

today

The ARBURG magazine

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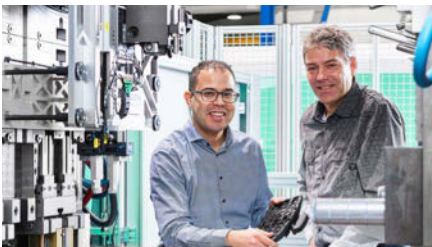
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IMPRESSUM

today, the ARBURG magazine, issue 69/2019

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The cover image was inspired by K-Profi trade magazine, which similarly focused on ARBURG IT employee Carolin Humm in one of the Fakuma editions on the subject of digitalisation.

ARBURG



Dear readers,

I hope that you had a good start into 2019 – a year which is bound to be an exciting year for the entire plastics world, as it is time for the K trade fair again. This leading global trade fair will once again show what the future holds. Also for us. There is much to be excited about! And there is one thing I can reveal at this point: we will continue to move forward on our “Road to Digitalisation” – together with you. Regardless of whether you have already embarked on the path to digitalisation or if you are just starting out: we will be with you all the way. You can get an idea of what your path could look like during the Technology Days, the next step will then follow at K 2019.

Let yourself be inspired and try something new – that is the common thread running through this issue of “today”. Thomas Teufel ventured into new territory when he entered additive manufacturing almost 30 years ago. In our interview, the expert explains what can be achieved in 3D production today, e.g. with the freeformer. Our user reports will also introduce you to companies that have successfully broken new ground. These include Kokinetics, one of the first customers for our large ALLROUNDER 1120 H, as well as Lumitec and Ash Cloud. They all had the courage to enter the demanding world of injection moulding. Let us inspire you – at our Technology Days, during our worldwide trade fair activities and with this issue of “today”.

Happy reading!

Renate Keinath
Managing Partner

Thinking additively – creating added value

Teufel Prototypen: freeformer expands portfolio to include additively manufactured original parts

Teufel Prototypen from Unterfahlheim, Germany, looks back on decades of experience in additive manufacturing. Since 2018, the company has been using various processes, including ARBURG Plastic Freeforming. In our interview, Managing Director Thomas Teufel explains why he opted for the freeformer, when it makes sense to manufacture products additively, and which criteria apply in this regard.

today: Which additive processes do you use?

Teufel: As early as 1991 we started using an FDM (Fused Deposition Modeling) machine. This was followed by our first stereolithography (STL) system in 1998 and then the first selective laser sintering (SLS) system in 2006. In autumn 2018, we added a freeformer 200-3X to our machine fleet. This makes us the world's first "pure service provider" to offer ARBURG Plastic Freeforming (APF).

today: What was the reason for expanding your portfolio?

Teufel: Demand for series-identical components – i.e. products made of original material – is continuously increasing. Since 2005, we have been handling small-volume batches using an ALLROUNDER injection moulding machine and rapid tooling moulds. With the freeformer, we

can now also offer series-identical parts in single-unit batches.

today: For which customers are APF parts particularly suitable?

Teufel: The key advantage of the freeformer, its ability to process original plastic granules, is of particular interest to the medical technology and packaging industries. Moreover, the properties of additively manufactured components made of original material can be comprehensively tested before the final product goes into series production. Another advantage is the production of very soft products from TPE and resilient hard/soft combinations. For the latter, I'm already eyeing the new freeformer 300-3X for processing three components.

today: What is the demand for APF parts?

Teufel: It's excellent! Even after just a short time. The successful presentation of the freeformer at our Fakuma stand in October 2018 certainly played a role in this. Not only was there a great deal of interest, but specific projects for the freeformer emerged immediately after the trade fair.

today: What kind of wishes are you presented with regarding additive manufacturing?

Teufel: In many cases there is the desire to improve and manufacture existing products more cost-effectively by means of additive manufacturing. However, this only works for a maximum of one in ten cases, since the parts were designed for other manufacturing processes. Instead, the correct approach is to use the potential of additive manufacturing (AM) to create added value.



today: What does this mean in concrete terms?

Teufel: Ideally, the part design is optimised to make it AM-compatible. A robot gripper that was originally made of aluminium is a good example. We completely redesigned the gripper for additive manufacturing, in close cooperation with the customer.

ue



Managing Director Thomas Teufel uses an optimised gripper to illustrate the general advantages of additive manufacturing (top) and the potential of the freeformer in the production of soft components from original material (left).

Because the air lines had been integrated, there was no need for additional lines and assembly work for the plastic gripper. Plus the weight was also reduced. As a result, the robot was able to work much faster and more accurately and the system output was significantly increased.

today: As an expert, what advice would you give your customers or companies regarding additive manufacturing?

Teufel: Additive thinking is a necessity. Faithful to our credo "Creating the future",

we provide our customers with comprehensive support, for example by providing a guideline for the design of additive components. Because it is important that long-standing expertise in other processes is not transferred one-to-one. Fortunately, additive manufacturing is now a part of training and university education, so young engineers are taking this knowledge into the companies. This is an important step for further advancing additive manufacturing.

INFOBOX

Name: Teufel Prototypen GmbH

Founded: 1985 by Karl Heinz Teufel

Location: Unterfahlheim, Germany

Turnover: EUR 4.9 million (2018)

Divisions: Additive Manufacturing, Casting, High Speed Cutting, Rapid Tooling, Model Making

Employees: 48

Industries: automotive, medical technology, consumer goods

Products: models, prototypes and small-volume batches

Machine fleet: six machines for additive manufacturing, including one freeformer

Contact: www.teufel-prototypen.de

A clear perspective

ATCM: new SCADA system for turnkey systems



The new ARBURG Turnkey Control Module (ATCM) SCADA system visualises the processes of complex turnkey systems and merges all relevant process and quality data for specific parts. This enables 100 percent traceability of individual parts or component assemblies. The principle was demonstrated by ARBURG for the first time at Fakuma 2018 using spirit levels as an example.

Each ATCM receives a system-specific interface and is therefore only available for new turnkey systems. Prerequisite for implementation is an ALLROUNDER featuring the OPC UA interface. The ATCM collects the data from the individual stations of the production cell and forwards the data sets to an evaluation system in an event-driven and part-specific format.

The key functions of the complete production cell are visualised via a central HMI (Human Machine Interface) terminal. These include protocol charts, system statuses and alarms or the results of a camera inspection. Injection moulding machine, automa-

tion and peripheral equipment – e.g. lasers, scanners, image processing systems and measuring instruments – each supply the relevant data to the ATCM. Communication preferably takes place via OPC UA and on some peripheral devices via proprietary TCP / IP interfaces.

Number and code for each part

In the ATCM, each part automatically receives a unique number (ID) based on the shot numbers assigned during injection moulding. To ensure that the parts can be traced unambiguously, an identifier, e.g. a QR code, is applied following removal. The individual data sets are transmitted to an evaluating system, such as the ARBURG ALS host computer system, at defined intervals.

A Fakuma 2018, a complex turnkey system consisting of an electric ALLROUNDER 470 A, a MULTILIFT robotic system and an assembly station produced ready-to-use spirit levels. The process also included several test steps and label-

ATCM links part-specific process parameters with test results and visualises the key functions of the complete production cell via an HMI terminal with touch panel.

ling each spirit level with a QR code. The ATCM captured the information from the injection moulding process and camera inspection and allocated it to the relevant part via the QR code. Visitors were able to scan this code with their smartphones and view the corresponding process data on a part-specific website.



