

# today

The ARBURG magazine Edition 25 Spring 2004

Das ARBURG Magazin Ausgabe 24 Herbst 2003

Informationen über  
Markt und Technik  
des Spritzgießens

Ausgabe 1

A publication  
of the ARBURG Group

WELTPREMIER  
Allrounder  
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# today

# ARBURG

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## MASTHEAD

### "today", the ARBURG magazine, Issue 25, Spring 2004

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From its first edition in 1995 to the current 25th – "today" is always up-to-date, whether in content or in design.

**ARBURG**



## Dear Readers,

Time seems to fly by: we are already starting another K year and hope that this year economical conditions will finally undergo a crucial change for the better.

The speed with which time passes can always be seen from anniversaries, which have a habit of sneaking up on you unexpectedly. And just such an anniversary is being celebrated in this spring edition of our "today": After all, today we are presenting you with the 25th volume of our customer magazine. In 1995, we launched this publication as the successor to the legendary "ARBURG today" magazine – coincidentally in a K year as well!

Over the course of the years, the formal layout of our magazine has been adapted to the spirit of the times, the former "ARBURG today" became the present "today". But one thing has always remained the same: our claim to present you in each edition with interesting news from the world of ARBURG, which is just as colourful and diverse as in real life.

Whether a customer report or technical innovations from the

company, exhibition previews or presentation of the worldwide network – each time we have tried to provide you with exciting information that is both valuable and interesting.

Your positive feedback is the proof that we have got it right. The same applies to our customer magazine as it does to our entire range: it has to fulfil the requirements of our customers, only then will we be satisfied.

We will continue to place the same demands on our customer magazine. Just wait and see: it won't be long before we are celebrating the 50th edition of "today".

We are looking forward to many more editions with you and hope you will enjoy reading the new "today".

Yours,

Michael Hehl





# Little and large –

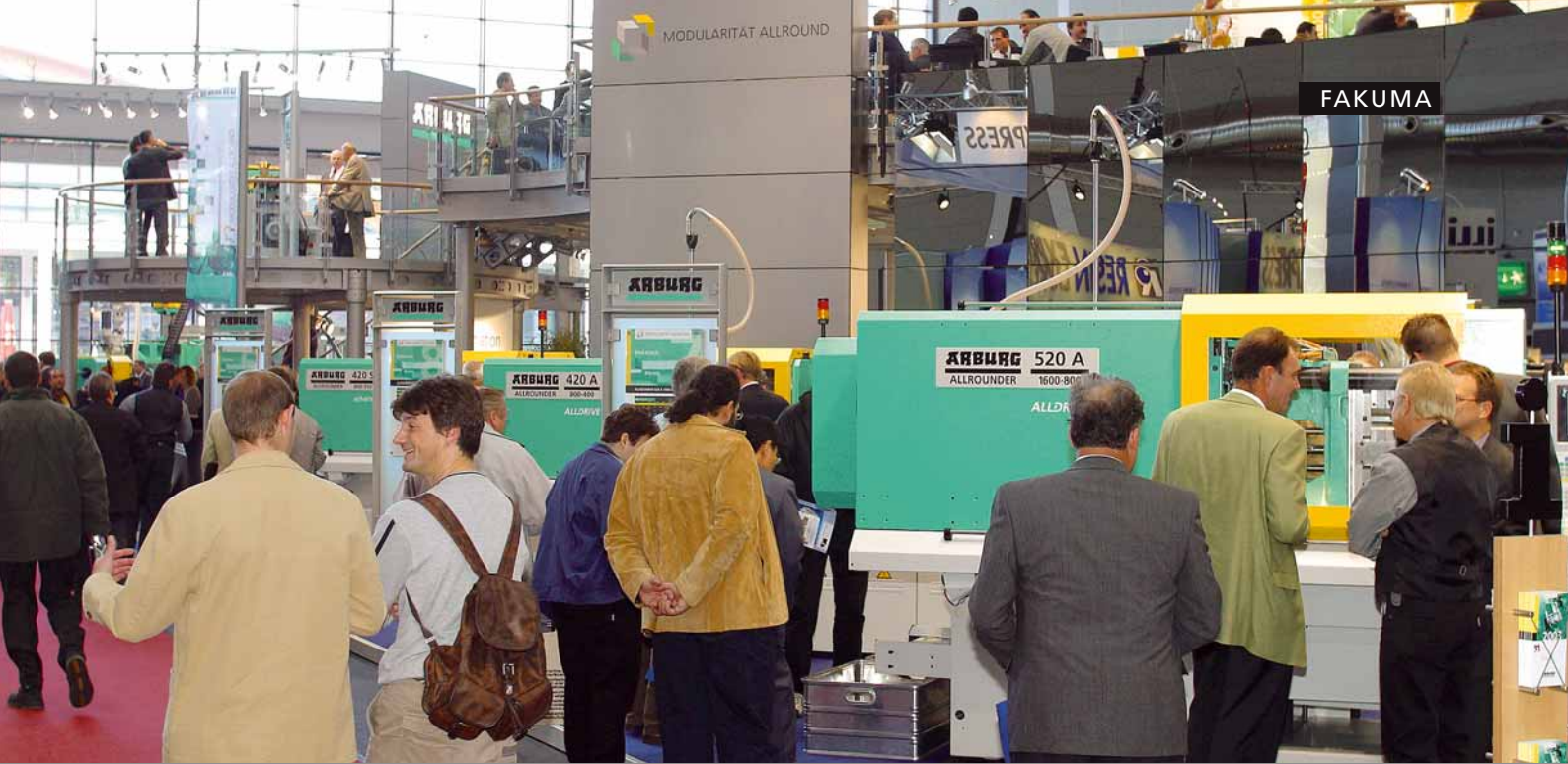
**D**iversity reigned supreme on ARBURG's Fakuma exhibition stand in hall A3: previously there had only been a few exhibition appearances where the company had presented itself in as diverse a manner with its ALLROUNDER range as it did in autumn 2003 in Friedrichshafen. At the start: the smallest ALLROUNDER 170 U, the largest two-component machine ALLROUNDER 820 S, the expansion of the ALLDRIVE series with the ALLROUNDER 520 A and finally new features marking the 10th anniversary of the SELOGICA machine control.



Highlights: The new, universal micro injection moulding machine ALLROUNDER 170 U (top left), the new electric ALLDRIVE machine 520 A (top right) and the large ALLROUNDER 820 S as a two-component machine (right) attracted many Fakuma visitors to the ARBURG exhibition stand.

