

today

The ARBURG magazine

Issue 33

Autumn 2006



50 years of ARBURG
injection moulding machines

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Drying assures quality



MASTHEAD

today, the ARBURG magazine, issue 33, Autumn 2006

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A clamping force of 5,000 kN and a distance of 920 x 920 mm between tie bars are the impressive dimensions of the new ALLROUNDER 920 S, which will celebrate its premiere at the Fakuma.

ARBURG



Dear Readers,

Autumn time is Fakuma time, at least between the 'K' years.

The fact that ARBURG has a very special connection to the

Fakuma is confirmed (not for

the first time) by our Partner Eugen Hehl on page 5 of this issue. This year, we are particularly looking forward to the Freidrichshafen exhibition because we can combine the 25th anniversary of the Fakuma with the golden anniversary of our injection moulding machine production. Two occasions worthy of a celebration, at which we will be pleased to exhibit as usual with a first-class stand featuring no less than three world premieres.

Throughout the year 2006, we have honoured "50 years of ARBURG injection moulding machines" with numerous high-class events held around the world. In this year's issues, you have been able to experience something of the celebrations surrounding our anniversary events.

In June, Michael Hehl, Spokesperson for our Management Team, reported from these pages the great success achieved by our anniversary machine series, the ALLROUNDER GOLDEN EDITION.

It is truly a pleasure to be able to state in all humility that the elaborate strategic planning and organisational preparations have been rewarded. I would therefore like to take this opportunity to extend a great compliment to the entire ARBURG anniversary team. This was a fantastic achievement, from which you, as our customers, have also benefited.

Now, our focus turns again to the forthcoming 'K' year: And I can promise you a few surprises for the year 2007 as well. But I am sure you're already counting on these, aren't you?

Happy reading!

Michael Grandt

Managing Director, Accounts and Controlling



Photo: Messe Friedrichshafen

Double

At the beginning of any success story, there always comes commitment and vision. This was the case both with regard to ARBURG and to the Fakuma. Consequently, this year ARBURG commemorates "50 years of ARBURG injection moulding machines" and the Fakuma commemorates 25 years since its founding.

Despite all the successes, there is one thing that exhibition organiser Paul E. Schall has not forgotten, "Without the attendance and the innovative ideas of the first exhibitors, first and foremost Eugen and Karl Hehl as the then Managing Partners of ARBURG, the success story would not have been possible in its present form." On the beginnings of the Fakuma he said, "Nothing ventured, nothing gained. With the Fakuma, it was a case of the right idea at the right time and the right partners from the outset – especially at ARBURG, but also at the Friedrichshafen exhibition centre." The exhibitors' and the organisers' presentations contributed to an innovative exhibition concept which

has remained successful to this day. In its 25 years of existence, the Fakuma has developed from tiny beginnings to become one of the largest European and internationally prestigious specialist plastics exhibition.

A leap which is readily comparable – of course in another timescale and context – to ARBURG's corporate history. The Fakuma and ARBURG enjoy an equally high standing within the industry. All 1,500 exhibitors at last year's Fakuma will be in attendance again in Friedrichshafen this year; the 67,000 square metres of exhibition space will again be filled.

At ARBURG, the situation in terms of customer satisfaction is equally good. In the service and consulting sectors, the company boasts outstanding figures, and technology, sales, applications technology and after-sales service also excel with top marks.

In recent years, ARBURG has utilised the perfect stage which the Fakuma represents in order to introduce new developments to the trade public. And the 18th Fakuma in 2006 will be no different.





50 years of ARBURG injection moulding machines

Mr Hehl, can you remember ARBURG's early exhibition presence at the Fakuma?

E. Hehl: As one of the very first exhibitors and therefore virtually as a co-founder of the Fakuma, this exhibition has always

What do you particularly value with regard to the Fakuma, Mr Hehl?



Eugen Hehl,
adviser to the ARBURG
Management Team

the occasion of 50 years of ARBURG injection moulding machines and 25 years of the Fakuma.



