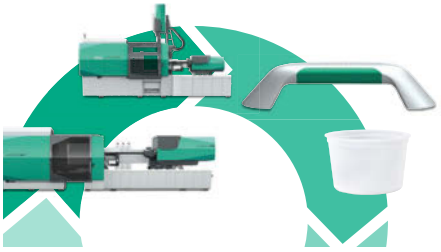
today

The ARBURG magazine Issue 71 2019



IMPRESSUM

today, the ARBURG magazine, issue 71/2019
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The plastics industry is becoming increasingly complex and its requirements more demanding: At K 2019, ARBURG will be presenting numerous practical solutions in this regard.

ARBURG

Dear Readers,

The time has arrived: The plastics industry meets at K 2019 in Düsseldorf to show where the journey is headed in the future.

Our focus is on the topics of digitalisation and circular economy, which we will present with arburgXworld and arburgGREENworld. However, these are not two separate worlds, rather we are looking at one world from two perspectives, because this one world is the only one we have.

Regardless of whether we are talking about digitalisation or a circular economy: our goal was, is and remains high production efficiency and responsible use of resources.

In this issue of today you can find out more about how this can be achieved in practice and what strategy ARBURG is pursuing in this context.

In our ten-page K 2019 special, anyone unable to visit the world's leading trade fair can get an overview of future topics and solutions. In addition, there are some fascinating insights: The foundation of the Japanese ceramic injection moulding company Zikico, for example, is based on the realisation that Japanese food does not taste as good when eaten using metal cutlery. And we also take a closer look at the use of the freeformer in medical technology. All in all you can look forward to a colourful mix of subjects.

We hope you enjoy reading this issue of "today".

Juliane Hehl
Managing Partner

Two views of the same

K 2019: Digitalisation and circular economy

What are the most important and urgent topics in the world of plastics processing and use? Digitalisation and circular economy! And that is exactly what ARBURG's presence at K 2019 from 16 to 23 October 2019 in Düsseldorf, Germany, will focus on. With "arburgXworld" and "arburgGREENworld", ARBURG highlights the world of plastics from various perspectives, presenting numerous innovations in terms of machines, processes as well as digital products and services.

"As the world's leading trade fair in its industry, the K trade fair is a key platform for presenting important visions and innovations," states Michael Hehl, Managing Partner and spokesman for the Arburg Management Board.

A complex world rich in perspectives

"Our world is becoming ever more complex and richer in perspectives, so that the challenges are growing accordingly," says Michael Hehl. ARBURG is presenting suitable solutions with eight ALLROUNDERs and one freeformer.

Juliane Hehl, Managing Partner at ARBURG and responsible for Marketing and Technology, adds: "Our presence at K proves that we are dealing with the two most important topics of our time: digitalisation and the sensible use and recycling of plastics. The primary goal is to conserve resources and so make a significant contribution to production efficiency.

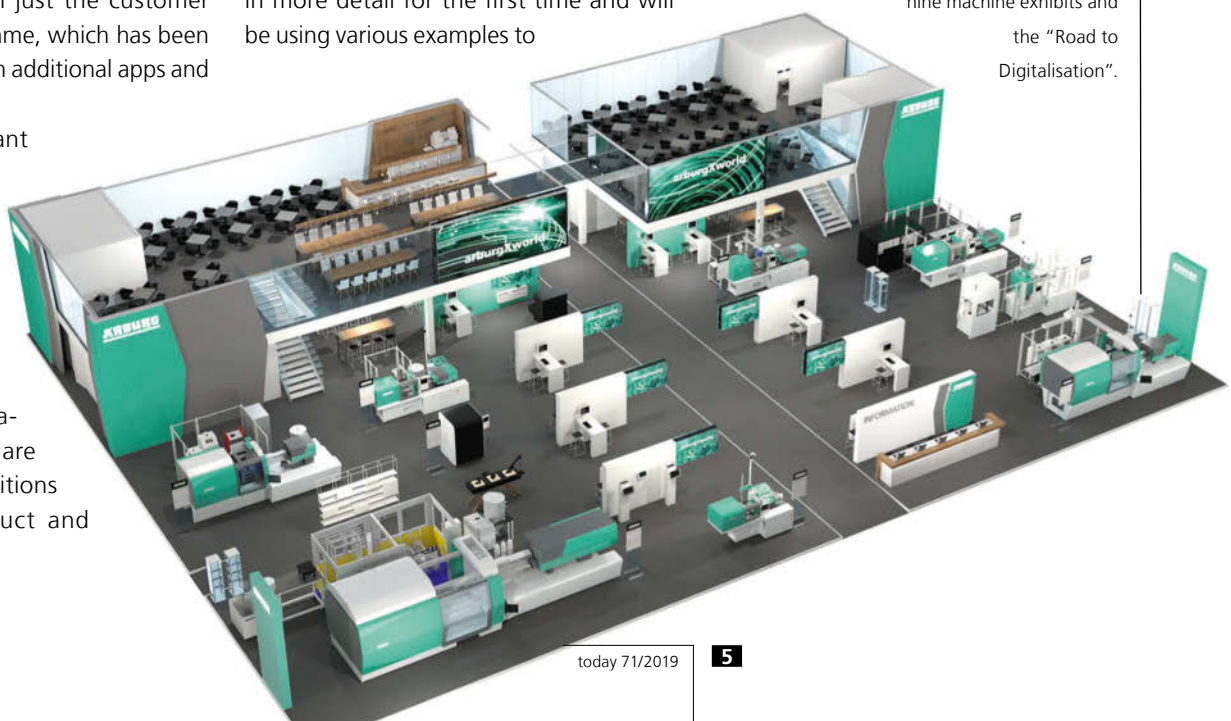
world in focus

New digital products and services

The idea behind "arburgXworld" stands for much more than just the customer portal of the same name, which has been further expanded with additional apps and new functions.

The filling assistant for the GESTICA control system, the plasticising assistant and the extended connectivity of the ALLROUNDER injection moulding machines (see page 7) are among the new additions to the digital product and service portfolio.

On the subject of circular economy and resource conservation, ARBURG will be presenting its "arburgGREENworld" in more detail for the first time and will be using various examples to



Visitors to the ARBURG stand can experience the future of plastics processing with nine machine exhibits and the "Road to Digitalisation".

Proud of the new products and innovations presented at K 2019 (from left): ARBURG's Managing Partners Juliane Hehl, Michael Hehl and Renate Keinath.

demonstrate what practical solutions can look like in practice (see page 10).

New ALLROUNDERs and freeformers

Two new injection moulding machines will also be on show for the first time, with the ALLROUNDER 270 S compact representing a special ARBURG first: This machine can be fully configured online (see page 7).