This wide-ranging exhibition appearance came at the right time as the industry presented itself in a spirit of optimism, which also infused the exhibition with an overall positive mood. Numerous discussions were of substantial quality. Many of the visitors came not only to obtain information, but with concrete ideas on their companies' requirements.

ARBURG used a total of 940 square metres on multiple levels to present its innovations. Nine ALLROUNDERS and one THERMOLIFT meant that visitors could view a total of ten exhibits in detail. One special highlight was of course the ALLROUNDER 170 U. The spe-



# in a flexible relationship

cialist media and competitors were equally astonished to see ARBURG now introducing a new model to the smaller end of the machine market. Particularly in the medical technology, biotech and electronics sectors, in view of ongoing miniaturisation of components up to the micron range, a machine of this size will be ideally suited for such application.

The machine, like all ALLROUNDERS, has a modular design with respect to clamping force, injection unit sizes and screw diameters and can be individually equipped with aggregates to suit individual needs. The machine features a distance of 170 millimetres between tie bars and is available with clamping forces of 125 kN and 150 kN. A new 70 configuration injection unit is also available in addition to the 30 injection unit. Screw diameters of 15 and 18 millimetres are available for the 30 unit, as are 18, 22 and 25 millimetre screws for the new 70 unit.

ARBURG showed the expansion of its ALLDRIVE machine series with the ALLROUNDER 520 A 1600-800. The modular options for combining electric and hydraulic drives were particularly impressive. The main functions of the machine, "opening and closing the mould", "injection" and "dosing", have been designed with electric servo drives as standard. Other movements such as "eject-

tion", "moving the nozzle" and "mould functions" can be operated either hydraulically or electro-mechanically. The new ALLROUNDER 520 A features a clamping force of 1,600 kN, a maximum moulded part weight of 516 grams in polystyrene, an 800 injection unit and a distance of 520 millimetres between tie bars.

A further ARBURG highlight: the options available by combining machines with adapted peripherals. One example was the two-component version of the ALLROUNDER 820 S with a 3200 horizontal and 150 vertical injection unit, MULTILIFT HV and conveyer belt for part placing of an ARBURG product briefcase. The exhibits showed the way into the future, which will be shaped increasingly by injection moulding solutions specially adapted to customer needs. ARBURG has recognised customer demands and goals early on and has reacted with the relevant products, including the sophisticated SELOGICA machine control system.







# Permanent innovati

At its Ansbach site (small picture on the right) OECHSLER produces sophisticated plastic parts mainly for telecommunications and medical technology, such as components for blood sugar testers (small picture on the left). In action: cutting edge ALLROUNDER injection moulding technology with additional peripherals, operating fully automatically (pictured above).



Photo:Oechsler AG

**The motto of OECHSLER AG is: "only by permanently adapting to new challenges and innovative new developments do we safeguard our future." Lasting success on the market proves that the company has always maintained this philosophy. So far, more than 100 ALLROUNDERS are employed in its injection moulding shop.**

gree of precision integration and at the same time meeting the highest standards of quality. The value-added chain comprises not only the manufacturing of moulds and the production of plastic parts, but starts much earlier with innovative product development, prototyping and complete production management.

State-of-the-art technologies are used at their production sites. Prototypes, prototype tooling and samples can be produced at short notice. Clients benefit from the advantages of central product management which, at OECHSLER, means permanent customer sup-

OECHSLER AG produces high-precision plastic parts and assemblies with a high de-



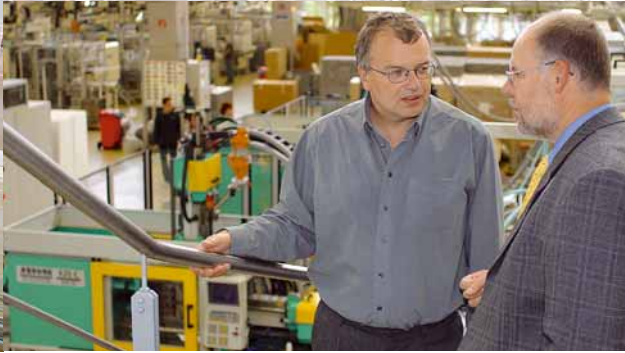


Photo: Oechsler AG

# ons

port over the entire project term by the same employee (one-face-to-the-customer) who knows the project from a technical as well as a commercial perspective.

Apart from the automotive sector where the substitution of metal parts with plastic is one main focus, OECHSLER AG also concentrates on the medical technology and telecommunications sectors. Other niche areas deal with mechanical optics, for example. All sectors bring their experiences from these special areas via knowledge and know-how transfer in cross-sectional teams into the series production.

In the field of medical technology various components are produced and assembled under clean-room conditions of different classifications, in the field of communications technology OECHSLER manufactures cases for mobile phones, for example, using in-mould decoration (IMD) and in-mould labelling (IML). A high level of automation is used throughout the whole production.

Semi- and fully automated assembly systems as well as robotic systems reduce production costs on the one hand, and increase precision and product quality on the other. Intermediate and final checks are integrated

into the production process so as to provide complete documentation on each production step due to the high traceability requirements in such fields as the automotive and medical technology industries. On the product side, OECHSLER AG, the "gear cutting expert" is particularly known for its developments in the manufacture of gears. In the field of mechatronics the company fills the missing link between electrics and information technology with the required mechanics.

Apart from insert/outsert technology and multi-component injection moulding, OECHSLER AG deals with the manufacture of three-dimensionally injected circuit substrates using a comparatively new technology. Here the company employs MID (moulded interconnect devices) technology used to link mechanics, electronics and information technology in innovative assemblies.

Quality assurance is a top priority at OECHSLER. Through a CAQ system optimised to suit the specific company requirements testing efforts are reduced, investigations into the cause of defects optimised and targeted countermeasures made more effectively. Total Quality Management (TQM) is used throughout the entire company.

The WAVE DRIVE® gear by OECHSLER excels by virtue of high reduction ratios in minimal installation spaces as well as the substitution of metal with plastic. A high degree of automation in production ensures the highest quality, as Herbert Köck (left), Production Quality Control, and Robert Feuchter, Production Manager, can confirm.