Paul E. Schall,
Managing Partner of
P. E. Schall GmbH

Success

meant a great deal to us owing to its proximity to our headquarters and its geographic/strategic situation – the exhibition centre in Friedrichshafen is ideally located in strategic terms at the border triangle between Germany, Austria and Switzerland, and is consequently very important for our customer contacts.

Mr Schall, did you at the time actually foresee the development which this exhibition would undergo?

P.E. Schall: The successful development of the Fakuma has borne out our philosophy of making exhibitions for markets. The easy access from countries where plastics processing plays an important role, but also the clearly structured participant listings have been responsible for the success of the Fakuma since 1981, when it took place for the first time with 81 exhibitors. Exhibitors and visitors alike have always appreciated the practice-orientation and expertise, comprehensive comparison opportunities, exceptionally clear layout and the highly praised, familiar atmosphere.

E. Hehl: With this exhibition, we can reach our customers in the German-speaking region and today also throughout Europe in an ideal manner. Moreover, we value the same quality with regard to this exhibition as our customer's value in us: continuity. While other exhibition venues have to keep re-positioning themselves, at the Fakuma you can build on existing foundations and reliably assume that the industry will be meeting at this event. This is why we continue to introduce globally-significant innovations there. The Fakuma is well-established – in good as well as bad times. This is what this particular exhibition has in common with our company.

Mr Schall, how would you characterise the co-operation between your exhibition company and ARBURG over the years?

P.E. Schall: The initial business contacts very quickly became personal contacts and even friendships. Where possible, we utilise synergies, as for instance this year,

What are both of your hopes for the coming years with regard to the Fakuma?

P.E. Schall: The increasing recovery of industry, trade and export activities in Germany are currently boosting demand on the domestic market. This is what the Fakuma wishes to promote today and in the future. According to the German plastic-processing industry association, GKV, plastics processors are planning to make 90 per cent of their capital expenditure in Germany this year and only 10 per cent abroad. In order to prevent this expenditure from being misspent, a visit to the Fakuma is a must.

E. Hehl: In future, Europe will continue to need excellent exhibitions which leave nothing to be desired in terms of advanced technology. This description fits exactly to the Fakuma. Pursuing this philosophy must be a vital interest of the exhibition organisers in order to remain successful. Then we will be able to enjoy the Fakuma well past both of our anniversaries.

World premieres at the Fakuma



The three new machine types, ALLROUNDER 920 S, ALLROUNDER 520 U and ALLROUNDER 275 V, to be introduced to the trade public as a world premiere at the Fakuma 2006 are certain to create a great deal of attention.

Exhibition stand 3101 in hall A3, where the new hydraulic ALLROUNDER 920 S will be presented, is sure to be especially crowded. The size of the new S machine alone indicates the massive performance potential packed into this ALLROUNDER: It features a distance of 920 x 920 millimetres between tie bars and a clamping force of 5,000 kN. With this new machine type, ARBURG is strategically extending the successful ALLROUNDER large machine range upwards. In technological and design terms, the ALLROUNDER 920 S is based on the ALLROUNDER 630, 720 and 820 S machines. With regard to modularity, for example, the new large machine can also be individually adapted to a wide range of applications. Despite the size of the machine, the 920 S also operates with a fully-hydraulic three-platen mould clamp. This means a high degree of parallelism of the platens, stability and accuracy of the clamping unit and consequently a high level of reproducibility and production quality as well

as mould-protecting operation. At the Fakuma, the new ALLROUNDER 920 S is equipped with a horizontal MULTILIFT H robotic system.