The new ALLROUNDER 1020 H in Packaging version has a distance between tie bars of 1,020 millimetres and a clamping force of 6,000 kN. The exhibit is also equipped with the new size 7000 injection unit, which is also available for the ALLROUNDER 1120 H and offers a maximum shot weight of around 4,200 grams polystyrene.

In the field of additive manufacturing, the freeformer 300-4X will make its debut. The machine features four axes of which three are moving the part carrier in the X-Y and Z directions, as before. The fourth axis enables its rotation, e.g. to add fibres. This makes it possible to exploit the advantages of ARBURG Plastic Freeforming for fibre-reinforced components as well.

The Packaging version of the ALLROUNDER 1020 H and the freeformer 300-4X are making their debut at K 2019.

Growing arburgXworld

Digitalisation: Numerous new products and services

Anyone interested in digitalisation will find the right partner in ARBURG – a partner with many years of experience, comprehensive expertise and a rapidly growing range of products and services. This is what "arburgXworld" stands for.

With its ALLROUNDER 270 S compact, ARBURG is moving into new dimensions: Customers can configure and order this injection moulding machine online themselves.

Ordering the machine online

Various options can be added to the basic version of the hydraulic machine. As the name suggests, the ALLROUNDER 270 S compact only requires a small footprint and in this way is reminiscent of the previous successful ALLROUNDER 221 K. In addition, the new machine stands out for its high-quality technology, energy efficiency and short delivery times. The entire configuration and ordering process for the new machine can be completed on the "arburgXworld" customer portal, which ARBURG has greatly expanded this in recent months.

New features

In addition to the familiar free-of-charge functions such as the main "Machine Center", "Service Center", "Shop" and "Calendar" apps, there will be additional fee-based functions offering considerable added value starting at K 2019. New functions include "Self Service", the "Dashboard" showing the machine status, the control simulator, collecting process data and the machine configuration.

Customers in Germany have been able to use the portal since March 2019 and the response has been excellent. As of K 2019, it will then be available internationally in 18 languages.

All injection moulding exhibits on the stand feature "basic connectivity", i.e. they are equipped with an IIoT gateway and can be networked easily and in a standardised format via interfaces with the higher-level ARBURG Remote Service (ARS) systems and the "arburgXworld" customer portal (see Tech Talk page 26).

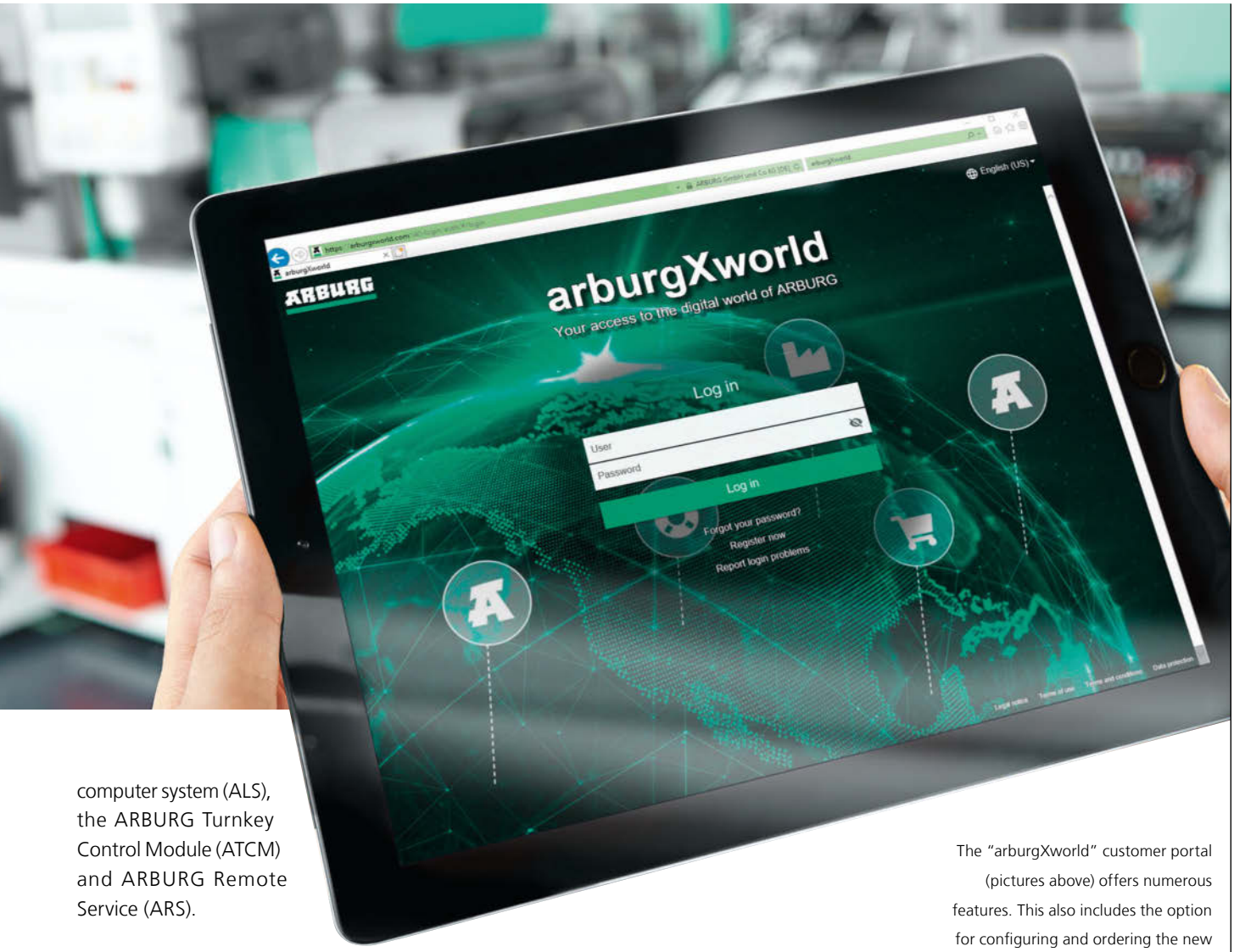
The filling assistant displays the filling degree of the part in relation to the current screw position as a 3D graphic.

thanks to assistants

One particularly "smart" application will be demonstrated by ARBURG using an electric ALLROUNDER 570 A, whose GESTICA control system includes the new filling assistant. This means that the ALLROUNDER "knows" the moulded part to be produced.

