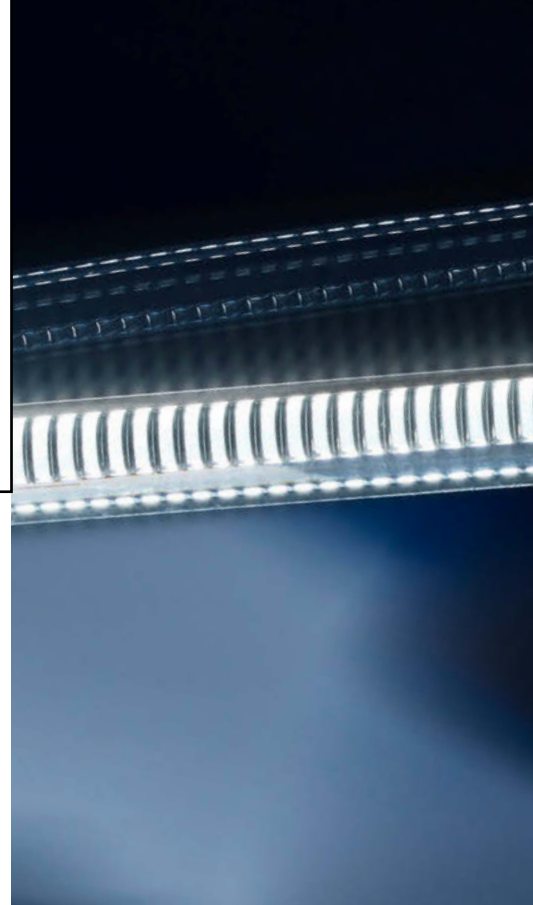


Vertical machines



TECH TALK

Dipl.-Ing. (BA) Oliver Schäfer, Technical Information



Crystal clear

Nitrogen flushing – what's the story?

For transparent parts, black spots or yellow discolouration are major knock-out points for product quality. The bar is set particularly high in the medical technology and optics industries. The solution is to flush the injection unit's material feed zone with the inert gas nitrogen (N₂). But how does it work, this "exotic" process technology that significantly improves quality?

The aim of N₂ flushing in injection moulding is similar to that in inert gas welding: to protect the process from oxygen present in the atmosphere. The (chemically) inert nitrogen helps prevent degradation processes through oxidation during melt preparation – especially at high temperatures. Consequently, the use of inert gas is generally recommended for all oxidation-sensitive melts, for

example, when processing polymers such as PC, COC, and COP.

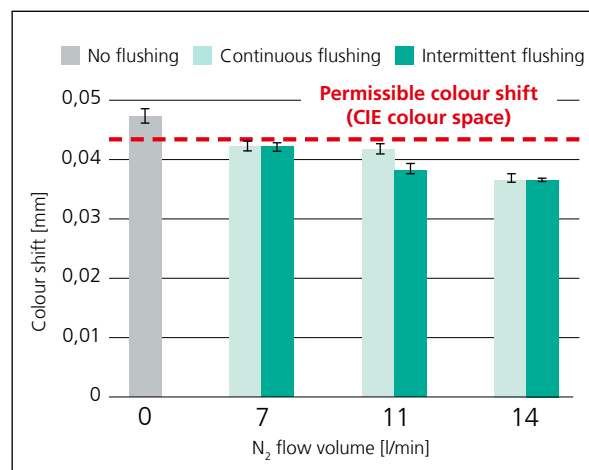
Typical applications

Optical fibres made of PC are typical applications in optics, where a low colour shift – the difference between the colour values of the LED light source and the outgoing light – is a quality feature. By reducing the yellow value, the colour shift decreases significantly (graphic).

For COP and COC plastics, which were developed as glass substitutes in medical technology and imaging optics, the manufacturer's instructions even explicitly refer to processing with N₂ as

an inert gas. In these applications, the main aim is to avoid black particles in the parts.

In terms of process technology, N₂ flushing first requires a gas extraction station on the injection moulding machine. A compact unit with integrated flow measurement has been designed





for ALLROUNDERS for this purpose. This means that the desired N₂ feed to the injection unit's material feed zone can be easily and selectively adjusted via a pressure regulator. In production, only a gas connection with a maximum of 40 bar needs to be provided.

Choice of different flushing modes

Another aspect is the control of the N₂ feed in the process sequence, as applications in medical technology often require continuous flushing of the melt. Depending on the temperature of the cylinder module, the inert gas is switched on as early as the heating phase.

An alternative to continuous flushing is intermittent flushing during dosing and decompression – especially for optical applications. Gas consumption can be reduced by up to 75 per cent without compromising on quality.

Documented quality

To cover all areas of application, the SELOGICA and GESTICA machine controllers offer four different selectable functions for N₂ flushing. Operation is simple and requires no programming in the process. In addition, integrated flow measurement at the gas extraction station also allows the quality-defining N₂ flow volume to be used for process monitoring, and the production process to be seamlessly documented.

This nitrogen flushing example shows that ARBURG offers integrated hardware and software solutions even for "exotic" process technologies. The options for equipping ALLROUNDERS are constantly being developed and expanded.

Especially in medical technology and optics, the quality of transparent parts can be significantly improved by flushing the material feed zone with N₂ (picture above).

This is shown, for example, by measuring an optical fibre's "colour shift" in the CIE colour space with different types of flushing and flow volumes (graphic).

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