The new hydraulic ALLROUNDER 520 U will be shown at the Fakuma as the largest representative of the U machine series. The machine is equipped with an electro-mechanical dosage system for high-precision injection as well as a MULTILIFT H robotic system for part removal and will produce a technical component. A maximum clamping force of 1,600 kN, a distance of 520 x 520 millimetres between tie bars and a maximum shot weight of 434 grams of polystyrene are the machine's impressive performance characteristics. The high-performance version is complemented by two further machines with clamping forces of 1,400 kN and 1,200 kN. With the current five machine sizes, 170 U, 270 U, 370 U, 470 U and 520 U, the ALLROUNDER U machines cover a clamping force range from 125 kN to 1,600 kN and, thanks to their modular design, are capable of perfectly running all applications and processes



required in a modern injection moulding company.

The third innovation concerns the vertical machine sector. The new hydraulic ALLROUNDER 275 V complements the smaller 175 V with a clamping force of 125 kN on the market with a second ARBURG vertical machine which also features the free-space system and integrated C-clamps. The injection unit sizes are 30, 70 and 100, the mould mounting platens for the new machine type are 275 x 320 millimetres.



The maximum clamping force is 250 kN. After the great success of the small ALLROUNDER 175 V injection moulding machine, which was created in response to repeated customer requests, ARBURG continues to concentrate on series machines especially designed for the encapsulation of inserts.

Further highlights, including two electric ALLROUNDER 420 A machines, one optimised for fast-running applications and the other for high-precision LSR/thermoplastic multi-component moulded part production, an automation cell around an ALLROUNDER 630 S with MULTILIFT V robotic system as well as an ALLROUNDER 570 C GOLDEN EDITION, as representative of the anniversary machine series, complete the exhibition offerings in the ARBURG technology range for the "double anniversary year" 2006.



Unbeatable offer



ARBURG has hit the bull's-eye with the ALLROUNDER GOLDEN EDITION. Thanks to advanced technology and an unbeatable price/performance ratio, the anniversary machine series has truly impressed the international world of plastics. No wonder then, that since its market introduction in February 2006, this anniversary gift has been extremely well received world-wide and is being used throughout all sectors.

"With the ALLROUNDER GOLDEN EDITION, we wanted to launch onto the market a technologically high-quality machine with defined options for a broad range of applications at a very low price," said Managing Director for Sales, Helmut Heinson, with regard to the anniversary

machine concept. "The fact that this concept was just right is evidenced by the success of the GOLDEN EDITION, with which we are extremely satisfied", he concludes.

With clamping forces from 400 to 2,000 kN, the range of five machine sizes, the ALLROUNDER 270 C, 320 C, 420 C, 470 C and 570 C GOLDEN EDITION, which each feature a fixed clamping force and injection unit combination.

The high-tech standard equipment of the machines includes the modern SELOGICA 'direct' control alternative with touch screen for ease of operation, highly wear-resistant plasticising cylinder fittings for a long service life and fast-switching valve technology for the highest moulded part quality. With the optional features, the basic machines can be individually equipped for the injection moulding requirements at hand and can consequently be used in a wide variety of sectors.

In addition to the overwhelming sales success of the GOLDEN EDITION, numerous customer enquiries with regard to additional equipment features prove the attractiveness of the anniversary machines.

ARBURG responded to these requests by extending the list of available options in July. New features include, for instance, a second core pull and six heating circuits. More complex moulds can now be used, which is of particular interest for the larger models in the anniversary machine series.

"Our customers have not invested in the ALLROUNDER GOLDEN EDITION merely to expand their production capacity. Due to the high technological level, many have also taken this opportunity in order to modernise their machine fleets," said Heinson, naming another positive side effect of the anniversary offering. "The contacts, which initially only expressed interest in the GOLDEN EDITION, also led to new co-operations with regard to the other ALLROUNDER machine series."

Due to the great success, the GOLDEN EDITION ALLROUNDERS are assembled continuously (above) and, thanks to SELOGICA direct with touch screen, offer a high degree of operating convenience (left).

GOLDEN
EDITION

The ALLROUNDERS produce for the sensitive Infocom sector, which accounts for 90 percent of Balda's turnover, as Stefan Schmedding from Balda reports (photo, right).