Arburg developed the filling assistant together with its Aachen-based partner Simcon. The simulation model created offline and the part geometry are loaded directly into the control system. The GESTICA control system animates the filling level of the part in relation to the current screw position as a 3D graphic in real time. In cooperation with Simcon, the functionality of the filling assistant has been expanded to cover a wider range of moulds and materials. On the GESTICA screen, the machine operator is able to interactively compare the results of the simulation created offline with the filling performance of the last cycle. This results in benefits with regard to set-up time, safety and efficiency.

The new plasticising assistant supports both material preparation and predictive maintenance of the screw. To round things off, the trade fair appearance will also feature a presentation of the proven digital products and services: the six assistance packages for the SELOGICA and GESTICA control systems, the ARBURG host



computer system (ALS), the ARBURG Turnkey Control Module (ATCM) and ARBURG Remote Service (ARS).

The "arburgXworld" customer portal (pictures above) offers numerous features. This also includes the option for configuring and ordering the new ALLROUNDER 270 S compact (picture below) online.

Experience the arburgGREENworld

Circular economy: Processing recyclates in practice

A circular economy can only work if all parties involved in the value chain work together. This was the conclusion drawn by the experts who attended the ARBURG Packaging Summit 2019. At K 2019, ARBURG and its partners will be demonstrating what this could look like in practice in the future.

ARBURG has bundled its many years of activities in the field of resource conservation and circular economy in its arburgGREENworld. The two applications showcased at K 2019 demonstrate the company's expertise in the field of recyclate processing.

High-quality parts with recyclate content

In the production of cups, new PP material is processed together with recycled PP in a ratio of 70:30. The moulded parts are produced in a cycle time of around four seconds on a hybrid ALLROUNDER 1020 H in Packaging version and equipped with an 8+8-cavity stack mould. The recyclate is provided by Austrian company EREMA.

Production of the thin-walled cups demonstrates that adding the recyclate does not result in any loss of quality. This application is an example of a closed circular economy and proves the following: if it is possible to collect plastics sensibly and safely, then they can also be returned to the value chain. At the trade fair, EREMA recycles the cups to demonstrate how PCR material (post-consumer recyclate) is produced from packaging.

Functional part made of PCR

In a second application, such PCR material made from household waste is used to produce a handle for the safety door of ALLROUNDER injection moulding machines.

The PCR, which is available on the market, is processed by an electric two-component ALLROUNDER 630 A using the ProFoam foaming process while TPE is used as the second material. The two foamed halves of the handle are mounted in the mould and then partially overmoulded with the soft component.

This practical example illustrates how PCR material from household waste can be recycled to produce high-quality, durable functional parts on a standard injection moulding machine.

How a circular economy works: Recyclates are used in the production of cups and handles. The required granulates are produced, for example, by EREMA.

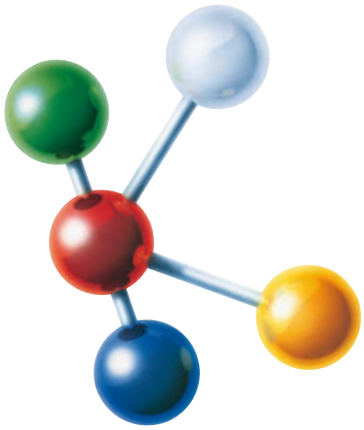


Photo: EREMA

arburgGREENworld

arburgGREENworld rests on four pillars. GREENmachine, GREENproduction and GREENservices relate to offers and services for customers. Key issues in this context are, for example, minimising the CO_2 footprint of the machines, processing of recyclates and bio-plastics, increasing production efficiency, use of innovative processes and advice on application technology, resource and energy efficiency.

ARBURG has been a global leader in resource conservation and environmental protection for decades. Accordingly, production is characterised by a reduced CO_2 footprint. The central production site with a high proportion of in-house production, minimised material use, environmentally friendly processes and efficient logistics, as well as the use of natural resources and renewable energies all contribute to this. All internal processes are combined in the fourth pillar: GREENenvironment.

Brochure

The future of injection moulding

Broad range: Innovative processes and applications at K 2019

ARBURG underlines the importance of K 2019 as the world's leading trade fair by presenting various turnkey solutions and a wide range of processes and applications. Highlights include two-component injection moulding in combination with ProFoam foaming technology and the FIM process (Film Insert Moulding).

"With nine ARBURG machines on our stand and eleven more at partners' stands, we will be prominently represented at K 2019", states Juliane Hehl, Managing Partner at ARBURG and responsible for Marketing and Technology. This proves that ARBURG has the necessary know-how and the right technology in its portfolio for all fields.

Two-component technology combined with ProFoam

One highlight is the automated two-component injection moulding in combination with ProFoam foaming technology. An electric ALLROUNDER 630 A with MULTILIFT V robotic system and 1+1+1-cavity mould produces a handle for the safety door of the ALLROUNDER injection moulding machines from foamed PCR material and TPE (see page 10). In the individual process steps, metal threads are inserted, the upper and lower parts of the handle are injection moulded and mounted in the mould, and the handle is then partially overmoulded with the soft component. The cycle time is 62 seconds.

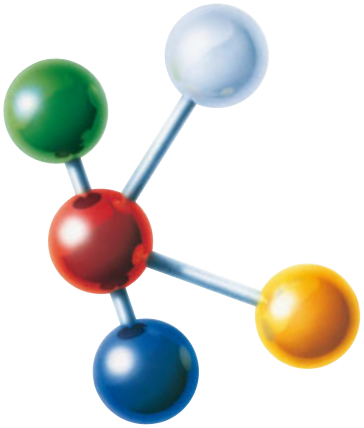
Functional in-mould film lamination

An example of the FIM process that can be used to produce functional products is TactoTek's IMSE technology (Injection Moulded Structural Electronics). To produce a night light, preformed films with integrated electronic functions and LEDs are processed on an electric ALLROUNDER 470 A equipped with a six-axis robot. They are first cleaned, inserted into the mould and then laminated in-mould with PC. 100 percent functional testing of the component is integrated into the turnkey system.

Sunglasses in a single step

The production of high-quality UVEX sunglasses made of PA is also fully automated. The glasses are injection-moulded in one shot on an electric ALLROUNDER 570 A. A six-axis robot then removes the glasses and forwards them for laser marking (CE marking and data matrix code), optical inspection and packaging in textile bags. The ARBURG Turnkey Control Module (ATCM) SCADA system visualises the entire system and enables 100 percent traceability of the parts.

LSR covers for microswitches are used in the automotive industry and in medical technology.



0.009 gram LSR parts

In the field of micro injection moulding, ARBURG will be demonstrating the production of covers for micro switches made of non-post-cure LSR. For this purpose, an electric ALLROUNDER 270 A is equipped with a size 5 micro-injection unit with an 8-millimetre screw, an 8-cavity mould and a cartridge for the premixed LSR. The moulded part weighs a mere 0.009 grams and the cycle time is 20 seconds. The moulded parts are picked up by a MULTILIFT H robotic system, optically inspected in the gripper, separated according to cavity and packed in paper bags.