Video

Brilliant solution

fischer automotive systems: flexible turnkey system for multi-variant roller blinds

At the US location in Auburn Hills, Michigan, fischer automotive systems produces kinematic components for the centre console of the Mercedes GLE class, which are equipped with a roller blind. The individual slats of the roller blind are injection moulded using a large two-component ALLROUNDER 920 S and, while they are still in the turnkey system, are combined with externally supplied parts to form the finished subassembly.

“Because we needed to produce the decorative roller blinds in many variants and in large quantities, we were looking for a very flexible turnkey solution,” explained Dan Saari, Production Manager at the fischer production plant in Auburn



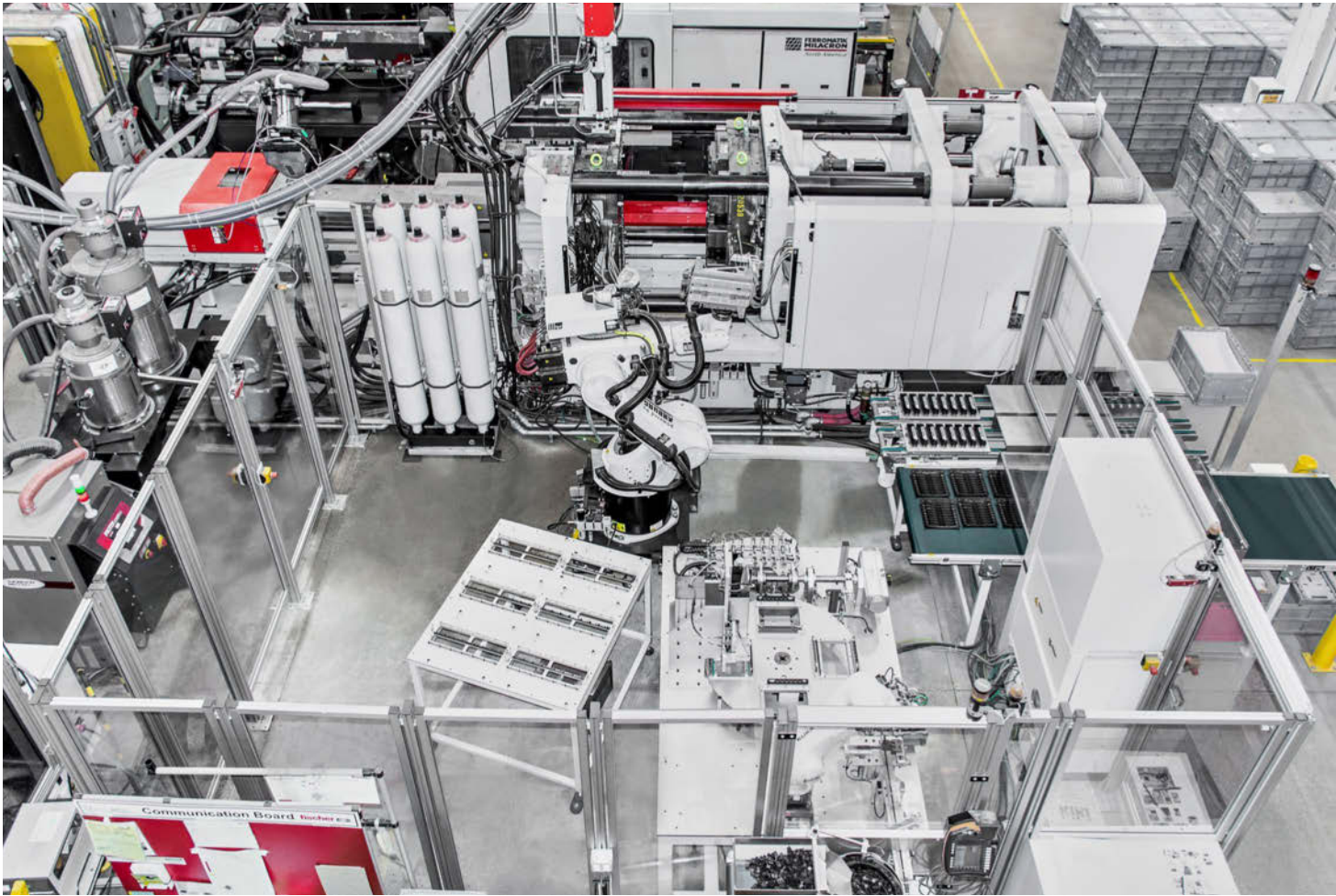
Photos: fischer

Hills. The complex product requires precise two-component injection moulding and demanding assembly. Consistently high part quality and production efficiency were also important. “From planning to implementation, ARBURG provided us with excellent support throughout and

found a particularly clever solution,” emphasised Dan Saari.

A hydraulic two-component ALLROUNDER 920 S with a clamping force of 5,000 kN and two KUKA six-axis robots integrated into the SELOGICA controller form the heart of the flexible turnkey system. Assembly is

Production Manager Dan Saari, Process Engineer Izet Cejvanovic and Maintenance Manager Jon Anderson (from left) accompanied the turnkey project at fischer automotive systems in the USA. The injection-moulded and assembled subassembly is finished with decorative elements to produce the roller blind (picture above).



integrated directly into the turnkey system to improve product quality and availability. In addition, there is a cooling station, an oscillating conveyor and a manually loaded double shuttle table for feeding external assembly parts.

Central SELOGICA controls processes

“We can control and monitor all turnkey system processes easily and transparently with the user interface of the central SELOGICA,” explained Izet Cejvanovic, Process Engineer at fischer in the USA, citing a major advantage. In addition, the hot runners, the mould temperature control and the needle-type shut-off nozzle are regulated via the machine controller.

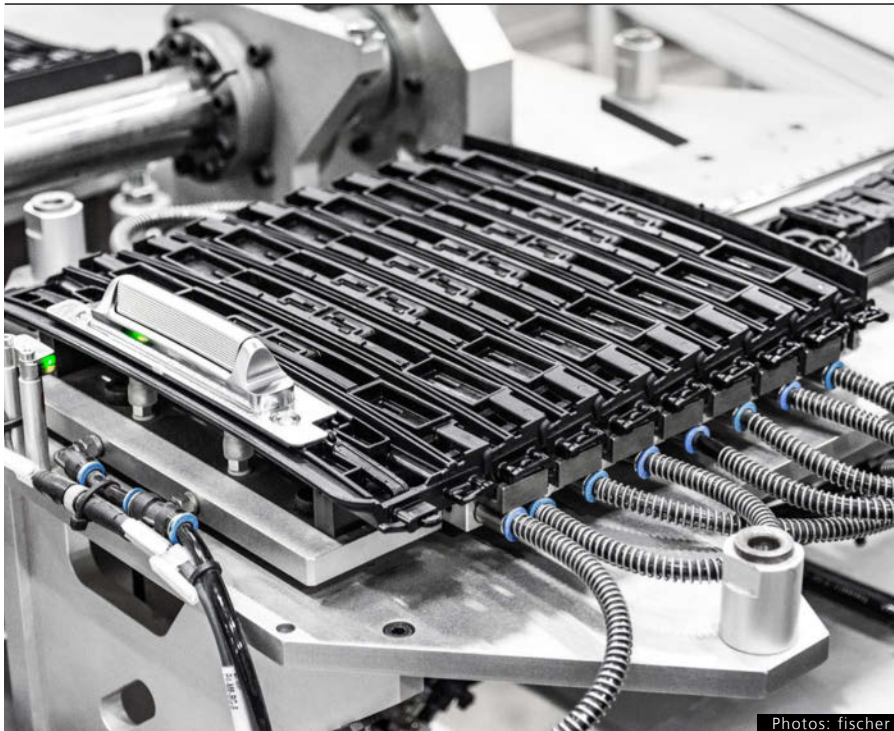
Equipped with an 8+8-cavity mould, the two-component ALLROUNDER 920 S initially produces eight individual slats from fibreglass-reinforced PA6. They are



rotated precisely by 180 degrees to the next position by an indexing unit in order to inject two soft sealing lips made of TPU onto each slat. These then ensure that the centre console roller blind will not rattle or squeak while driving. The injection mould-

ing parameters are continuously monitored and reject parts are immediately ejected from the process.