Balda | AG
Tools for Success



Fotos: Balda AG

Big in international

Balda AG's ambitious goal for 2010: the parent company from Bad Oeynhausen, Germany, aims to post a turnover of one billion euros by that date. Under the umbrella of the corporation, which was established in 1999, several specialised companies contribute to the Group's global success story.

It all began in 1908, when Balda produced cameras – a growth market even then. Today, the three core divisions are called Infocom (mobile communication systems), Automotive and Medical Technology. "Diversification" is the key strategic term which has determined the Group's global positioning since its general restructuring in 1994.

The increase in turnover by 5.2 per cent to 397.2 million euros in 2005 documents the success of the reorientation. In 2005, the number of employees also increased to 8,044 from 5,532 in 2004. This was principally attributable to the expansion of business activities in Asia. The internationalisation of the Group, which already has production locations in China, Malaysia, Hungary and Brazil, is being continued in

2006 with extension of operations in China and expansion into the Indian subcontinent. The strategic production expansions reflect expert assessments that China and India will be the mobile communication markets with the strongest growth glo-



bally beyond 2010. Growth rates of up to 400 per cent are forecast.

With a 90 per cent share of turnover, the Infocom division is the primary business segment within Balda AG. The global mobile telephone systems supplier counts globally leading mobile phone manufacturers among its customers. For industry giants



such as Siemens (BenQ), Nokia, Motorola, Alcatel, all the components are made from high-performance plastics for a variety of product segments. The product portfolio includes upper and lower shells, replaceable covers, displays, keypads, buttons, battery housings and much more.

The particular production requirements in the mobile phone sector relate for instance to two-component injection moulding, in-mould labelling, in-mould decoration as well as the realisation of fast-running, thin-walled applications. With its technological expertise in these fields, Balda AG doubtless counts among the leading suppliers world-wide. It is the only company to offer all the major surface finish techniques, from painting and galvanising through to PVD (Physical Vapour Deposition).



business



Balda has over 450 injection moulding machines operating world-wide – 83 of these are ALLROUNDERS, which produce as single or two-component machine versions. During multi-shift operation, mostly seven days a week, the ALLROUNDERS are used for part production in all three segments – Infocom, Automotive and Medical Technology.

The technical ability of the ALLROUNDERS to work at full capacity, as confirmed again and again by customers, is an expression of ARBURG's high quality standard. In addition to the solid standard ALLROUNDERS, Stefan Schmedding, responsible for the Global Technology/Injection Moulding department, particularly values the customised high-tech solutions in terms of the machine equipment as well as the applications themselves.

Schmedding believes that the stringent customer demands in the telecommunications sector are best served by ALLROUNDER technology. For instance, thin-walled mobile phone upper shells, so-called A-covers, which must be visually attractive and also extremely hard wearing, are produced on A series ALLROUNDERS. In the case of fast-running applications in particular, the electric ALLDRIVE demonstrates its superiority over hydraulic machines. Ultimately, the decisive factor for the purchase of ARBURG's electric machines was a comprehensive and convincing comparative test performed in-house at Balda.

In addition to the machine properties, ARBURG's global pre- and after-sales service is particularly important to Balda AG owing to their production locations around the world, a fact Stefan Schmedding emphasised once again to conclude. Machine transfers between the individual production locations also require a uniform world-wide service standard of the highest order.

INFOBOX

Founded: 1908

Plants: Brazil, China, Germany, India, Malaysia, Hungary

Turnover: 397.2 million euros (2005)

Employees: 8044 (2005)

Products: Hardware components and complex assemblies made from high-performance plastics for the infocom, automotive and medical technology sectors.

Machine fleet: Over 450 injection moulding machines, 83 ALLROUNDERS

Contact: Balda AG, Bergkirchener Straße 228, 32549 Bad Oeynhausen, Germany, www.balda.de



Family party at Lossburg



On 15 July, more than 6,000 employees, pensioners and their relatives celebrated the ARBURG Family Day at Lossburg, on the occasion of the company anniversary. In the very best summer weather, the well-humoured guests enjoyed an attractive and varied programme, which was enriched musically and historically by local clubs in typical regional style.