Media-tight plugs

Overmoulding of hybrid components will be demonstrated on a vertical ALLROUNDER 375 V. The MULTILIFT SELECT robotic system is mounted on the machine base so that the automated system has a small footprint. In order to manufacture the plug inserts, the contacts are supplied on a roll, punched out and overmoulded in a cycle time of 15 seconds. They are deposited in trays and then transported to the Plasmatreat stand (Hall 11, Stand G04), where they are overmoulded in an automated process to form media-tight, finished plugs.

The night light consists of an in-mould laminated film with integrated electronic functions and LEDs. In combination with a power module, it becomes a charging station for smartphones.

UVEX sunglasses are manufactured fully automatically, including lasering, quality control and preparation for packaging.

Two magnetic components, one tool

An electric ALLROUNDER 370 E GOLDEN ELECTRIC will demonstrate the processing of a plastic-bound magnetic material. A family mould enables highly flexible production without the need for conversion: Alternatively, a cog wheel or a magnet wheel is injection-moulded.

Cube-mould technology including assembly

FOBOHA (Hall 01, Stand C50) will be showing a sophisticated cube-mould application. Here, an ALLROUNDER CUBE 2900 with a 24+24-cavity mould is used to produce holders and wheels for dishwasher baskets that are mounted in the mould.

Taste is everything

Zikico: Award-winning designer cutlery is produced using ceramic

Japanese moulded part manufacturer Zikico processes zirconium oxide using a ceramic injection moulding (CIM) process to produce aesthetically shaped cutlery sets under the brand name "Sumu". They demonstrate good taste in two respects: on the one hand due to their design by Japanese star designer Masanori Oji, and on the other hand due to the taste-neutral ceramic. In our interview, company owner and mechanical engineer Mitsunori Yamase explains how he came up with the cutlery idea and the technical implementation.

Photos: Zikico

today: Mr. Yamase, how did you come up with the innovative idea of ceramic cutlery sets?

Yamase: While cooking! When I was in Germany for some years, I once prepared a Dashi soup for friends using original ingredients imported from Japan. When I tried the dish with a metal spoon, the typical umami flavour was missing, which in Japanese means tasty. Only when I drank the soup directly from the bowl did the proper taste come through.

That's when I started looking for a neutral material that would bring out the light taste of Japanese food in an authentic way. During my studies in Germany between 2001 and 2004, I also spent time at ARBURG to gain practical experience in injection moulding. In Hartmut Walcher's PIM laboratory I came into contact with zirconium oxide and ceramic injection moulding. So the association was right there.

today: In 2007, you established a laboratory in Tokyo that specialises in the processing of zirconium oxide. What is your relationship with ARBURG today?

Yamase: Our contact ranges from machine technology to application technology consulting in CIM matters.

today: For the Japanese market in particular, linking a product with traditional manufacturing processes is very important...

Yamase: That's why our cutlery is produced using a combination of modern injection moulding and traditional craftsmanship. The actual functional ceramic parts are produced in small-volume batches using CIM. The handles made of PPS are moulded parts, too. The two components are joined by an outsert connection in the handle. We use 15 single-cavity moulds without ejector bolts to avoid marks on the ceramic parts. Due to the necessary free-form surfaces, the mould design is very sophisticated. In order to avoid material contamination through particles, we always ensure a clean process environment. The cutlery is produced on an ALLROUNDER 270 C with hard alloy cylinder, the handles are made on an ALLROUNDER 270 S. Debinding takes five days at 450 degrees Celsius, sintering two days at 1,450 degrees Celsius. The parts shrink by 30 percent.

today: That's the modern part of production. Where does the traditional craftsmanship come into play?

Yamase: From removal of the green parts out of the moulds to deburring and enhancement as well as packaging, all further production steps are done by hand. In this way, the spirit of work remains in the product.

today: Mr. Yamase, how do you market your high-quality cutlery sets?

Yamase: In terms of sales, we initially approach gourmet restaurants in Japan and internationally via a retailer. Because this is where very high-quality local ingredients are usually prepared, whose delicate umami flavour is preserved by our cutlery. The durability of the ceramic material and the good look are another advantage. The final price is somewhere between high-quality stainless steel cutlery and silver cutlery. The Japanese star designer Masanori Oji was of great help in harmonising the design, mould technology and manufacturing process.

today: The design of your cutlery sets has already won several awards...

Yamase: Yes, that tells me that although we are still at the beginning, we are on

injection moulding

Mitsunori Yamase develops and produces high-quality ceramic cutlery sets designed to preserve the uniquely pure umami flavour of Japanese dishes.

the right track. In addition to the German "iF Design Award 2019", we also received the "Golden A Design Award 2019" from Italy. We are now planning for a production target of 2,000 pieces per month.

INFOBOX

Name: Zikico Inc.
Founded: 2018
Location: Tokyo, Japan
Production area: 700 square metres
Employees: five
Products: Ceramic injection-moulded parts made of zirconium oxide
Machine fleet: Two ALLROUNDERs
Contact: www.zikico.com

Expert circle

ARBURG Packaging Summit: Solutions, innovations, visions

The ARBURG Packaging Summit in June 2019 took place at exactly the right time: The discussion about plastics, especially in packaging, is a major issue in public perception, while the circular economy is one of the focal points at K 2019. 120 experts from all over the world used the opportunity to discuss the current situation and point out potential solutions.

"During the two-day event, we discussed with prominent experts how a circular economy for packaging products could be achieved," says ARBURG's Managing Director Sales, Gerhard Böhm. "We have demonstrated how the plastic industry is tackling the challenges it faces and showcased some of the resource-efficient solutions and innovations we are planning, both now and in the future, to help the industry on its journey towards a circular economy." The event programme included more than a dozen expert talks, each focusing on different aspects of packaging technology.

Video
Event

Overview: Presentations and live demonstrations

Speakers from BASF, Borealis and Henkel showcased new materials and talked about what their companies are doing to route plastic back into the value creation chain and process recyclable materials. ARBURG and mould manufacturers StackTeck and FOBOHA presented innovative processes, trends and machine technology specifically for the packaging industry. IML expert Verstraete showed how invisible watermarks can be used to apply a "digital recycling passport" to plastic packagings in order to facilitate sorting by material. Erema presented various beacon projects in the field of recycling, and Global-Flow provided a general overview of disposal processes and the use of secondary raw materials.