In the early fifties, OECHSLER initially manufactured injection moulding machines themselves. The production on ALLROUNDERS – the first machine being an ALLROUNDER 221 U – began in 1965. When it comes to incorporating innovative technologies into the manufacturing process, OECHSLER is always one of the companies involved in helping ARBURG to lead the way.

One of the first ALLROUNDERS with modular drive technology, an ALLROUNDER 420 A



Photo: Oechsler AG

In Ansbach, several generations of ALLROUNDERS produce precision small parts. Automated processing steps such as centralised material feed, part separation and sprue separation are standard (pictured below). One of OECHSLER's activities is the assembly of complete components for installation in a variety of vehicles (pictured above).



ously from a 2+2+2-cavity mould. Freely programmable six axes robots remove the injected parts, travel to a recycling station, separate the sprues, then travel to a placement and palletising station and place the finished cases in order into special trays for further processing. Production manager Robert Feuchter says that these manufacturing cells are amongst the fastest systems on the market when it

realised for this company. Apart from its development services, OECHSLER offers cost-effective manufacture of all components up to final series production and especially for sophisticated assemblies at a constant high level of product quality. The ALLROUNDERS at their Ansbach site play a considerable part in this.

comes to the complete manufacturing cycle. When introducing the manufacturing cells, the close co-operation with the ATC Rednitzhem-bach, practically on their own doorstep, and with the applications technology department in Lossburg, had been extremely important.

Robert Feuchter also comments positively on the subject of controls. ARBURG managed an important step for further production optimisation at component manufacturers with the

800-400, has been installed at the company since the middle of 2003 and is currently in its test stage to find out what effect advantages such as improved production quality, fast, stable operation and environmental aspects (energy use, noise development and reduced oil consumption) have on the production of precision plastic parts in particular. And even the new ALLROUNDERS 170 U have a firm place in the OECHSLER production plan. They will gradually replace the predecessor models in small-part production. In the larger clamping force range, a two-component version of an ALLROUNDER 630 S will have come into operation in Ansbach in 2003.

One of the technical highlights of OECHSLER's production is the manufacture of mobile phone cases in several production cells with ALLROUNDER 470 and 570 two-colour machines. The parts are removed simultane-

ously from a 2+2+2-cavity mould. Freely programmable six axes robots remove the injected parts, travel to a recycling station, separate the sprues, then travel to a placement and palletising station and place the finished cases in order into special trays for further processing. Production manager Robert Feuchter says that these manufacturing cells are amongst the fastest systems on the market when it

As a project partner, OECHSLER offers its customers a broad value-added chain whose individual components can be put together tailored to the individual customer. Many of OECHSLER's customers increasingly make use of this development know-how. OECHSLER, for example, has been working together with brake specialist TRW for years as a development partner in the automotive sector. The actuator, a component of the electro-mechanic parking brake (EPB) on the Audi A8, was

### INFOBOX OECHSLER

**Founded:** 1864, AG since 2000

**Plants:** in Ansbach, Weißenburg and Großhabersdorf

**Products:** Plastic parts mainly for the automotive, medical and communications technology, systems supplier, in-house mould construction, clean-room production

**Quality assurance:** in accordance with ISO 9001 and VDA 6.1. Aim: Certification according to TS 16949 in 2004

**Training quota:** between 8 and 8.5 percent

**Address:** Matthias-Oechsler-Strasse 9, D-91522 Ansbach, Germany  
www.oechsler-ag.de





# It's up and running!

**The new ARBURG website went live on 16 January 2004. With new design and structure, it now informs even more extensively and individually than the previous site about the company, the products and service it provides. National sites for individual subsidiaries containing country-specific information complement the large international site.**

Access to the international ARBURG website, which is offered in German as well as in English, is via "www.arburg.com". The national pages for subsidiaries are available in the relevant national languages and can be accessed either via the country selection function on the international site or directly via each country domain, e.g. France via "www.arburg.fr".

The latest highlight immediately grabs the visitor's attention through an eye-catching teaser in the left-hand margin of the homepage. The same goes for news at the right-hand margin, which is also included on each page. And the same applies to the "Worldwide" button,

which links to the "Locations" page. From this page, you can access international ARBURG subsidiaries, representative offices and agents via the map of the world or by selecting the relevant country directly.

The structure of the national pages corresponds to that of the international site. All pages are divided into five main areas: "ARBURG", "Products", "Services", "Contact" and "Know-how", each of which is divided into subsections. In some sections of the national pages there are direct links to the international section, for example for the products. To prevent visitors from getting lost while surfing, the sections to which the currently displayed page belongs, are shown in yellow. The visitor will also be able to see on the right-hand side underneath the ARBURG logo if he is on the international site or on the pages of a subsidiary.

"ARBURG" groups together company-specific topics such as philosophy, history, production, organisation or training. The comprehensive Products area not only contains complete information about machines, applications, robotic systems and accessories but also

numerous brochures which can be downloaded.

The scope of the extensive "Services" area ranges from support, spare parts and training offers to application technology and projects and beyond to financial services. "Contact" lists all the important telephone numbers and e-mail addresses. Finally, anyone with an interest in the technical topics covered by the "Tech talk" column of the "today" journal will feel at home in the "Know-how" area.

The new ARBURG website: new design, more clearly laid-out, more extensive and more individual.



# Degradable and renewable

**N**ature compounds, biodegradable plastics made from renewable raw materials, have recently become increasingly important as they can be disposed of in organic waste containers, for example. They are currently used in the area of injection-moulded parts, thermoformed parts and films. With the aid of an ALLROUNDER, an injection moulding compound was successfully tested and a new product launched.

Since 2002 the Fraunhofer Institute UMSICHT in Oberhausen, Germany, and the FKUR Kunststoff GmbH, a company in Willich, Germany, have been co-operating in the development of these new materials. At the end of 2002 both partners were able to present, amongst other things, a biodegradable compound which can be injection-moulded and displays very good heat resistance. In the pilot plant of the Fraunhofer Institute for environmental, safety and energy technology UMSICHT in Oberhausen, an ALLROUNDER 470 S 1300 with VARIO system was used for sampling and pilot production of products made from this material.

Dipl. Ing. Thomas Wodke,

responsible at UMSICHT for the areas Injection Moulding and Product Development since 1998 and managing director of invenio Kunststoff Engineering GmbH, Erwitte, since 2002, emphasises in this context the fact that the Fraunhofer Institute can offer the complete product development chain under one roof. Their service range extends from product ideas to creation of requirements profiles, material development and compounding, the design, the construction, the support of mould construction and prototype production as well as injection moulding from initial samples and short runs, engineering in the area of production layout and consulting services for product introduction. Invenio mainly looks after the product development, component construction, mould engineering and injection moulding and strength analysis sectors.