The large KR 30 six-axis robot uses a complex vacuum gripper specially designed for this application. It removes the eight



The complex turnkey system (top left) combines injection moulding and assembly. An external element which is fed via a double shuttle table (bottom left) is pressed together with eight injection moulded slats to form a subassembly for roller blinds (top right).

finished hard/soft parts and deposits them on a cooling station with a total of 48 slots.

Two six-axis robots for assembly

Following the first-in-first-out principle, the robot then grips eight cooled slats and another element that is fed via a double shuttle table with a pre-assembled handle. The individual parts are deposited in the assembly station. Here the subassembly is assembled during the current injection moulding cycle. The slats are first pushed together before being turned.

At the next station, an Agilus six-axis robot progressively threads two clips each between two slats into the pins provided for this purpose in a complex rotary motion. These small parts were previously fed individually by means of an oscillating conveyor. In the next step, the clips are pressed together with the slats. After that, the small Agilus' big brother in turn removes the fully assembled subassembly and places it on a conveyor belt. This is now ejected from the system and subsequently finished to customer specifications, e.g. with a wood decor or powder enamel coating.

"In this way, around 1.6 million of these products will be produced for the automotive industry over the course of the project," emphasises Dan Saari. He confidently adds: "We are ideally positioned to meet the demanding requirements of the automotive industry with this flexible and production-efficient turnkey system."

INFOBOX



Name: fischer America Inc., subsidiary of fischer automotive systems GmbH & Co. KG

Founded: 1998

Location: Auburn Hills, Michigan, USA

Employees: 196

Industries: tier 1 supplier for the automotive industry (Daimler, Audi, BMW, Chrysler, GM, Porsche, Rolls Royce, VW, etc.)

Products: high-quality passenger car interior, e.g. storage compartments, air vents and multifunctional components

Machine fleet: 26 injection moulding machines, including 19 ALLROUNDERS with clamping forces from 250 to 5,000 kN

Contact:

www.fischer-automotive-systems.de

Everything fits toge

KEBO: Gerold Keller and Andrew Sargisson value ARBURG as a

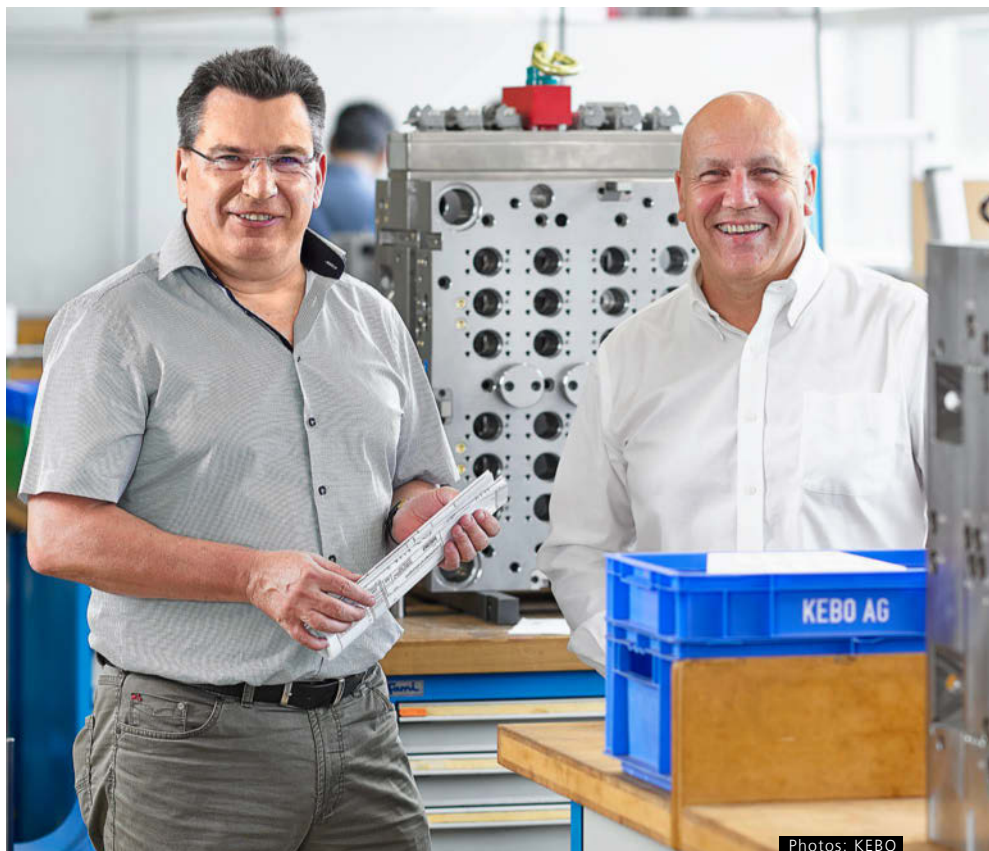
K EBO AG in Neuhausen am Rheinfall, Switzerland, is a recognised manufacturer of high-end moulds for medical and packaging technology – and has been a dedicated ARBURG partner since the company was founded in 1979. In our interview, Managing Director Gerold Keller and Sales Manager Andrew Sargisson discuss the fruitful cooperation in the packaging industry and present some application examples showing how customers can benefit from this.

today: Why do you think KEBO and ARBURG are a good match?

Keller: Like ARBURG, we are a typical family-run company with many long-serving employees. Using our expertise and high-tech, we solve the special challenges that we are faced with. ARBURG has a very similar mentality and a highly pragmatic approach; it all fits together in human and technical terms.

today: Before ARBURG intensified its activities in the packaging sector with a specially designed machine in 2009, you were among those asked what the ideal features should look like. That sounds like a very open dialogue?

Keller: Absolutely, we fully support each other. To further improve ARBURG packaging machines we designed a special mould for thin-walled parts, for example. The number of cavities can be varied so that 2, 4 or 6 cavities can be used on different machine sizes.



Photos: KEBO

today: The hybrid ALLROUNDER HIDRIVE machines in the “Packaging” version are currently ARBURG’s leading products in the packaging market. Do you have a particularly challenging project example in this regard?

Sargisson: Yes, one of these size 820 ALLROUNDERS with 3,700 kN of clamping force and equipped with a 6-cavity mould is currently producing six thin-walled IML cups with a capacity of 750 millilitres for the Chinese market in a cycle time of just 5.9 seconds. We optimised the hot runner mould using a sophisticated measuring

Managing Director Gerold Keller and Sales Manager Andrew Sargisson (top, from left) appreciate the ARBURG partnership and the open dialogue with the packaging team (right).

sensor system. We are operating at the technical limit here: despite the extreme flow path/wall thickness ratio of around 1:400, complete mould filling is achieved.

ther

packaging partner

The customer had to make a higher investment, but has since been able to lower his production costs by around one third, something we were able to prove by calculating the unit costs, including the running costs.