During breaks between presentations, the attendants had ample time to experience selected packaging applications live. Coffee capsules made of biomaterial and PP with a 0.02 millimetre thin barrier layer, thin-walled IML cups and beverage closures were produced, for example.

ARBURG
PACKAGING
SUMMIT

Succinct: Panel discussion

One highlight of the event was the "Summit Talk" panel discussion presented by Guido Marschall of Plas.TV. Gerhard Böhm (ARBURG), Thorsten Kühmann (VDMA), Manfred Hackl (EREMA), Prof. Dr. Hans-Josef Endres (IfBB Institute for Bioplastics and Biocomposite Materials, Hanover University) and Philip

During the "Summit Talk", leading experts discussed challenges and opportunities for the packaging industry (from right to left): Gerhard Böhm (ARBURG), Thorsten Kühmann (VDMA), Manfred Hackl (EREMA), Prof. Dr. Hans-Josef Endres (IfBB, Hanover University), Philip Knapen (Borealis) and presenter Guido Marschall (Plas.TV).

Video Summit Talk

Knapen (Borealis) discussed the current situation in the packaging industry, the insights gained during the event and the challenges and tasks ahead.

Anyone who was unable to attend the event or panel discussion can view the entire "Summit Talk" online (see QR Code).

Together: New solutions

For Bertram Stern, Packaging and Circular Economy Manager at ARBURG, the Packaging Summit was a thoroughly successful event that not only identified the challenges, but also new opportunities for the packaging industry: The manufacturers of injection moulding machines, moulds and materials as well as recycling experts must work together along the entire value chain. Only by working together could new solutions be developed and used plastic be recovered as a valuable raw material, and then used efficiently in the production of new products.

ARBURG's Managing Director Sales Gerhard Böhm welcomed the approximately 120 international experts to the ARBURG Packaging Summit.

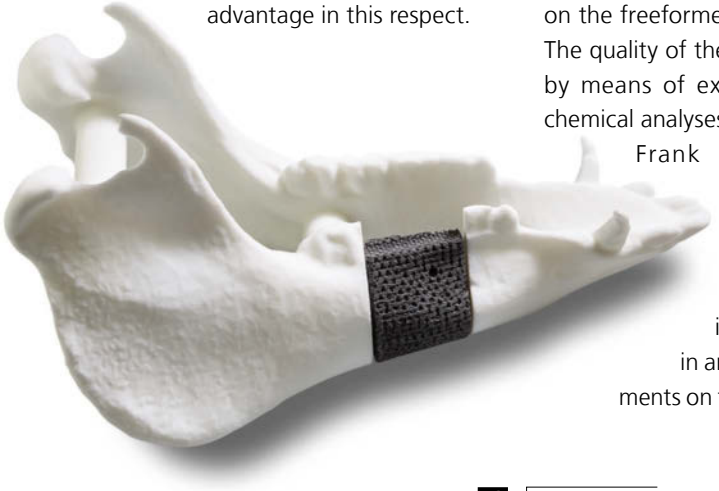
A system with "gre

Karl Leibinger Medizintechnik: Freeformer for individual imp

Karl Leibinger Medizintechnik GmbH & Co. KG, based in Mühlheim an der Donau, Germany, is a KLS Martin Group company and one of the traditional medical technology companies. The company develops and produces a wide range of medical technology solutions. It entered additive manufacturing in 2000 and has been using a freeformer since December 2017. The objective: to manufacture individual components and implants at very short notice.

Frank Reinauer, Head of Innovation and Production Biomaterials, praised ARBURG Plastic Freeforming: APF has great advantages over other additive manufacturing processes. On our freeformer we can produce very quickly and, above all, with dimensional accuracy. And the familiarisation phase was remarkably short. Based on our experience, we were able to start immediately with individual projects.

Various polylactides and polymer-metal-based composite materials are processed to create products such as tensile rods, prototypes and functional components. The freedom in terms of materials that the open system offers is a decisive advantage in this respect.



Original FDA-listed material

The freeformer can be used to process qualified plastic granulates up to FDA-listed original materials of the same type as those used in injection moulding. This makes it possible to directly influence component properties, process proprietary plastics and optimise process control. ARBURG's material database provides the necessary parameters for this purpose.

This is where the specialists at Karl Leibinger Medizintechnik see the particular strengths of ARBURG's industrial additive manufacturing system. Frank Reinauer commented: "The ability to process a wide variety of original plastic granulates and to use their properties for medical technology products makes our production just as flexible as the freeformer is.

Bioresorbable implants

One product area involves bioresorbable implants for the mouth, jaw and face. These are used for osteosynthesis (surgical joining of bones) and reconstruction and dissolve in the body over a period of up to 24 months. Such complex geometries in particular can be economically produced on the freeformer, even in small batches. The quality of the components is ensured by means of extensive geometric and chemical analyses.

Frank Reinauer sees great future potential in manufacturing on the freeformer: In the sector of individualised implant production and in areas in which the requirements on the geometries cannot be

realised using conventional processes, there are wide-ranging production perspectives for the freeformer. Since individuality is becoming increasingly important in medical technology for implants adapted specifically to patients, we are very well positioned in this respect with the freeformer. This is why we will increasingly use the system in low-volume production as well, with automation of this production process being an option.

Expanding additive manufacturing

The geographical proximity and particularly the personal support from the

at advantages”

lants

Frank Reinauer, Head of Innovation and Production Biomaterials at Karl Leibinger Medizintechnik, is pleased about the new possibilities the freeformer offers for the production of implants. Their use is tested on pig skulls (picture below left).

APFteam are other advantages that are highly appreciated in Mühlheim. The company is therefore planning to further expand this area. “Generally we are more than satisfied with the performance of the freeformer”, says Frank Reinauer, drawing a positive conclusion about the cooperation. “But of course there is always room for improvement in terms of what we personally want from this system. For example, the temperature range could be lowered further for us, to be able to process low-temperature materials. However, this in no way diminishes our fundamental trust in the freeformer and its capabilities.”

INFOBOX

Name: Karl Leibinger Medizintechnik GmbH & Co. KG (a company of the KLS Martin Group)
Founded: 1886 by Karl Leibinger
Location: Mühlheim an der Donau, Germany
Employees: 372
Industry: Medical technology
Products: Implant systems, individual implants, sterilisation containers, surgical lights, surgical instruments
Machine fleet: More than 20 additive manufacturing machines, including one freeformer
Contact: www.klsmartin.com

The ea

ARBURG application te

Innovations and technical advances can only be achieved with proper foresight. One of many outstanding examples is the history of the Application Technology (AT) department at ARBURG which has existed since the first machines were sold back in 1956. Jürgen Schray, who has been Head of Application Technology for many years, and his successor Dr. Thomas Walther delved into its history.