It was an extremely successful day all round, with plenty of fun, games and refreshments. Particularly the 'younger' guests were able to let off steam during a pretend rally featuring various game and handicraft stations. Puppet shows and a giant inflatable pirate ship were popular attractions throughout the day.

The celebrations were held in a relaxed atmosphere – anyone wishing to do so was able to obtain comprehensive information on developments at ARBURG in recent years. On the large-scale plant tour, even the most hidden areas could be



explored and the new ARBURG corporate video answered any open questions relating to products, markets and customers.

During a casual conversation on the main stage between Renate Keinath and a radio presenter, the Managing Partner repeatedly emphasised the great value to the company of the ARBURG employees and their further education and training. The "ARBURG corporate family," is so special, "because something as special as ARBURG can only be created with good employees," she said.

The Family Day, which was last held in 1998 on the occasion "75 years of the

Hehl family business" was again a very special event for the employees, a fact confirmed by the excellent attendance with more than 6,000 visitors and the many compliments to the management team and the organisers.

During the Family Day, each member of the "special corporate family", as the Managing Partner, Renate Keinath (above) described ARBURG, had a great time.





Together into

the future

A further highlight in the ARBURG anniversary year was the Partner Day held at the Lossburg headquarters on 29 June. The golden anniversary, "50 years of ARBURG injection moulding machines", which was jointly celebrated with our co-operation partners – mainly from the project sector – was not the only focus of the event. The route that ARBURG would like to go down together with its partners in order to be successful in the market was also emphasised.

"We would like to celebrate our anniversary together with our exceptional and, in many cases, long-standing partners. This anniversary would have been impossible in its present form in the absence of these trustworthy and long-term partnerships," were the words with which Michael Hehl welcomed some 50 high-ranking representatives of 31 companies from the sectors of mould-making, peripherals and automation systems. He went on to thank them for the trust they have placed in ARBURG and their outstanding collaboration.

The Technical Director, Herbert Kraibühler, outlined how ARBURG sees its future market position and its cooperation with its partners, "We will rapidly advance our technology in order to remain active as a competent partner to the plastics industry world-wide. In addition to our machine developments, we will promote our activities as a technology and systems supplier." He continued by stating that in order

to meet the challenges posed by global change, cooperation in partnerships must be promoted and internationalised, both with regard to the customers, as well as to suppliers.

"The long-term solution for co-operation in partnership is to jointly realise economically optimised technical solutions, not only in the case of large-scale overall projects but also for effective customised solutions," added Eberhardt Lutz, German Sales Manager.

With examples from the fields of multi-component injection moulding, thermoset and LSR processing and micro-assembly injection moulding, Jürgen Schray, Department Manager Applications Technology, demonstrated what these innovative solutions might be.

Interesting automation solutions were presented in detail by Oliver Giesen, responsible for the Project Department, who