Keller: Such a demanding project can only succeed on the basis of honest and open cooperation between machine, mould and robotics manufacturers. Many customers are thrilled by the performance of ARBURG machines with our mould technology because not only the injection and cycle times are excellent, but also the output.

today: How do you approach the process of developing a common concept?

Keller: For the specifications of an injection moulding machine, it is ideal if we as mould manufacturer are allowed to define the parameters, for example with regard to core pulls and water connections. Then

provided real added value, is a recently realised project for yoghurt cups.

Sargisson: The customer greatly appreciated the fact that he had zero cause for concern during the project jointly realised by ARBURG and an automation manufacturer. Now three hybrid ALLROUNDER 720 H machines in "Packaging" version, equipped with 8-cavity moulds, achieve more output than five other injection moulding machines previously.

today: ARBURG is known for its after-sales service and a well-structured worldwide sales network. Do you benefit from this?

Sargisson: Absolutely! In the US, for example, we had been in contact with a customer since 2011. This involved the production of conical airline cups, where cost pressure was a critical issue. A hybrid ALLROUNDER 920 H packaging machine equipped with one of our 12-cavity moulds best met this challenge, so that ARBURG was awarded the contract in the end. An ARBURG technician from the Rocky Hill subsidiary was present during installation.

Keller: We have a true partnership with ARBURG and cooperate on an exceptionally trusting basis – in any country. This benefits

us, ARBURG and above all our customers.



everyone does their part and finally the system is assembled, tested and approved. A good example, which went very smoothly, thanks to good coordination, and which

INFOBOX



Name: KEBO AG

Founded: 1979 by Alfons Keller and Charles Bodenmann

Location: Neuhausen, Canton of Schaffhausen, Switzerland

Employees: approx. 80

Industries: medical, pharmaceutical, packaging technology

Products: development and production of injection moulds and hot runner technology

Contact: www.kebo.com



The place to be!

20 years of Technology Days: home to the world of plastics since



ARBURG has hosted its Technology Days every spring at its headquarters in Lossburg for 20 years now. These are internationally regarded as a unique industry event and have been attended by almost 88,000 invited experts from over 50 countries since their launch in 1999.

Often imitated but never equalled: the ARBURG Technology Days. "Had we known at the time, we would have better



1999

The Technology Days attracted many visitors: compared to the former demonstration room (above), the current Customer Center (below) offers significantly more space for exhibits and applications.

1999



2018

protected the name," smiles Dr. Christoph Schumacher, Head of Marketing and Corporate Communications at ARBURG, with the benefit of hindsight.

There are many reasons for the continuing success of the Technology Days. More than 50 exhibits showcasing a wide variety of applications from all areas, expert presentations and insights into what goes on behind the scenes at the company attract thousands of guests to Lossburg every year:



News

customers and interested parties as well as journalists. The proportion of foreign participants has risen steadily over the years and now stands at more than 40 percent. And what's even more important: around half of all guests are first-time visitors! The visitors receive extensive support from over 600 ARBURG employees – another success factor.

Overview and new impetus

Interested parties use the event to gain a general overview of the ARBURG portfolio and its potential. Long-standing customers, on the other hand, come with the intention of finding out about trends and innovative technology in order to obtain new ideas for their production.

Since its introduction in 2013, the Efficiency Arena has been a crowd puller for everyone, illuminating forward-looking topics and their significance in the practice.

The main focus of the Technology Days from 16 to 19 March 2019 will be the "Road to Digitalisation". Digital products and services such as the assistance packages (see

Tech Talk page 26) and the new ARBURG customer portal will be presented in the Efficiency Arena.

"Digitalisation" remains a recurring and important topic for the exhibits in the Customer Center and in the turnkey area as well as in the service area and as part of the expert presentations and tours.

Advance information online

The wide-ranging programme makes a visit well worthwhile. Anyone wishing to get a preview of what will be on offer can find an initial overview of the exhibits and presentation topics on the ARBURG website.



Luminous logo

Lumitec: successful entry into injection compression moulding

The use of electroluminescent films is one of the core competencies of Lumitec AG in Gais, Switzerland. They are used to create “smart” applications such as backlit panels for sports seats in the automotive sector. When no injection moulding company was capable of achieving the required in-mould film lamination in high quality for series production, ARBURG not only provided support in terms of machine technology, but above all application technology expertise. As a result, Lumitec has taken on injection moulding production of these panels for themselves, practically pioneering the process since 2013.

The sports seat panels are installed in the backrests of the seats as identity carriers and “welcome indicators”. They are backlit in colour as soon as the vehicle is opened using the remote-controlled key or door handle. Accordingly, the demands on the appearance of the product is extremely high.

Sophisticated look

The black surface requires a high-quality high-gloss finish and very high resistance to extreme temperatures and at times highly aggressive leather lotions. Emil Enz, CEO of Lumitec AG, explains the considerable technical challenges: “The challenges relating to the visual characteristics could only be solved because, instead of the HPF process (High Pressure Forming), thermal preforming was chosen. This means that the film is not fully formed, but that the final shape is achieved only during the injection moulding process. This requires the compression moulding process.”

Process optimisation leads to success

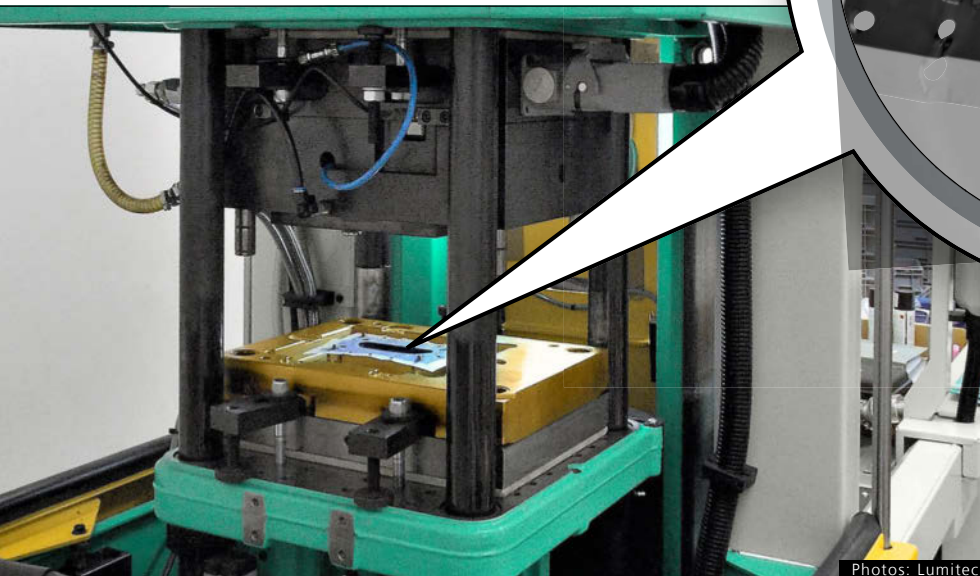
Problems had arisen in pre-series production when no injection moulding company was capable of producing the parts for Lumitec in high-quality and in high volume. Via the automation company for the injection moulding system, the application

engineers at ARBURG received an optimisation enquiry. In Lossburg, the experts tried to improve the process. It quickly became clear that only changes to the mould would lead to success. After just one day of intensive testing, a production data set was created and a recommendation made for further mould optimisation.