"The proverb 'the early bird catches the worm' accurately reflects ARBURG's application technology", comments Jürgen Schray, who has since retired, on the idea of introducing technical customer advice. But as with many other things, the concept was born out of the necessity – in this case to not only sell the machines and then leave the customers to their own devices, but also to support them in the high-quality manufacture of their products. A situation, it turned out, that resulted in long-term cooperations and more machine sales.

Pioneering new technologies

The tasks developed alongside the innovations that ARBURG launched with its ALLROUNDERs. This included, for example, two-colour and two-material injection moulding, and later also interval and sandwich injection moulding in the 1960s. Jürgen Schray comments: Supporting customers in their processing tasks helped them adopt the technology and buy the required machines. This approach has remained almost unchanged to this day.

From 1977, ARBURG had its own demonstration room containing several

rly bird...

chnology: Diverse and sometimes exotic tasks

ALLROUNDERs and continued to be one of the industry's innovation drivers in the following years, as Jürgen Schray remembers: "New technologies such as LSR injection moulding in the early 1980s were in particular demand. Through our extensive additional consulting we were able to build trust, which was rewarded by long-term partnerships with companies and excellent personal contacts. We were in the right place at the right time with the right technology. And we really gave very practical advice. Our customers' successes often reflected back on us. And that's why many of these relationships still exist today.

The business environment is changing

"Compared to previous times, today's tasks are technically much more specialised and therefore more complex," notes Dr. Thomas Walther. But as always, ARBURG reacted very flexibly to these developments. Personnel and infrastructure were strengthened in order to respond even more rapidly and effectively to the increasingly detailed requirements of customers. Examples include the Customer Center that opened in Lossburg in 2009 and the organisational integration of the International Technical Support (ITS) into AT. In this way, ARBURG is able to globally offer a professional environment to further drive process development and knowledge building in a targeted manner. However, consistency is still in demand, and this is where ARBURG application technology continues to shine. "On the one hand, this is due to competent advice and customer support, on the other hand to participation in trade fairs and through personal contacts," explains the Head of Application Technology. "With us, customers feel at home, not least because staff consistency is a key advantage that we have." The three-pronged approach of "communication – know-how – network" is what has made us, together with the sales department, so successful in consultancy.

Open for many ideas

ARBURG application technology has always been open to new ideas, including truly exotic ones. "We have processed dog food on our machines to make chewing bones, produced butter sheep in series, processed pasta dough to make spaghetti or injection-moulded gummy bears", emphasises Dr. Thomas Walther.

Mixing ceramic and metal powders with plastic binders has even resulted in a recognised processing method: powder injection moulding (PIM). The first ceramic injection-moulded part was produced on an ALLROUNDER in 1963. Many years ago already, ARBURG tested processing wood, maize and leather granulates as well as other "biomaterials". The experts remember the associated smells in the technical centre to this day.

Today, the Application Technology department's tasks also include comprehensive documentation of customer-specific injection moulding processes, mould tests, process optimisation, support for the AT hotline, specialist presentations and cooperation with research institutes and universities.

"So we never get bored, even without exotic injection moulding trials," comments Dr. Thomas Walther with a smile. "Among other things, we are currently looking intensively at the processing of recyclates. We will be presenting two examples of this at K 2019."

A wide range of tasks for ARBURG Application Technology: Pasta, gummy bears (picture left) and butter sheep (picture above) have already been injection-moulded.

Fully automated

Jiangsu WINWORLD Precision Parts: Rapid development into an

Since its foundation in 1996, Jiangsu WINWORLD Precision Parts Co., Ltd. has dynamically evolved to become a major OEM supplier of automotive components. The sales growth rates are between 20 and 30 percent annually. WINWORLD produces three million door handle modules per year for one manufacturer alone and, like many new Chinese manufacturing companies, relies on maximum precision, quality, efficiency and automation – and on ALLROUNDER injection moulding machines.

As a T2 automotive supplier, WinWorld produces, for example, trim panels and housings for electric power windows and door handles, gear housings, modules for electric servo motors, engine covers and frames for vehicle seats, as well as mechanical parts and frames for sliding roofs. Its customers also include established European OEMs and car manufacturers. In addition to injection moulding production and component assembly, the portfolio of the company, which is certified according to the TS16949 standard, also includes an in-house mould-making shop and an R&D department.

Production around the clock

At WINWORLD, the injection moulding machines are running around the clock. All of the ALLROUNDERs are equipped with robotic systems to ensure cost-effective production. For the exclusive manufacture of various gear and door lock housings, seven hydraulic ALLROUNDER 720 S machines are combined to form a production island. The injection moulding machines are directly connected to four assembly lines in which the parts are further processed. The special feature of housing production at WINWORLD is that the parts can be individualised down to "one piece flow".

Integrated assembly

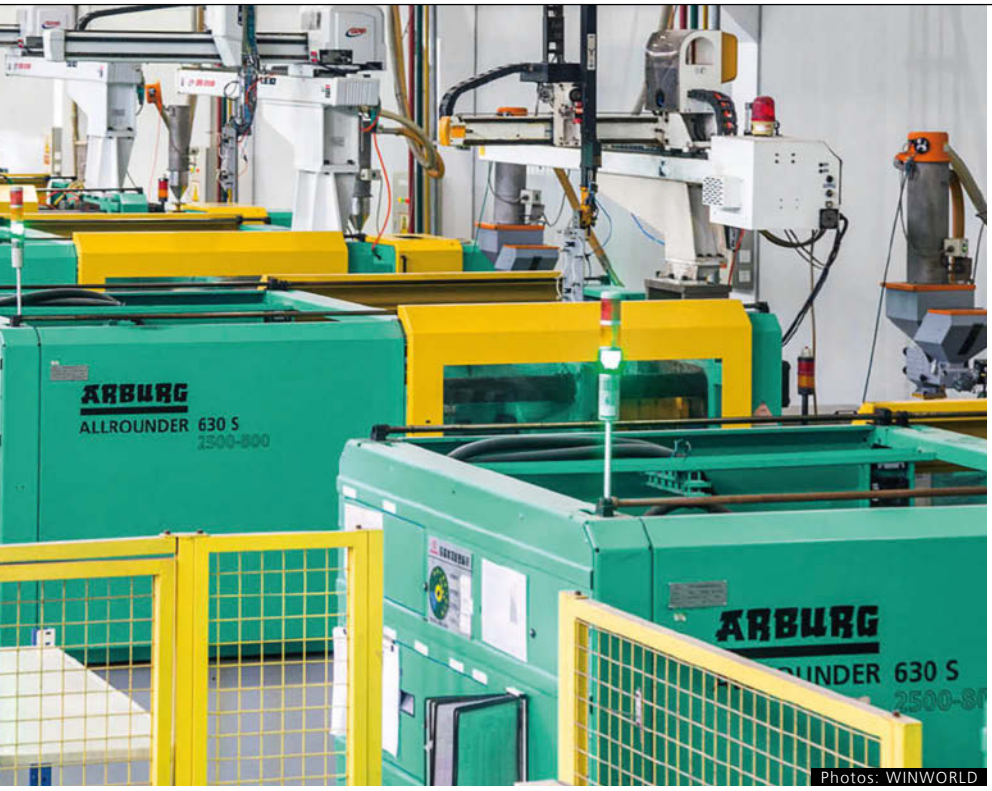
For the production of left and right door lock systems, hydraulic ALLROUNDER 630 S machines with a clamping force of 2,500 kN, for example, are integrated in the assembly lines. The moulded parts are removed via robotic systems and set down onto a conveyor belt for further processing. Downstream, clips, springs and end stop dampers are mounted onto the parts, partly using rotary tables. A functional check is carried out next. The four-cavity hot runner moulds operate with a shot weight of 400 grams.