When processing the material, the fact that the plastic is not suitable for hot runner processing has to be taken into consideration. High injection speeds and very short holding pressure and cooling times, however, enable a very economic production. According to Thomas Wodke, the

## INFOBOX

### Fraunhofer-Institut UMSICHT

Osterfelder Straße 3, D-46047 Oberhausen,  
www.umsicht.fhg.de

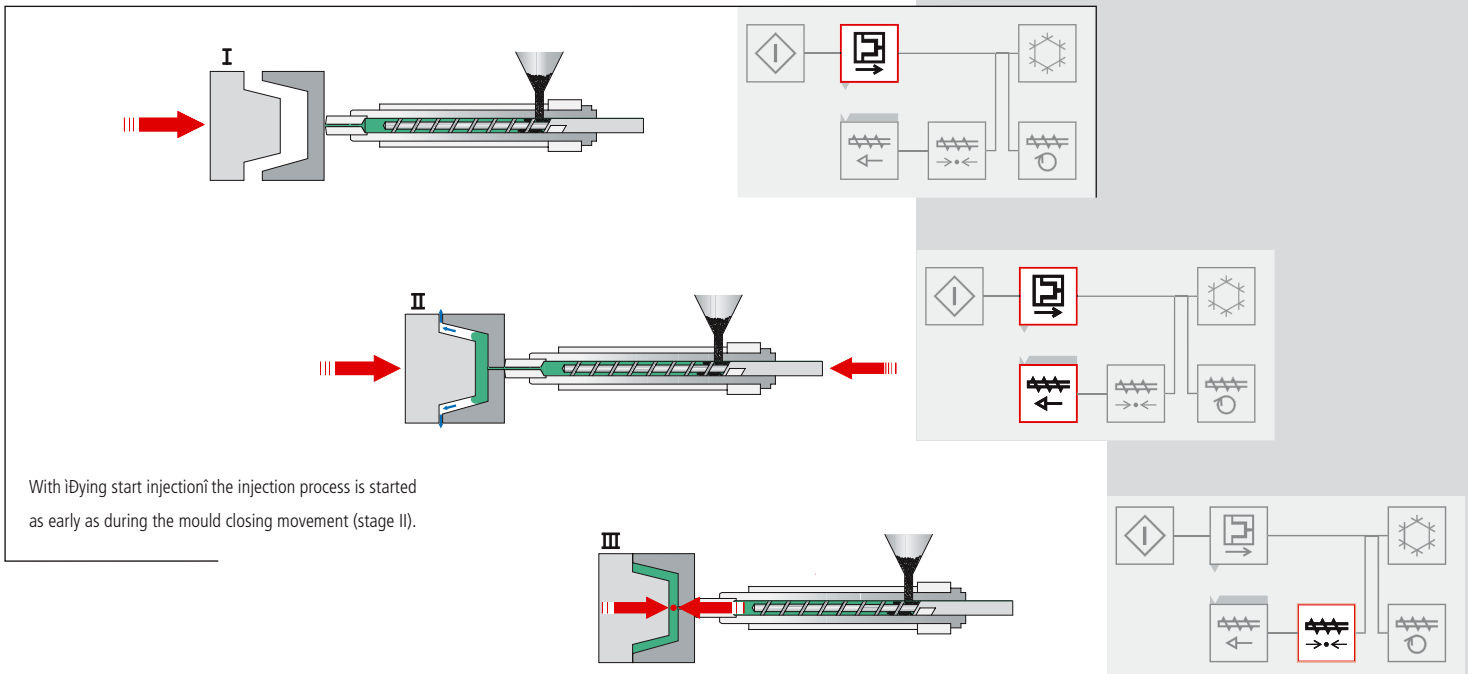
### invenio Kunststoff Engineering GmbH

Blumenstraße 7, D-59597 Erwitte  
www.invenio.net

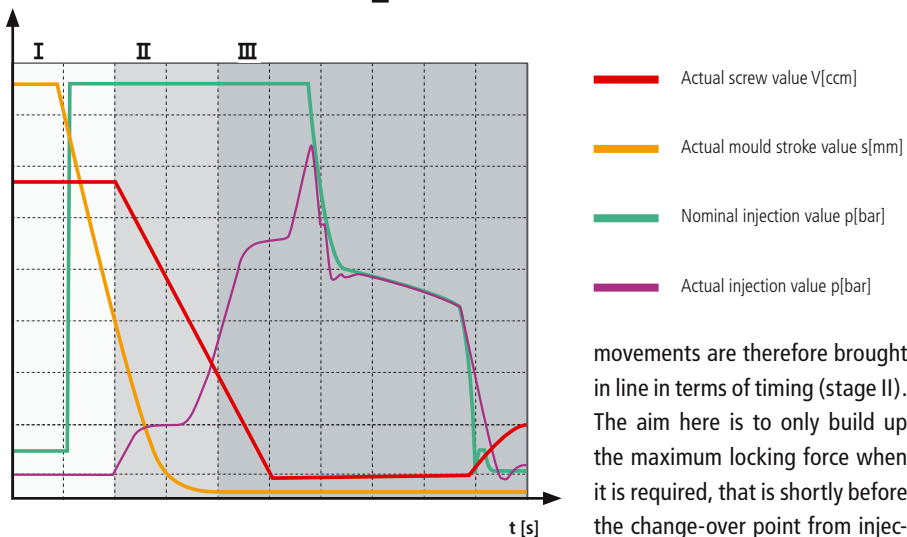
ALLROUNDER is especially used for small-scale production. In daily operation the collection of quality-related injection moulding parameters via the SELOGICA control and the VARIO facility is of particular advantage here for shortening the flow paths.

One example for the processing of nature compounds in the injection moulding process is the production of disposable cutlery.