As part of the analysis, Lumitec learned how a process could be optimised with the help of process and monitoring graphics and how these graphics should be interpreted. The very next day, the Swiss company was already thinking about buying a suitable ALLROUNDER, which came as quite a surprise to ARBURG. An ALLROUNDER 270 S with a swivelling clamping unit has been integrated into a production line at Lumitec since October 2013. On this machine with a vertically positioned clamping and injection unit, the films that were preformed in thermoforming steps are inserted into the mould and laminated in-mould using the compression moulding process.



with ARBURG



Photos: Lumitec

The backlit sports seat panels (left) require a very demanding production process. Electroluminescent films are laminated in-mould using an ALLROUNDER 270 S (images on the right).

Getting started with highly sophisticated technology

Emil Enz notes that all process steps required highly controlled processes, especially with regard to preforming and injection moulding: "The main factor that enabled us to manage the whole process within around six months – from the specifications for mould construction to the purchase of the injection moulding machine and the implementation in production-ready processes – is the outstanding support from ARBURG application engineering and the German IfK Ingenieurbuero fuer Kunststofftechnik in Balingen. We thus successfully ventured from nowhere into one of the most demanding niches in injection moulding technology."

Since purchasing the ALLROUNDER, Lumitec has moved on to the second generation of pan-

els; at the production facility in Gais, they were able to independently adapt the process to the new films.

INFOBOX



Name: Lumitec AG
Founded: 1986 by Emil Enz
Locations: Gais, Switzerland
Employees: approx. 15
Industries: automotive, aerospace, watches, industrial goods
Products: electroluminescent films and systems
Contact: www.lumitec.ch



Requirem

Kokinetics: Large ALLROUNDER 1120 H produces millions of parts

The customer portfolio of seat manufacturer Kokinetics GmbH in Kriftel (Germany) includes almost all well-known international automotive manufacturers. This is reflected in the high demands the company places on its machine fleet. Since February 2018, this has included two automated hybrid ALLROUNDER 1120 H systems, with a clamping force of 6,500 kN. These largest ARBURG machines produce fibre-reinforced carrier plates for car seat depth adjusters.

Kokinetics Production Manager Reiner Amberg is pleased with the ALLROUNDER 1120 H machines: "We have a background in metalworking and, although we have only been processing plastic in-house for three and a half years, our two large ALLROUNDERS produce flawless high-quality products in three-shift operation." The first experiences with the new large machines are absolutely positive, even if there are always minor teething problems in practice at the early stages. "We can, however, either solve these problems by ourselves or by having a brief conversation with the experts in Lossburg. Working with just one machine manufac-

turer right from the start and knowing our contacts at ARBURG has paid off," notes Reiner Amberg.

World market leader for carrier plates

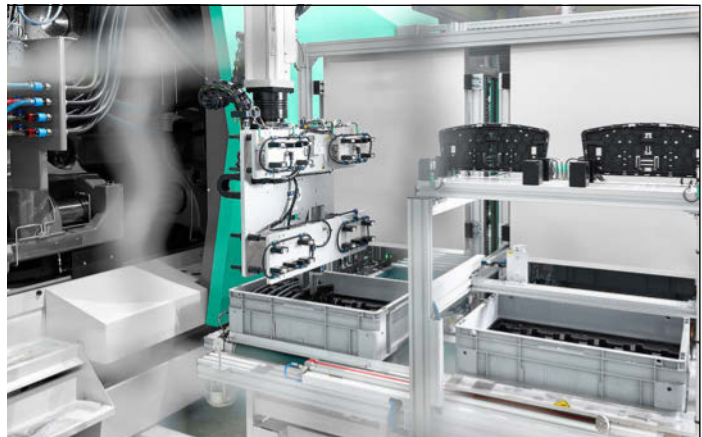
To meet the specifications of the automotive industry, Kokinetics only processes PP filled with long glass fibres. This material is also used for mass production of carrier plates for seat depth adjusters in various designs. It is a field for which Kokinetics claims world leadership. To use multi-cavity moulds for this, the machines had to be of a certain size – with the ALLROUNDER 1120 H, ARBURG now meets this demand.

Size 1120 H at the right time

Kokinetics was one of the first customers for the large machines. Reiner Amberg commented: "During planning of the project, it became clear that the quantities would become so high over the product life cycle that we would not be able to achieve them using two-cavity moulds. Due to a lack of space at our site, various scenarios were initially simulated with stack and progressive moulds. Instead of the three size 1120 H machines, we would have needed

six ALLROUNDER 720 S machines and the respective palletising stations, which would have almost doubled the space requirement." Like all the other ALLROUNDERS, the first two 1120 H machines are now in permanent operation and producing millions of parts.

The shot weight for the four carrier plates is 1,124 grams. "Basically, the moulds have a very simple design," said Reiner Amberg. "They have a hot runner for sprueless injection moulding as well as exposed and concealed sliders. With these moulds, we manufacture the parts in continuous production on customer request." A special feature of the MULTILIFT V 40 robotic systems in transverse design, which are integrated into the two injection moulding systems, is a two-part vertical mould-entry axis allowing work to be carried out at hall height. The combined pneumatic suction gripper module removes the parts from the mould, rotates the upper two parts by 180 degrees and deposits them in an intermediate station. From there, the gripper picks up the carrier plates and, by turning them again (left/right), inserts them vertically in the correct position into blister packs or small batch containers for further assembly.



ent: permanent operation

As a turnkey partner, ARBURG also designed and supplied the robotic systems and storage peripherals. According to Hicham Amriui, head of project management, a major advantage was that the entire system had already been set up in Lossburg and sampled with original moulds. This allowed production to be started immediately after delivery and acceptance.

"We are also very satisfied with the support provided by the departments in Lossburg and the service centre in Worms, because they listen to our feedback, in particular on the new ALLROUNDERS 1120 H," said Reiner Amberg.

More machines in 2019

This is one of the reasons why Kokinetics has already ordered three new ARBURG machines. The ALLROUNDER 1120 H, 920 S and 630 S machines are all equipped with robotic systems and will be integrated into production by Summer 2019. "Our third large ALLROUNDER 1120 H will then allow us to produce around 20 million parts per year," said the delighted production manager.

Hicham Amriui, Head of Project Management, and Reiner Amberg, Production Manager, are pleased with the large turnkey systems (top left). The large ALLROUNDER 1120 H machines are equipped with MULTILIFT V robotic systems (top, centre and right) and are used to produce carrier plates for car seat depth adjusters (below).



INFOBOX

Name: Kokinetics GmbH

Founded: 1890

Location: Kriftel, Germany

Employees: approx. 300

Industries: automotive and related industries

Products: moving parts, components and systems made of metal, plastic and hybrid materials

Machine fleet: 15 ALLROUNDERS with clamping forces from 2,000 to 6,500 kN

Contact: www.kokinetics.de

WORLD FREEFORMER
3 COMPONENTS PREMIERE

Superb trade

Formnext 2018:





fair appearance

freeformer world premiere inspires experts

In November 2018, Formnext in Frankfurt am Main, Germany, lived up to its reputation as the world's leading trade fair for additive manufacturing: almost 27,000 trade visitors came to the fair, a record plus of 25 percent. And ARBURG was right in the middle of the action with a crowd puller: the premiere of the freeformer 300-3X, the world's first machine capable of additively manufacturing complex functional parts in a resilient hard/soft combination with support material.

"We hit the bull's eye with the freeformer 300-3X," said ARBURG Managing Partner Juliane Hehl. "The trade community has apparently been waiting for such a three-component machine, which enables completely new applications in industrial additive manufacturing."