The cycle times are between 30 and 40 seconds. The materials used are PBT and PA66, each with a glass fibre content of 30 percent as well as POM.

SELOGICA offers advantages

High-ranking representatives of WINWORLD visited the ARBURG Technology Days in Lossburg in 2014 and 2016. But it only took the first visit to convince the experts about the advantages of ARBURG technology, because comprehensive quality control plays a very important role in their company. This is where the SELOGICA control system comes into its own with its visual process control and monitored

automotive supplier



Photos: WINWORLD

The housings for electric motors are produced on automated ALLROUNDER 630 S machines.

injection programs. WINWORLD also appreciates the high level of user-friendliness offered by the control system with its graphics-based user interface and detailed control options. The high precision of the ALLROUNDERs and their reliability are also deemed unbeatable.

Knowledge transfer in Lossburg

In Lossburg, the experts not only gained interesting insights into machine technology, but also into the general production design. This enabled them to become familiar with and adopt many European standards – e.g. with regard to continuous media temperature control and quality. Furthermore, ARBURG provides the company with comprehensive advice on the topic of peripherals in production, as well as fast assistance, extensive training activities and professional service. In this respect, WINWORLD values ARBURG's highly professional approach, but also the patience with which the requirements are implemented.

INFOBOX

Name: Jiangsu WINWORLD Precision Parts Co., Ltd.
Founded: 1996 by Managing Director Qiaomei Wang
Locations: Two locations in Zhenjiang, Shanghai metropolitan area, China
Production area: 12,000 square metres
Employees: 330
Industries: car manufacturing, medical technology, primarily for the Chinese and European market
Machine fleet: 60 injection moulding machines, including 15 ALLROUNDERs with clamping forces from 500 to 3,200 kN
Contact: www.zjwinworld.com

Arburg industry experts (from left to right): Manuel Wöhrle (lightweight construction), Matthias Lang (automation), Julia Grigas (packaging), Manuel Frick (LSR), Bertram Stern (packaging, circular economy), Martin Manka (medical technology) and Jasmin Girrbach (administration) together with the responsible Head of Department Ralf Müller.

We know what we're doing!

Industry experts: Targeted support and strategic development

How can customers be supported efficiently, effectively and proactively? By specialists with a high level of technical know-how and industry knowledge who specifically support the sales team in customer enquiries and conversations. At ARBURG, this is the responsibility of the "Industry Sales" group.

"We are actively involved in the worldwide sales activities and are in charge of the strategic cooperation with important industry customers in the global market," says Manuel Wöhrle, explaining the tasks of his group made up of Sales Managers and Senior Sales Managers. He himself is responsible for lightweight construction, while Matthias Lang is responsible for automation, Martin Manka for medical technology, Manuel Frick for LSR and Julia Grigas and Bertram Stern for packaging. Interdisciplinary subjects are also dealt with by the Industry Sales team. This means that Bertram Stern is also the contact person for questions relating to circular economy (see page 10).

Interdisciplinary teams

Industry-specific projects are initiated not only by Sales colleagues, but also by the experts themselves. As central contact persons with regular contact to customers, they also help to ensure their customers' systematic further development. The particular topics are dealt with on an interdisciplinary basis and come from the areas of application technology, technical processing, development, materials management, service and marketing. This is why, depending on the task at hand, the teams can sometimes include up to 45 people. In the field of automation, including the turnkey specialists, this number can be as high as 80. Due to the company's international orientation, ARBURG subsidiaries also employ industry specialists.

"This enables us to make effective use of the expertise from all sectors and to further advance the industry," says Manuel Wöhrle, commenting on the advantages. "We possess in-depth market knowledge and a high level of expertise relating to each industry, and provide market-specific technologies and applications," he adds. "This enables us to quickly show our customers the benefits of our solutions."

Silver anniversary

Success story: 25 years ARBURG AG in Switzerland

The series shows no signs of stopping ARBURG has been celebrating subsidiary anniversaries non-stop for years. This is impressive proof of the success that the subsidiaries have enjoyed in their respective markets for decades. In June 2019, ARBURG AG celebrated its 25th anniversary in Switzerland.

As part of the festivities, ARBURG Managing Partner Juliane Hehl presented the traditional anniversary sculpture to Marcel Spadini, Managing Director of ARBURG AG. In her address, she emphasised the outstanding achievements of the Swiss team over the past 25 years: An important factor for this success story has always been the high level of competence and continuity, which are highly valued by the customers.

Market leader in Switzerland

ARBURG Managing Director Sales Gerhard Böhm described the establishment of the subsidiary as an important milestone: "We have been the market leader in Switzerland for many years. Now more than ever, our customers are relying on innovative strength and production efficiency to stay ahead of global competition." Accordingly, highly complex, fully automated and specifically configured machines and turnkey solutions are in much demand. The ALLROUNDERs are mainly used in medical technology and the watch-making industry, as well as in the electrical and construction industry. ARBURG Plastic Freeforming using the freeformer is also gaining in importance in Switzerland as a supplementary manufacturing process.