## One step ahead



**Shorter cycle times and better venting of the cavity result from the "injection dependent upon mould stroke" option, or, in injection moulding jargon, "flying start injection".**

The step ahead is basically an additional step in between. Instead of starting the injection only after the mould has closed, the injection process is already started at a defined stroke point during the mould closing movement (end of stage I). The two opposing linear

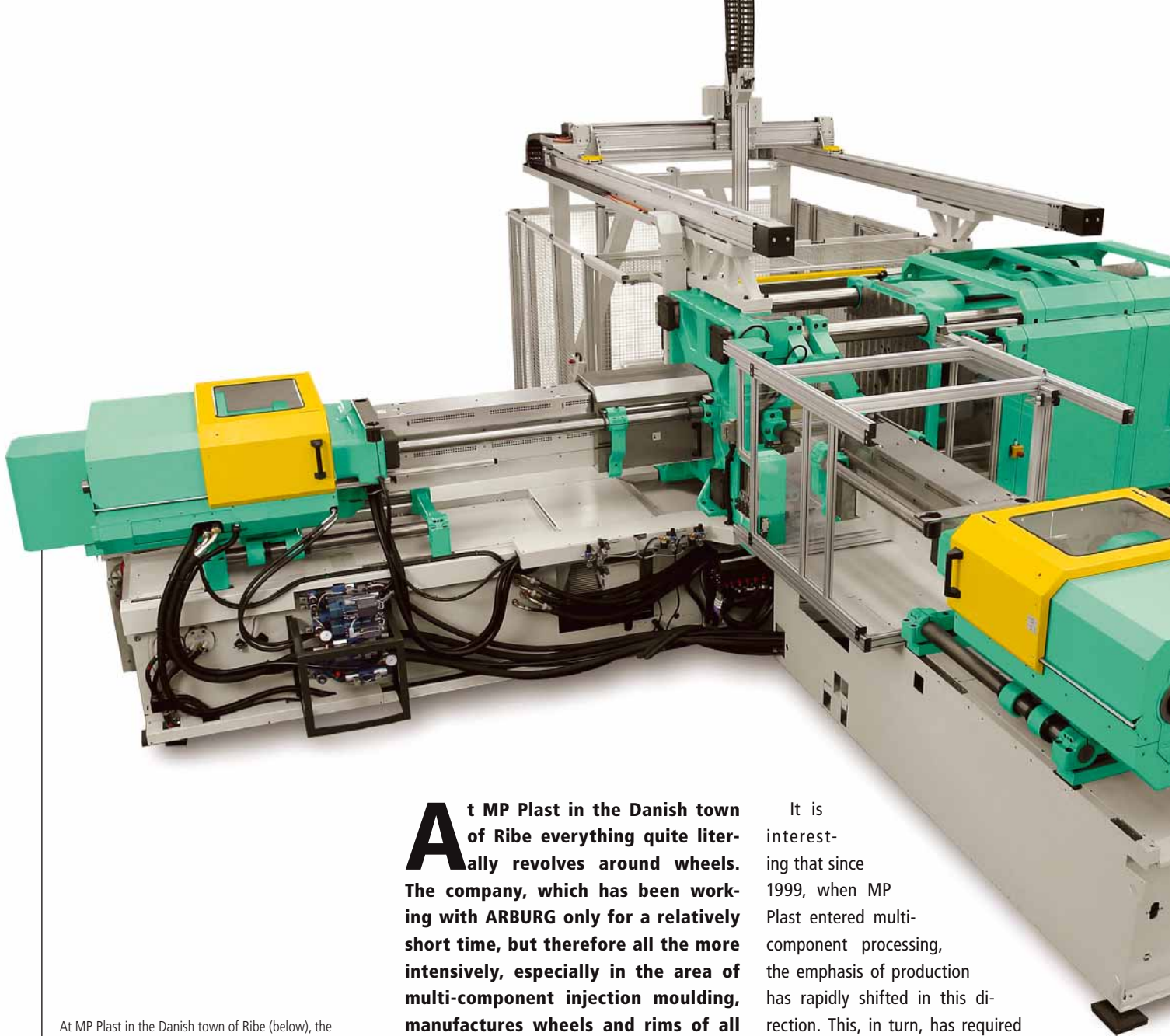
(stage III).

One advantage of this process variant is the reduction in cycle time through the cycle step "injection start" being brought forward. The potential savings amount to tenths of a second and therefore predominantly lead to a clear increase in productivity when short cycle times are involved. In addition, the ventilation of the cavity through the opening gap of the mould is significantly increased for high injection speeds. The sequence, which follows a similar principle to compression injection, can also result in quality benefits with regard to

fewer stresses in the moulded parts and lower post-shrinkage.

This process variant lies somewhere between the extended clamping program and classical compression injection moulding. For the extended clamping program venting of the cavity is supported in the first place by graduating the locking forces. During the filling phase, the locking force is kept low in order to improve venting of the cavity via the parting line of the mould. The holding force is only increased with the start of the holding pressure stage, the phase of the process where the maximum internal mould pressure and therefore the maximum forces in the cavity have been reached.

Apart from a corresponding control option, another prerequisite for the processes described above is a twin-circuit pump technology as used on the hydraulic ALLROUNDERS starting from technology stage 2.



At MP Plast in the Danish town of Ribe (below), the world's first ALLROUNDER 820 S 4000-3200/3200 produces complete plastic wheels (r.) as a two-component machine fully automated for a wide-range of applications with MULTILIFT V robotic system (above).



**A**t MP Plast in the Danish town of Ribe everything quite literally revolves around wheels. The company, which has been working with ARBURG only for a relatively short time, but therefore all the more intensively, especially in the area of multi-component injection moulding, manufactures wheels and rims of all types and sizes.

With its Ribe site, the company, which is listed as a publicly owned company, is located near the German border. This is also where MP Plast's largest international customer is based. 40 percent of the wheels manufactured by the company are exported, 60 percent go to Danish customers. The products are used in the plant construction sector as well as in the toy sector or for moving heavy loads. Wheels and rims are either fitted with ball, roller or plain bearings and are supplied with or without wheel hub covers. Their product range is rounded off with the manufacture of technical parts, which the company produces as a sub-supplier for various different suppliers.

It is interesting that since 1999, when MP Plast entered multi-component processing, the emphasis of production has rapidly shifted in this direction. This, in turn, has required investment in a modern machine fleet which shows a high degree of automation. The injection moulding machines in Ribe operate with clamping forces of between 400 and 4000 kN. All important machine data flows into one central computer where the actual status of the machines can be read at any time. Which material, what percentage of pigment, how much regrated and how much raw material is used – all these questions can be answered in seconds by looking at the central computer.