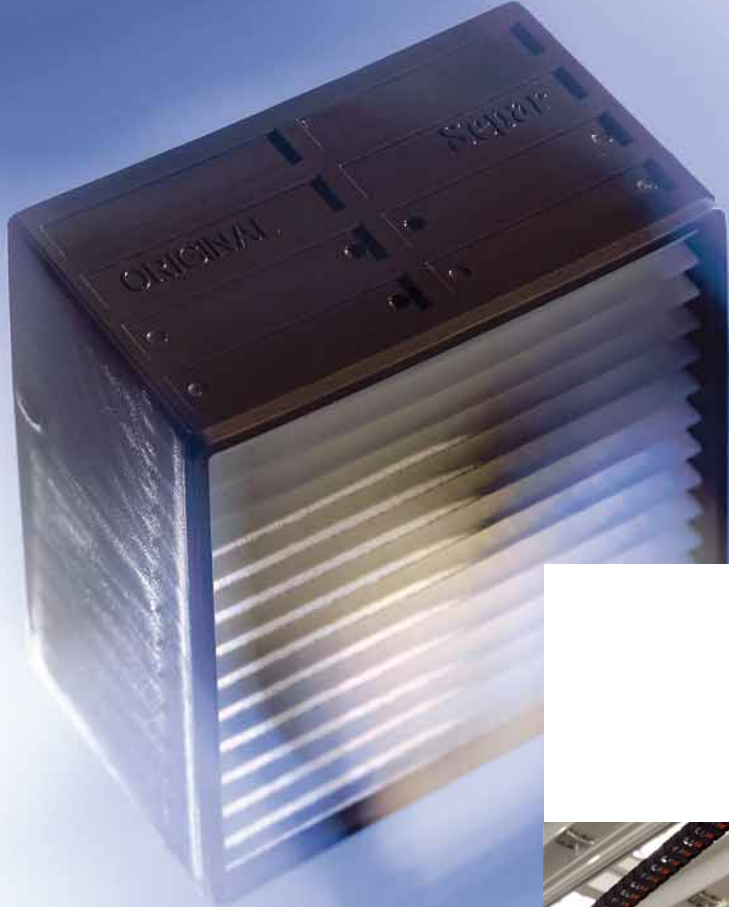
The guests were individually introduced by the Managing Director for Sales, Helmut Heinson (right). During the company tour, Oliver Giesen, responsible for the Project Department presented a current production cell to his group (above).



also explained the current market requirements, "Demand for complete production cells from a single source is increasing. Process steps which are still fairly unknown in conjunction with injection moulding are being integrated and the requirements with regard to complexity, process reliability and professional after-sales support are increasing, while internationalisation is progressing swiftly." He went on to say that in order to meet these demands, strong partners were needed in order to pursue and successfully

extend the route that has been jointly set out on – to the satisfaction of the customers. With this statement at the close of the series of presentations, Oliver Giesen aptly summarized ARBURG's future strategy.





A major



FELSCH Spritzguß GmbH set the ARBURG Project Department a tricky task: the production of fuel filters was to be almost completely automated. The main challenge here was the handling of the inserts – a concertina-shaped filter paper and a flexible HNBR profile seal. Thanks to the close co-operation with FELSCH Spritzguß, this difficult task was solved by means of a production cell around an ALLROUNDER 420 C and a MULTILIFT V robotic system.

The FELSCH Spritzguß GmbH product range includes two versions of the fuel filter, which are conventionally produced semi-automatically.

“We wanted to automate the manual insertion and removal process in order to significantly reduce the cycle time of the injection moulding process and simultaneously render the work process more ergonomic,” said Thorsten Felsch, Technology Manager at FELSCH Spritzguß, regarding the reasons for investing in a production cell. “In addition, greater planning reliability and higher quality had to be achieved through a constant cycle time.”

With this task in mind, the company approached the ARBURG Project Department, which designed and implemented an appropriate production cell. It consists of an ALLROUNDER 420 C with a two-cavity mould, a vertical MULTILIFT V robotic system with a complex gripper,



FELSCH Spritzguß
Kunststoff in Maß und Form



During production of the fuel filter, the complex handling of the inserts places high demands on the robotic system and peripherals.

challenge

a rotary table and a conveyor belt. Although the system looks simple at first glance, "it is one of the most difficult we have realised to date," according to Gerd Ruoss from the ARBURG Project Department.

The difficulty was in the detail, or more precisely in the properties of the inserts, the precise and reliable handling of which placed high demands on the robotic system and peripherals. The flexurally non-resistant profile seal made from HNBR has strict production tolerances