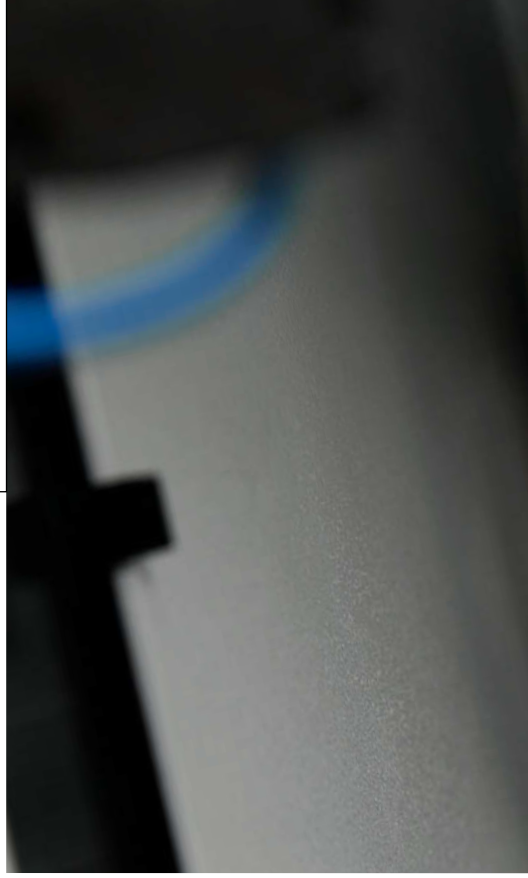
Well prepared for the future

"With our anniversary open house event, we not only wanted to thank our customers for the many years of cooperation, but also demonstrate how we can continue on our successful path together," said Marcel Spadini. He said that the consistently positive feedback from the guests was proof that this had been achieved all around. "The atmosphere was excellent and also showed that we plastics experts here in Switzerland are a real family and are well prepared for the future."

ARBURG Managing Partner Juliane Hehl presented the traditional anniversary sculpture to Marcel Spadini, Managing Director of ARBURG AG.

TECH TALK

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



Connectivity all aro

ALLROUNDERs ideally prepared for networking with OPC UA

Simple and standardised networking – this is where the OPC UA communication platform provides ideal conditions with its manufacturer- and language-independent technology. The flexible connectivity modules for ALLROUNDERs are based on this standard. This applies both to process control between the machine and the production environment and to the online provision of process information to higher-level software tools and platforms. In other words: This is practice-oriented digitalisation!

The number of digital solutions is growing continuously. And this continually results in new possibilities and potentials for further increasing the efficiency of injection moulding production. One of the central questions when developing the connectivity modules for ALLROUNDERs therefore was: How can an infrastructure be created that is flexibly designed and easily expandable at any time?

Connected equipment

When it comes to the actual production process, the connection of peripheral equipment to the injection moulding machine is a decisive factor. One thing is certain: OPC UA will become the EUROMAP standard for data exchange within injection moulding cells. The technology behind OPC UA offers interesting features for even more convenient and efficient work processes:

- A shared data set for machines and peripheral equipment
- Parameter input for devices directly via the machine control system
- Extensive integration of peripheral equipment in quality monitoring

ARBURG already offers networking solutions based on OPC UA for hot runner controllers, temperature control units and LSR dosage systems. To ensure that any future EUROMAP standards can be easily retrofitted, an open distributor (switch) is used on ALLROUNDERs.

Connected systems

In addition to the integration of peripheral equipment, it is becoming increasingly important to use data from the machine control system at a higher level:

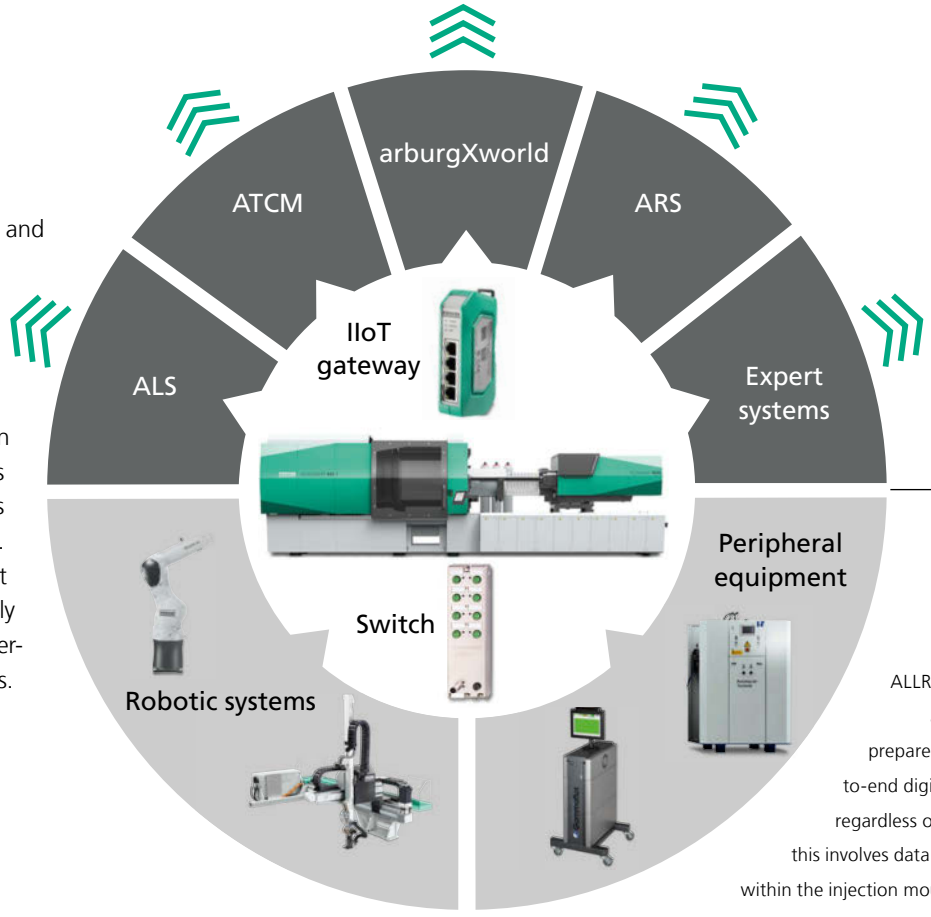
- ARBURG host computer system (ALS): Manufacturing execution system for production management and detailed planning
- ARBURG Turnkey Control Module (ATCM): SCADA system for collecting process data for complete production cells
- „arburgXworld“ customer portal: Simple production overview and process documentation plus many additional functions
- ARBURG Remote Service (ARS):

und

External machine diagnostics and process support

- Expert systems (e.g. for internal mould pressure): external process monitoring

Basic connectivity with an integrated IIoT gateway was developed to meet the various requirements (see page 7). These new features mean that the ALLROUNDERs are ideally prepared for connection to higher-level software tools and platforms.



ALLROUNDERs are ideally prepared for end-to-end digitalisation: regardless of whether this involves data exchange within the injection moulding cell or with systems and platforms (graphic, left). The integrated IIoT gateway (top) makes this possible.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