However, it is not only the machine fleet with an age range of eight to ten years that is comparatively modern; the peripherals are too. All machines are stocked via a central material supply and are automated to a large extent with handling equipment and automatic feed equipment such as for ball bearings. The main customers for the wheel production are based in Germany, England, Holland and Sweden.

The co-operation with ARBURG only came



# Round and round it goes at MP Plast!

about when MP Plast entered into the multi-component production of its wheels. Since 1999, the company has integrated a total of six ALLROUNDERS into production, of which three are "normal" injection moulding machines and another three are two-component ALLROUNDERS.

Another interesting detail: there has been a great willingness to invest in the company. This, coupled with its modern machine fleet, has meant that MP Plast was the first in the world to buy an ALLROUNDER 630 S 2500-1300/150 with three axis robot as well as the first to buy an 820 S 4000-3200/3200 with MULTILIFT V. This proves the high degree of confidence the company has and is willing to invest in ARBURG.

ARBURG justifies this confidence by delivering high-quality injection moulding technology tailored to the requirements of the company on the one hand, and the comprehensive consultation work and services provided as well as fast spare parts service on the other hand. According to company founder and owner Max Petermann, very good impressions were also gained on the visits to ARBURG in Lossburg for approval of machines. "Teamed with the expertise of the service engineers at ARBURG in Denmark this was the optimum package for us."

At the end of the day, reliability of the machine technology is also necessary, as MP Plast

is known in its market segment as a fast and highly reliable supplier of high-quality products. The machines all operate in three shifts seven days per week. Apart from PP copolymer, polyamide, polyurethane and TPE are used to produce the hard-soft combinations. The moulds are maintained and repaired in the in-house mould construction department.

Max Petermann increasingly sees the future of his company in the multi-component sector. The production of injection moulded parts from two components already comprises the lion's share of its total production. In the medium term, further machines for manufacturing parts from three components might be added to the existing ones. Given this technical background, Petermann wants to work on the development of new products in a targeted manner to be always one step ahead of the competition.

Here, ALLROUNDER technology will continue to play an important role, as MP Plast is very happy with its machines and peripherals. The simple and clear design, the stability and high functionality are all reasons for choosing ARBURG machines, says Petermann.

The SELOGICA control operates in this manner as well: the numerous programming and monitoring functions are easy to use. The machine operators work quickly with this control and intuitively make the connections. This will make sure that the wheels from Denmark will continue to roll towards Europe and overseas in future.



Photo: MP Plast

## INFOBOX MP Plast

**Founded:** 1986 by Max Petermann

**Production area:** 3,000 m<sup>2</sup> in Ribe

**Employees:** 20

**Machine fleet:** 17, including three large two-component ALLROUNDERS alone, many machines not more than five years old, highly automated machine fleet with central computer, material supply, removals and supply to the warehouse.

**Products:** Emphasis on multi-component injection moulded parts, especially wheels and rims

**Location:** Ørstedesvej 7 b, DK-6760 Ribe, Denmark, [www.mp-plast.dk](http://www.mp-plast.dk)



# Service around the clock



recent result of this is the extended service range available to the German market, "ARBURG Service Allround". It consists of a hotline which is available 24/7 and a callout service for service engineers at weekends and on public holidays.

However, the new range of services required a structural change in the field of service. So that nothing was left to chance when implementing the service, it has undergone extensive testing at the service location Neustadt near Hanover since early

2002. Only after a successful trial run, were further Service Centres set up at the headquarters in Lossburg, at the ARBURG Technology Centre in Rednitzhembach, at the ARBURG Info Centre in Radevormwald and in Worms.

Customers can reach their regional contacts at all five locations free of charge on weekdays between 7 AM and 5 PM for all service enquiries. In addition, an "expanded" paying hotline is available, which is operated by qualified ARBURG employees between 5 PM and 7 AM as well as around the clock at weekends and on public holidays. Their workstations are connected online to the ARBURG headquarters and the Service Centres so that they have

access to all important customer information and machine data and equipment, and can provide comprehensive support.

In urgent cases where it is indispensable that the fault be remedied at the weekend or on a public holiday, a service engineer can be requested using the expanded hotline. For these chargeable emergencies, a service engineer will be on standby duty in each service area and will come to your location between 8 AM and 2 PM.

**A**RBURG Service Allround - this is the extended range of ARBURG services available to the German market as of January 2004. It not only provides a hotline for telephone support around the clock, but in an emergency, service engineers can be requested even at weekends or on public holidays.

Traditionally, a comprehensive and customer-orientated range of services has always been high on ARBURG's agenda and list of priorities. We constantly work to meet the challenges of the future head-on. The most

## INFOBOX Service Allround

The Service Centres can be reached free of charge on weekdays between 7 AM and 5 PM:

**Lossburg: 07446 33-39 09**

**Neustadt: 05036 802**

**Radevormwald: 02195 50 40**

**Rednitzhembach: 09122 792630**

**Worms: 06242 4506**

The chargeable hotline is available on workdays between 5 PM and 7 AM as well as 24 hours at weekends and on public holidays (except 24/25/26/31 December, 1 January and the Easter holidays) on **09001 272874**.





# ARBURG comes to its customers



**C**ustomers cannot always find the time to attend the annual trade fairs in order to find out about the latest developments within the field of injection moulding. This is why the German ARBURG Sales department has launched the "Technology on Tour" roadshow to provide interested customers with all the information they need away from the ATCs.

Visitors can get better acquainted with the latest trends in ARBURG injection moulding technology in the form of presentations on a variety of innovative subjects. Under the direction of the Manager of German Sales, Eberhard Lutz, the information is therefore condensed so that it contains only what is absolutely

essential –and anyone interested can take a closer look at the associated machine technology by visiting Lossburg or attending the ARBURG Technology Days.

By taking this step, Eberhard Lutz is hoping above all to disseminate information to customers in all regions of Germany at an optimised level. The events, which will be held at conference hotels, are each scheduled to last for a day and will provide participants with a wealth of important tips needed by injection moulding professionals, all delivered in a neat and concise package.

The two speakers from ARBURG will be supported by two external contributors. Martin Hoyer from Applications Development will present ways to increase product quality in the injection moulding process. Oliver Giesen from the Project Department will be focusing on automation of the injection moulding plant. The two external speakers are Marius Fedler from the Plastics Institute in Lüdenscheid and Willi Steinko from GTT, a company specialising in technology transfer. They will be talking on the topic of encapsulation of metal parts and the influence of mould temperature control on quality and cycle time of moulded parts, respectively. Following this, the participants

The "Technology on Tour" team (pictured above, left to right): department manager Eberhard Lutz and speakers Martin Hoyer, Oliver Giesen, Marius Fedler and Willi Steinko. The specialist presentations (centre) led to animated discussions (l.).

will have an opportunity to quiz the experts on special subjects.