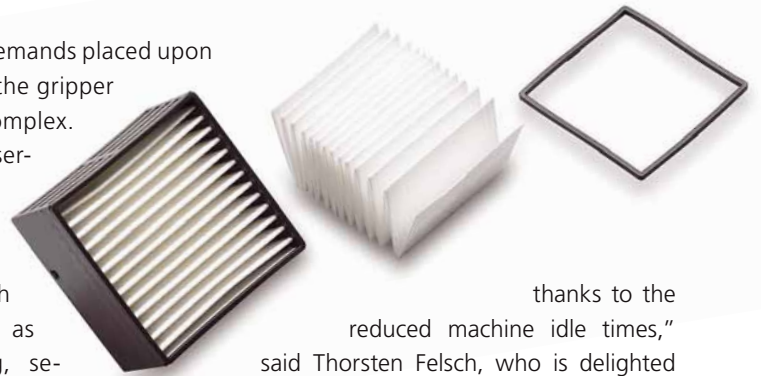
Due to the high demands placed upon the robotic system, the gripper is correspondingly complex.

It features a dual insertion and a dual removal module, which both fold horizontally through 90 degrees, as well as various demoulding, securing and centring devices.

The rotary table comprises two stations featuring holders which have also been designed for the particular properties of the inserts.

When the four folded filter papers and four profile seals are each inserted manually into the outer rotary table station and the inner station is empty, the rotary table turns automatically through 180 degrees. This allows the inserts to be provided without interrupting production. From the inner station, the insertion module of the gripper picks up two profile seals and two filter papers, moves to the open mould and firstly presses the seals into the mould. The finished parts and sprue are then removed before the filter paper is inserted. The robotic system then moves out of the mould again and sets down the moulded parts and sprue on the conveyor belt.

Depending on the product version, the cycle time for the application is between 35 and 45 seconds. "By using the production cell, the cycle times were halved



thanks to the reduced machine idle times," said Thorsten Felsch, who is delighted with the successful investment.



and must be demoulded at the pick-up stations, reliably picked up by the gripper as well as finally being inserted into the mould. The filter papers must be provided in the folded state, secured in place by the gripper without damage and then be inserted precisely into the mould. Moreover, rapid conversion of the system had to be possible in order to accommodate the different product versions.

INFOBOX

Founded: 1988 in Spenge

Employees: 130

Products: Technical plastic parts

Machine fleet: 30 injection moulding machines with clamping forces from 350 to 8,000 kN, of which 20 are ALLROUNDERS with clamping forces up to 4,000 kN

Contact: FELSCH Spritzguß GmbH, Dammstraße 5-13, 33824 Werther, Germany, www.felsch-spritzguss.de

ARBURG Partner Eugen Hehl (centre) officiated at the inauguration of the new subsidiary building in Utrecht (right), which was celebrated fittingly for the occasion (left).



Impressive new building



and public representatives subsequently took the opportunity to compliment the splendid building itself as well as emphasising the general economic significance of ARBURG.

Over an area covering more than 1,000 square metres, Sales, Service, Training, Spare Parts and a representative machine showroom are housed under one roof in the new, architecturally impressive building. A roof which, only days after the official inauguration, offered sufficient space for expert presentations and individual customer consulting during the first large-scale customer event, the "Open House".

The visible connection to the ARBURG headquarters goes far beyond the new architectural concept. A genuine Black Forest fir tree belonging to the Hehl family forms the "foundation stone", which owing to the particular soil conditions in the Netherlands is in fact a foundation pile. In May last year, ARBURG Partner Michael Hehl rammed a "Dutchman" – so-named due to the long tradition of Black Forest firs as construction timber in the Netherlands – into the ground at Krommewetering 81 in Utrecht.

Even from a distance, the close relationship with the ARBURG headquarters in Lossburg is evident. The structure and exterior design of the new ARBURG B.V. subsidiary building in Utrecht have been strictly adopted from Germany. At the same time, the building is a pilot project for the newly introduced corporate architecture concept, which all the new ARBURG buildings will conform to in future, world-wide.