ARBURG impresses trade visitors

ARBURG has become a regular port of call for anyone interested in industrial additive manufacturing of functional plastic parts.

"I think the live presentation of the freeformer is very successful," said Cindy Qiao, Sales Director at Husun Technologies in Beijing, who travelled from China specifically for the event. As a distributor

for medical technology, she is particularly interested in FDA-approved original materials and additive manufacturing of implants. David Schmid, a developer at invenio GmbH Engineering Services in Ruesselsheim, Germany, is also focusing on additive manufacturing: "At ARBURG, I really like the interactive stations with functional parts. I love the 'planetary gear' assembly, where cranking causes individual gears to mesh exactly with each other."

Attractive new rental model

Bernd Rittinghaus, from German injection moulding company Ernst Rittinghaus in Halver, attended Formnext for the first time, "because we are getting more and more inquiries regarding product development. Using a freeformer, we could additively manufacture complex prototypes from original materials, with typical injection-moulding functions such as the 'click effect'."

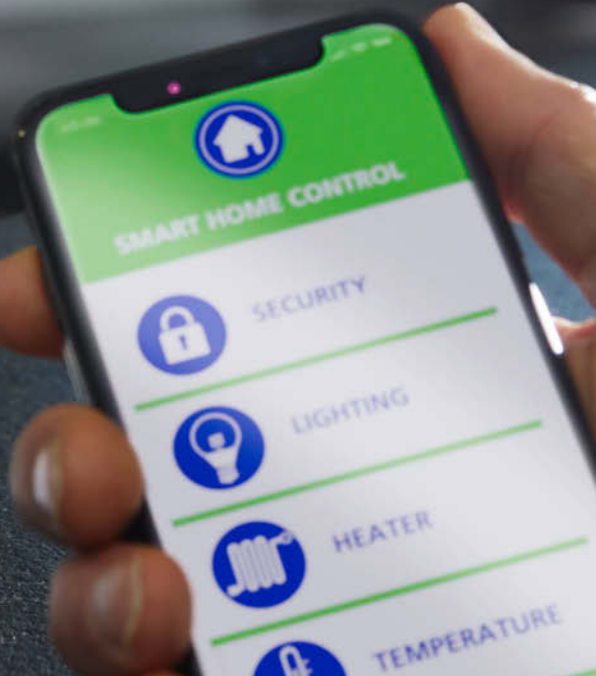
The "all-in package" for the freeformer 200-3X also met with a positive response. "The new rental model would allow me to simply try out the freeformer and gather experience before making a purchase decision," said Bernd Rittinghaus, team leader for model making at Jung in Schalksmuehle, Germany. As he manufactures electrical installation equipment, partly in low-volume batches, he has been interested

The world premiere of the freeformer 300-3X and the interactive stations attracted trade visitors to the ARBURG stand (left). The freeformer 300-3X can process three components (centre) and produce resilient hard/soft combinations with support material, e.g. a movable "gripper finger" (right).

in functional 3D printing for some time. The company Hehnke from Steinbach-Hallenberg, Germany, is not only active in injection moulding and mould construction, but also in new areas such as 3D measurements using computer tomography. "In future, we would also like to get involved in additive manufacturing," said Managing Partner Tommy Hehnke. He can imagine trying out the attractive rental model and using the freeformer for additive manufacturing of gripper elements and equipment for his own injection moulding production.



Video



Really smart!

Cameron-Price: broad product range – an injection moulding

As a “typical” moulded part manufacturer, Cameron-Price Ltd from Birmingham, Great Britain, has a very broad product line-up. Its fleet of machines must be accordingly flexible. A highlight among the extensive product range are housing parts for the “Centrica Hive” smart home system by Centrica, a subsidiary of British Gas, the UK’s leading energy supplier.

Cameron-Price has continuously strengthened its partnership with ARBURG over the past 15 years and is increasingly focusing on the automation sector. While the large ALLROUNDER 630 S and 720 S systems are mainly used for injection moulding of automotive parts, the other machines produce products e.g. for the electronics, sports and medical technology industries.

Parts for smart home applications

Recently, Cameron-Price has invested heavily in increasing machine capacities for manufacturing smart home components. These are housing parts for the heating and hot water control of the Centrica Hive system from Centrica. It consists of various

components for smart control and monitoring of private households and is mainly used in Europe and North America.

Tolerances measured in microns

Two 4-cavity moulds are used for the front and rear sides of the ABS housings. The surfaces are highly polished and the cycle times are below 30 seconds. Especially for the front side, the customer expects perfect tactile qualities, which are achieved through appropriate mould specifications.

In general, the moulded parts for the Centrica Hive system must have a high degree of dimensional accuracy with tolerances of ten micrometers. To achieve this, Cameron-Price relies on the high reproducibility of ALLROUNDERS and their automation.

After the machines had been equipped with robotic systems, part quality was assured comprehensively across all shifts. The yearly maintenance intervals ensure efficient use of the ARBURG machine fleet and minimise spare parts costs. “We use an ALLROUNDER 570 C GOLDEN EDITION equipped with a MULTILIFT SELECT robotic system for producing parts for the Hive system,” explained Barry Moor, Managing Director of Cameron-Price. “In this way

we combine maximum flexibility for quick mould change and simple programming of the entire system via the SELOGICA machine control system to achieve a smooth manufacturing process.”

The quality of all parts, in particular the surface and dimensional stability, is checked by an operator directly at the machine. The front and rear housings are then individually packed in antistatic bags. They are then shipped to processors in Europe before being sold to end customers.

SELOGICA saves time and costs

Asked about the advantages of the SELOGICA machine control system, Barry Moor noted: “The detailed graphic representation shows a very clear picture of the cycle sequence and provides a convenient option for checking whether the part is OK directly during the process and before manual part inspection. We are able to exchange data between the machines, which saves time and costs. In addition, using the servo-hydraulic system also saves us a considerable amount of energy.” The decision-makers at Cameron-Price view ARBURG not as a machine supplier, but as a system supplier. Barry Moor commented:



partner

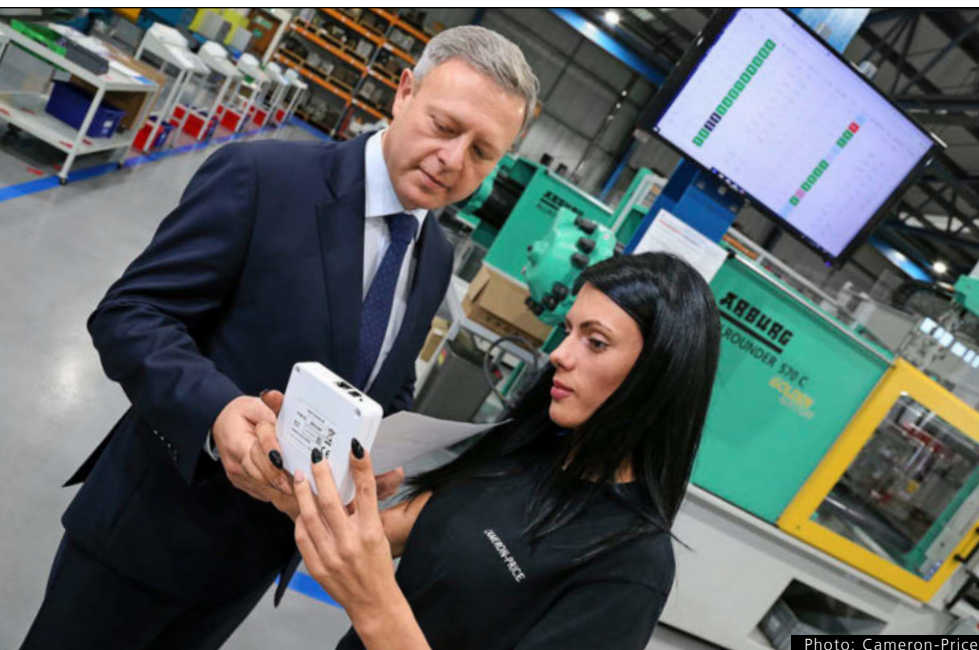


Photo: Cameron-Price

"It makes it all much easier when you only have one partner to deal with who can help us fully meet our customers' needs."