105 customers present during the first event in Nuremberg confirmed to the sales department and speakers that in their opinion the "Technology on Tour" was the right decision.

# YEARS

## A time to celebrate



**A**n important milestone in the development of subsidiaries and agents for ARBURG is celebrating their 10th anniversary. In this area, 2003 provided the company with quite a few reasons to celebrate. Apart from the subsidiary in Holland, Italy can look back on ten years of successful operation. Added to these was the tenth anniversary of EM-Kone, the ARBURG agent in Finland.

The subsidiary in Holland celebrated its tenth anniversary with a special kind of event. The race circuit in Zandvoort provided the unusual background for the anniversary of ARBURG B.V. Subsidiary manager Carlo Brouwer extended his invitation to his customers as well as his team. The 32 customers and 13 employees present gained first-hand experience of motor racing in its various forms. The anniversary guests were invited to the

Renault VIP pit on 14 September. The guests were able to test their courage in three different disciplines. Firstly, Renault Rally Meganes with over 200 HP were available for some test laps. Then, the amateur pilots could take their seat in a Formula 3 racing car and enjoy the thrill of the race. In the afternoon, a cart race followed. Together with manoeuvring tests and slalom races throughout the day, the end classification saw Peter Creedon from Philips Automotive in Lommel as the winner. The best ARBURG employee was Dennis Brandenburg who ranked third.

ARBURG Italia invited its guests to the anniversary celebrations at the subsidiary on 14 and 15 November. In addition to the various ALLROUNDERS which could be viewed in operation in the exhibition and training room, a demo installation of the ARBURG host computer system ALS and the ARBURG remote service ARS were also shown. The official ceremony was held on Friday, with the partici-

pation of Juliane Hehl, Stephan Doehler and Dr. Christoph Schumacher as representatives from Lossburg. During the official part of the event the guests learned more about the history of ARBURG and the development of the subsidiary. Following lunch, the rest of the day was spent on informal discussions held in a relaxed atmosphere.

The long-standing ARBURG trade partner EM-Kone in Finland celebrated its tenth anniversary with the inauguration of a new company building in Kerava. In it, you will







Photo:EM-Kone

now find a separate showroom especially for the ALLROUNDER. The Finnish customers particularly appreciate the sound technical advice, which shows that it is not just ARBURG's own subsidiaries that have in-depth know-how in the field of injection moulding technology at their disposal; so do ARBURG's independent agents. This is reflected in reliable technical consulting which is the defined objective of all of the worldwide efforts of the ARBURG Sales department. This strength, which is in any case an argument that can decide a sale, positively affects the worldwide sales figures. ARBURG is represented in around 70 countries worldwide.

The representative offices in Croatia and Serbia/Montenegro have recently been added. In this, the fact that the economic development in these countries is looking very positive has been taken into account.

The co-operation agreement with Nomis d.o.o in Zagreb was signed on 1 October 2003,

and Director Rajko Lazić was able to welcome the first visitors from Croatia to the Fakuma last year.

The most recent trade partner, Interexim d.o.o. in Novi Sad, began representing ARBURG in Serbia and Montenegro on 1 January 2004.

Photos from left:

Photo 1: Björn Norén (left), Juliane Hehl, Cynthia Norén and Stephan Doehler celebrated ten years of ARBURG Italy together.

Photo 2: Juliane Hehl presented Björn Norén with the anniversary sculpture as a memento.

Photo 3: To mark the tenth anniversary of ARBURG Netherlands, Eugen Hehl (r.) presented Carlo Brouwer with the official gift.

Photo 4: Stephan Doehler (l.) thanked Markku Hirn with a certificate for the excellent co-operation with the Finnish representative and congratulated him on the tenth company anniversary.

# MILESTONES



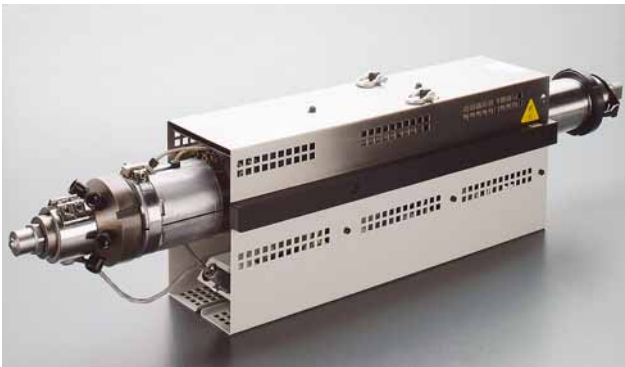
**The introduction of the CMD series at K'83 basically started the age of modular construction at ARBURG. The trend at that time towards fully automated moulded part production cells made it necessary not to consider the machine in its entirety any more, but in terms of its individual components and to enable the change of these assemblies through modular construction. This resulted in the modular injection unit as well, and its basic design can still be found today in the standard ALLROUNDER machines.**

The injection unit designed as a compact, autonomous assembly was introduced on the CMD ALLROUNDERS for the first time. The unit

called a cylinder module comprised the components cylinder, screw, nozzle, heating elements and covers. It was connected to the machine— by means of central plug-in connections and couplings — necessary as a result of the automation requirements. The heating

elements were re-designed especially for these modules and could be controlled adaptively like the nozzle heaterband via the machine control. This removed the need for the cylinder heating via independent control circuits and heaterbands, typical until then. Power supply and control were connected via central, integrated plug-in connections, coupling and interlocking between cylinder and housing

was also central by means of grooves and slides. When disconnecting the module, the injection unit could be retracted so far that the injection carriage was completely exposed and could easily be removed. The encapsulation of the complete cylinder module by fitting protective guards provided a high level of safety for operators. At that time, with this technology ARBURG had a unique feature that was patented and which brought significant operating benefits. It enabled quick and easy changing of the cylinder modules as well as connecting all heating circuits with absolutely no possibility of confusing them. Moreover, several cylinder sizes could be used on this machine without excessive changeover time therefore providing a user friendly operation. And finally, maintenance benefits could be utilised as the modular units could be moved into an easily accessible maintenance and cleaning position. Many of these advantages still characterise the ARBURG modularity concept with its cylinder modules today.