The components for the Centrica Hive smart home product (top) are produced on ALLROUNDERS. Managing Director Barry Moor likes to check their quality directly on site (right).

INFOBOX

Name: Cameron-Price Ltd

Founded: 1960 by James Cameron-Price

Location: Birmingham, United Kingdom

Employees: approx. 80

Products: safety-relevant products for automotive engineering, e.g. for brakes, steering and fuel supply, new product families for electric and hybrid vehicles, medical articles, industrial and consumer goods

Machine fleet: 24 injection moulding machines with clamping forces from 500 to 3,000 kN, of which 15 are ALLROUNDERS

Contact: www.cameron-price.co.uk

Congratulations!

Subsidiaries: ARBURG celebrates its anniversaries in Europe and 25 years in Italy

The Italian ARBURG subsidiary celebrated its 25th anniversary in September 2018 on a grand scale. An exclusive evening event with more than 160 guests was followed by a two-day open-house event. As a highlight, Managing Partner Juliane Hehl presented the traditional anniversary sculpture to Bjoern Norén, former Managing Director of ARBURG Srl.

Juliane Hehl was especially impressed with the subsidiary's dynamic development in recent years: "ARBURG Italy has long been the undisputed leader among our European subsidiaries." Since its founding, the team has grown by more than double to 38 employees. ARBURG sold its

first injection moulding machines to Italy as early as the late 1950s, and in 1960 Borje Norén's company Sverital became the official trading partner.

His son Bjoern Norén took over the management of the subsidiary founded in 1993 and successfully established and expanded it. He went into "ARBURG retirement" on 1 January 2019 and handed over management to Raffaele Abbruzzetti.

Bjoern Norén will continue to be involved with the company via his family company Sverital, a long-term automation partner of ARBURG in Italy.

Raffaele Abbruzzetti has been Managing Director of ARBURG Italy since 1 January 2019.



Managing Partner Juliane Hehl congratulates Bjoern Norén, Managing Director of ARBURG Italy until the end of 2018, on 25 successful years.



Asia

25 years in the Netherlands

The big celebrations on the occasion of "25 years of ARBURG Netherlands" kicked off with a two-day open-house event. This was followed by an exclusive evening event with 80 guests on 1 November 2018, at which Managing Partner Renate Keinath presented the anniversary sculpture to Gerrit Hazeleger, Managing Director of ARBURG BV.

In her speech, Renate Keinath emphasised the achievements of the Dutch 14-strong ARBURG team: "Customers very much appreciate the team's high level of expertise, which is an important factor in our success story in the Netherlands." It be-

gan with the sale of the first ARBURG injection moulding machine to Dutch company Draka in 1957. Customer support had been provided by the long-standing trading partner Kurval until ARBURG founded a subsidiary in 1993 in response to the successful market development. Gerrit Hazeleger has been Managing Director of ARBURG BV since 2010. As of 2019, he will also be taking over management of the Belgian branch from Simon Bemong, who is re-

tiring. In this way, both organisations will cooperate even more closely in the future and benefit from synergies.

Proudly looking back on 25 successful years: Managing Partner Renate Keinath with Gerhard Boehm, Managing Director Sales, Gerrit Hazeleger, Managing Director of ARBURG BV, and Stephan Doehler, European Sales Director (from right).



10 years in the United Arab Emirates

ARBURG used the setting of Arabplast in Dubai to duly celebrate the tenth anniversary of the subsidiary in the United Arab Emirates in January 2019.

To mark the occasion, a festive event with 50 guests was held. In this context, Managing Director Joachim Branz received the anniversary sculpture from Andrea Carta, Director of Overseas Sales. In his speech, he looked back at the milestones

and the successful development of the subsidiary. He also described the exclusive cooperation with the Higher Institute for Plastics Fabrication (HIPF) in Riyadh as an important cornerstone. ARBURG injection moulding technology can be presented live with 15 ALLROUNDERS in the Institute's technical centre.



Director of Overseas Sales Andrea Carta (left) congratulated Managing Director Joachim Branz on the anniversary.



Dare to

Ash Cloud: Chinese supplier enters the field of injection moulding

In 2016, the Chinese company Ash Cloud decided to start using injection moulding, without having had any previous experience with this technology. Thanks to the help of high-end ALLROUNDERS, as well as ARBURG's know-how, this risky endeavour turned into a big success. The supplier produces up to 35,000 smartphone sleeves and accessories per day at its Shenzhen location.

When you step into the Ash Cloud factory, the modern equipment immediately catches the eye. Screens and iPads are everywhere. Visitors would be forgiven for thinking that they have entered an IT company instead of an injection moulding company. No wonder: the main products are sleeves and accessories for smartphones and iPads.

2016 Entry into injection moulding

In 2004, the company started out assembling, packaging and delivering these products to OEMs. It took until 2016 before the company decided to set up its own in-

jection moulding shop. "As newcomers, we wanted two things in particular: reliable and precise high-end machines, and excellent technical support," recalls Guanyi Chen, General Manager at Ash Cloud. "We found out about ARBURG by coincidence. The machine manufacturer seemed a perfect fit. That's why we asked for as many as ten ALLROUNDERS at once." The first visit to the German ARBURG headquarters in Lossburg took place in June 2016 and by December the first machine had been installed at Ash Cloud in Shenzhen.

At first, ARBURG was surprised by the bold plan of the Chinese manufacturer to start producing plastic parts without having any experience in injection moulding. And that wasn't all – Ash Cloud did not hire experienced specialists, but instead simply chose the existing employees who were willing to switch over to the injection moulding department.

In addition to the machine technology, the key requirements to be met by ARBURG were to train the inexperienced employees and provide technical support. The future machine operators very quickly got up to speed

on the basics of injection moulding, mould technology and material characteristics.

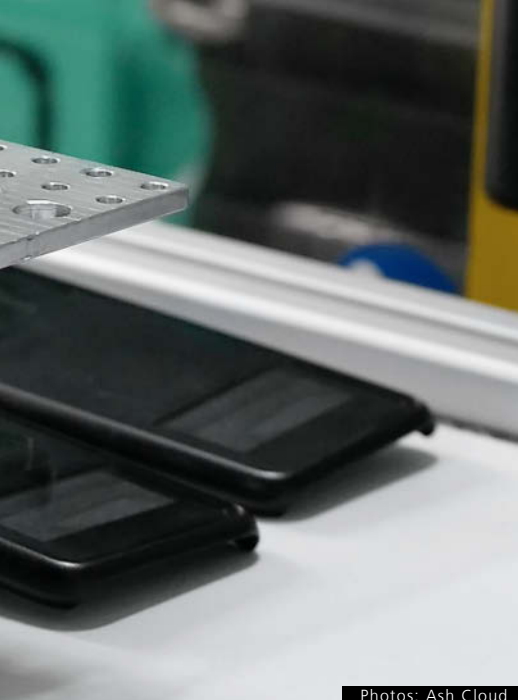
Many impulses at ARBURG

The theory was followed by practical experience. At the ALLROUNDER machines, the trainees practised how to install moulds and program the process parameters in the SELOGICA control system. The ARBURG technicians visited the site one to two days per week, to analyse product errors and optimise the injection moulding processes.