Already offering crucial benefits for decades: the modular cylinder modules from ARBURG.





## TECH TALK

Dipl. Ing. (FH) Marcus Vogt, Technical Information

### A close look at optimising: the SELOGICA cycle time diagram

**T**here is a direct relationship between productivity and continuity in the injection moulding process and cycle time not only in high-speed applications. The cycle time diagram of the SELOGICA control provides support when locating optimisation potentials. It is available for machine sequences as well as the functions of the robotic system.

With this diagnostics function, each individual cycle step of the machine sequence with its sequence in time is plotted in a bar graph and compared to a previously specified reference value. Changes in each time can therefore be seen at a glance and can also be located exactly via a magnifier function. Apart from the

graphic representation, the target and actual values are also displayed as absolute values in a table – broken down by start time, delay time and operating time of each cycle step. Here, the operator can analyse the complete cycle in detail and optimise it. If, during setup, different functions have been programmed with delay times for safety reasons, for example, these can be successively optimised and reduced at the transition point to the production stage. During on-going production, the continuity of the injection moulding process can then be controlled by comparing the actual times with the reference value. Possible deviations can be immediately allocated to the corresponding function without having to call up other individual parameter pages.

Of particular interest is the cycle time

diagram for simultaneous movements, like those possible with machines with electric drive technology or robotic systems with several servo axes. Visual representation in bar graph format provides a particularly clear indication of the potential of these simultaneous sequences. Particularly for high-speed applications or complex robotic system sequences, these can considerably increase the productivity of the machine.

## Focus on modular drives

**F**rom 25 to 27 March 2004, the spotlight at the ARBURG Technology Days in Lossburg will be on modular drive technology. In addition to electric drives, over 40 machine exhibits, different applications and interesting expert presentations will offer an extensive range of information.

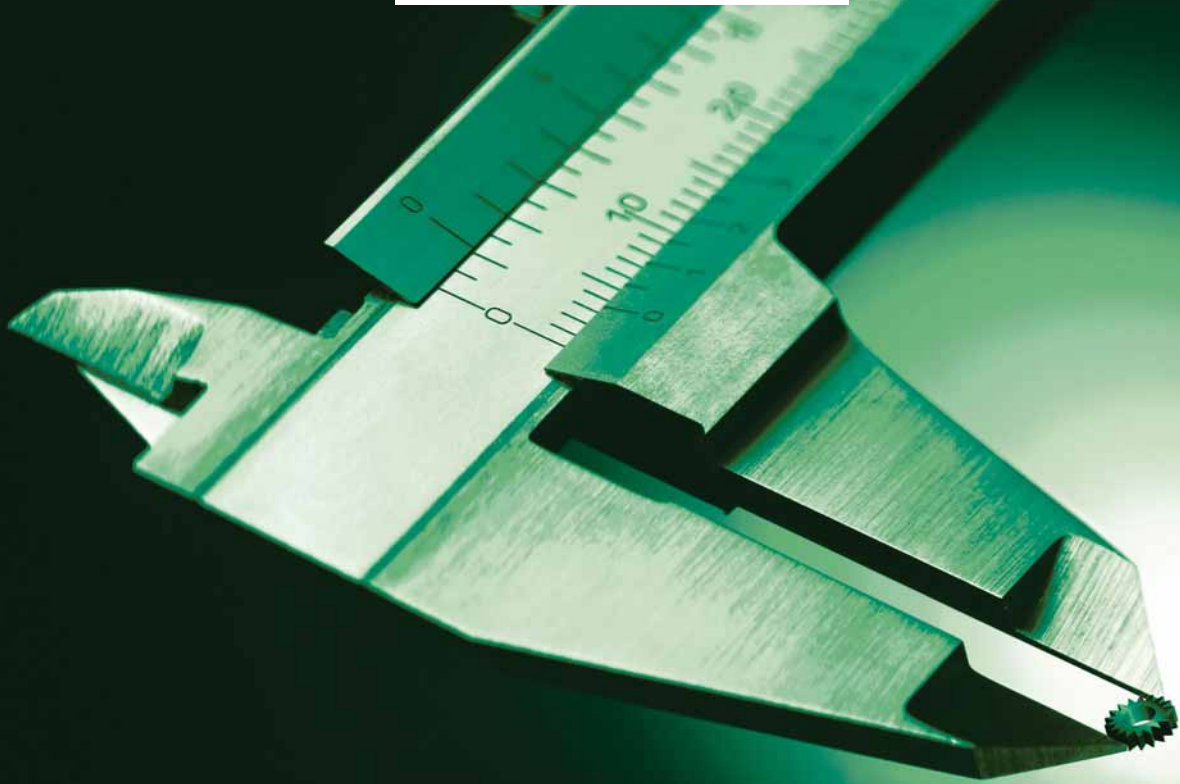
Around 3000 guests, of which more than a third came from abroad, travelled last year to the Technology Days in Lossburg. They took advantage of the unique opportunity to experience the complete product range live, carry out discussions with experts and to take a look at the ARBURG production.

At this year's Technology Days everything will revolve around the subject of drive modularity. The special model ALLROUNDER "advance" and the ALLROUNDERS 420 A and

520 A will show electric drives in use. An expert presentation will inform visitors about the technology and potential of the ALLDRIVE machines. Other topics in this series of presentations will be ARBURG Service Allround, injecting around metal parts and mould temperature control. Technical highlights such as the new hydraulic micro injection moulding machine ALLROUNDER 170 U, the large ALLROUNDER with up to 4000 kN clamping force and the MULTILIFT robotic systems await the visitors. After all, applications from the field of multi-component injection moulding, water and gas injection moulding technology, processing of thermosets, LSR and elastomers, powder injection moulding, production of PET preforms and precision injection moulding provide proof of the versatility of the ALLROUNDERS.



Venue - technical centre: Here, the professional audience can take a very close look at the electric ALLDRIVE machines.



# Micro?

Do you remember the success story of the ALLROUNDER 170 CMD? We are now introducing its successor: the ALLROUNDER 170 U. High-precision small parts in perfect quality are not a problem using the

new small and universal hydraulic machine. The ALLROUNDER 170 U equipped with a 15 millimetre screw diameter makes all small things possible – with our convenient SELOGICA controller!



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