In return, the Ash Cloud decision makers attended the ARBURG Technology Days in Lossburg in 2017 in order to gain new ideas not only for injection moulding but also for the areas of production, materials and automation.

35,000 smartphone sleeves per day

Currently, Ash Cloud produces up to 35,000 smartphone sleeves per day on 32 automated ALLROUNDERS, mainly models from the GOLDEN ELECTRIC series. However, since there are so many product versions, the individual orders are



Photos: Ash Cloud

Guanyi Chen is proud of his high-end injection moulding production (below), which he set up in a very short time. Currently, 32 automated ALLROUNDERS produce up to 35,000 smartphone sleeves per day (left).

be a winner!

with the help of ARBURG

fairly small. With this in mind, the company developed its own management system as early as 2005.

On the road to the digital factory

“In 2011, we installed the world’s first in-house, iOS app-based ERP system that integrates all processes in the company, as well as the complete production management system,” explains Guanyi Chen. “We are well on our way to becoming a completely digital factory.” The app has replaced stationary workstation PCs. In addition to purchasing, production, logistics and quality control, it also encompasses human resources, administration, finance, sales and training. With the smartphone or iPad, the staff collect the different types of information directly on site. This data is updated in real time and used for additional analyses later. This includes the volume of the current order, the number of parts already produced and the number of items in the follow-up order.

Each month, there are six “Open Days” to share results. The aim is to improve information technology in manufacturing by



sharing experiences with other manufacturing companies and experts. Guanyi Chen is convinced: “Many other companies in China only plan in the short term, but we want to have sustainable development. We are focused on improving our production efficiency and reducing costs.”

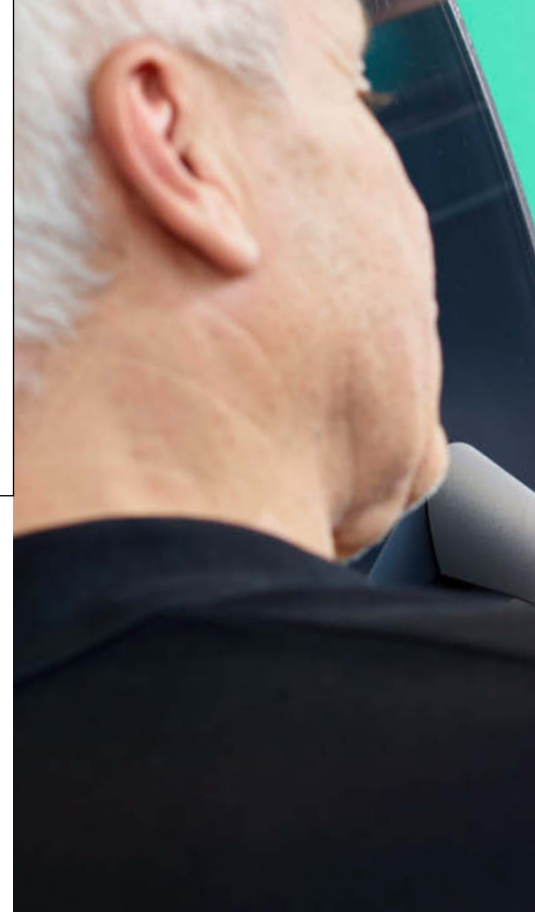
INFOBOX

Name: Ash Cloud Co., Ltd.
Founded: 2004 by Guanyi Chen
Location: Shenzhen, China
Turnover: EUR 25.6 million or RMB 200 million (2017)
Production area: 16,000 square metres
Employees: 480 (2017)
Products: sleeves and accessories for smartphones
Machine fleet: 32 ALLROUNDERS with clamping forces from 600 to 1,500 kN
Contact: www.ashcloud.com



TECH TALK

Oliver Schaefer, Technical Information



Need some help?

Assistance packages for digital help in every operating situation

Digital support for the operator – similar to modern car driving, this is an important goal for the continuing development of ARBURG control technology. This is also where the assistance packages for the SELOGICA and GESTICA control systems come into play. Selected highlights for daily practice are presented here.

In total, there are six packages, each containing up to ten different assistance functions. But in what ways do they offer support and what are the resulting benefits?

Easy set-up

The “4.set-up” assistance package makes an extensive collection of material-specific data available to the control system, and can be expanded at any time with your own materials. On this basis,

only a few process-relevant details are still required in order to have the basic processing parameters calculated automatically. Operators are free, for instance, to only reset the temperatures of the injection unit in case of a material change or also use the monitoring and logging functions “at the click of a button”. The usual entries and settings on various screens are no longer necessary. This saves a lot of time. No detailed knowledge of the control system is required for performing set-up tasks.

Another interesting feature is that you can limit the editability of parameters for certain user groups (upper and/or lower limit) or even block them completely. The special feature here is: the defined adjustment ranges are stored in the data set and not on the machine. Thus they can also be adopted from machine to machine. In this way, moulds can be protected against incorrect entries. For validated processes, it is possible to ensure adherence to a given process window.

Fast production start

The “4.start-stop” assistance package helps with production start-up, especially for high-speed and more complex applications – e.g. with inserts, hot runner moulds or multi-component technology. The “start-up parameters and cycles” feature, for example, enables specific machine settings to be configured during the start-up phase until the injection moulding process is running in a stable manner. It is also part of the data set. This means that operators no longer have to change the parameters manually at each start-up and reset them again later. Rather, this work step is also performed automatically. It is reproducible in a controlled manner and in such a way that flash formation after machine standstill is reliably avoided. “Automatic start-up” also enables processes to be carried out without inserts, injection or part demoulding during the start-up phase. The costs for



start-up pieces can thus be significantly reduced and production capacities increased.

Safe production and monitoring

The "4.production" and "4.monitoring" assistance packages focus on trouble-free production processes and high process reliability. The "programmable repetition group" helps with this. The machine operator can use this function to repeat a freely programmable part of the production sequence, depending on a signal. If, for example, a monitoring camera detects that demoulding has not been performed completely, several ejection or blow-out attempts can be made. The "actual value graphics" feature can be used to monitor distances, pressures, forces and torques via a reference curve with tolerance band. This makes it possible, for example, to take the smoothness of core pulls into account for process control.

The assistance packages combine the extensive capabilities of the SELOGICA and GESTICA control systems in a targeted manner (today 67, page 8). This not only simplifies selection, but also helps to exploit the available potential of smart machines. The operator is supported by the ALLROUNDER and can concentrate even better on his core tasks, such as controlling and monitoring injection moulding production.

The "4.monitoring" assistance package enables online monitoring based on reference curves. Together with "4.set-up", "4.start-stop" and "4.production", this package is standard equipment for the large ALLROUNDERS ready for Industry 4.0. You can recognise these machines by their clamp design.

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If your destination is digitalisation, then you should trust in the right partner. We are your guide when it comes to digital transformation because we provide customised solutions without any detours. With us, you set the right priorities for the future. On your "Road to Digitalisation". With our "Road to Digitalisation".

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