The new architectural masterpiece in the Netherlands was handed over by ARBURG Partner Eugen Hehl, who extended his thanks to Subsidiary Manager Carlo Brouwer and his team on 22 June. Numerous VIP guests shared in the collective enthusiasm over the successful construction project during the official inauguration ceremony. High ranking business

Photo: Jan de Kruijf



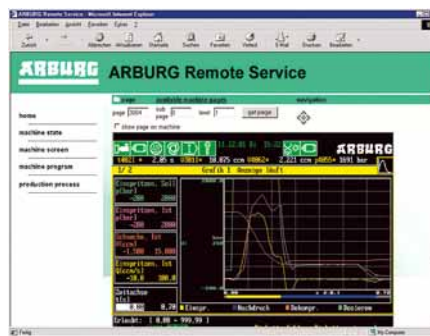
Total access

The production volumes are getting smaller, the deadline constraints are becoming tighter: in order to meet these demands, the capacity and flexibility of the machine fleet must be optimally utilised. This is where the ARBURG Remote Service (ARS) software comes in, which enables remote access to the control systems of the ALLROUNDERS via PC.

With ARS, the production time and machine downtime of the ALLROUNDERS can be monitored. Akin to a tachograph, the ARS records the machine status and displays it clearly in chronological sequence. For instance, the production sequence during a shift can easily be analysed.

Based on current machine and production data, it is possible to determine via ARS, which jobs are running on the machines and to what extent these have been completed. The progress of production can be monitored transparently at a glance for production planning purposes. In order to react quickly to impending deadline violations, ARS also enables the transfer of machine programmes from one machine to another.

A further feature is the option to display and print out individual screen pages. The current production process can thus be analysed and documented at all times. Consequently, a centralised user support



system including remote diagnosis or remote maintenance via ARBURG Customer Service can be provided. For protection of the production data, it can be determined explicitly which users have access to what machine via the ARS user and machine management system.

When setting up an ARS, the internationally recognised Ethernet networking standard is employed, which is also used for PC networking. For connection of an ALLROUNDER to the network, it must be equipped with the ALLROUNDER@web machine interface. The ARS software is installed on the central PC in the network. Machine and production data can then be accessed from any other PC connected to the network. Remote production locations or facilities can also be accessed via existing network connections so that production there can be monitored at the click of a button.

The performance of ARS can be tested using the demo version at <http://demo.arburg.com/ars>.

In addition to ARS, ARBURG also offers its customers the ARBURG host computer system (ALS), the functionalities of which extend far beyond those of the ARBURG Remote Service. The ALS basic module for machine and operating data recording can be flexibly adapted to the specific operating requirements through mutually-compatible expansion modules. The functionalities of ALS can thus be expanded far beyond the conventional BDE or MES systems. Even connection to production planning systems (PPS or ERP) can be realised.

Remote access to the ALLROUNDER screen pages (centre) is possible via ARS and the ALLROUNDER@web machine interface (above right).



One for all

F RANK plastic AG's slogan, "The universe of plastics processing", refers to the various processing techniques covered by the company and the associated, highly varied product range. Technical parts, products for the medical technology, instrumentation and control technology sectors, as well as profiles and pipes are manufactured by means of injection moulding, extrusion or machining.

FRANK plastic AG, based in Waldachtal in the northern Black Forest, comprises five independent divisions, Technical Injection Moulding, Medical Technology, Extrusion, Instrumentation and Control Technology and Industrial Service. However, these di-



visions work in close co-operation in order to pool their expertise.

A speciality of FRANK is consequently the combination of extruded and injection moulded parts in a single component. One example is a bone cement mixer for

artificial hip joints, which comprises several injection moulded and extruded parts, all produced in-house and fully assembled under clean room conditions. This product also indicates the com-

pany's strategic direction, which is firmly rooted in Germany as a production location. "Medical technology and extrusion will undergo the strongest development here," says Andreas Ermantraut, CEO of FRANK plastic AG, with confidence.

"We would like to maintain the quality standard 'Made in Germany' because we see our future here," adds Joachim Frank, Director and Technical Manager. This is the reason why the company invested in the construction of a plant extension for medical technology, which the company moved into in 2006 after only twelve months of construction work. The floor space at the new extension covers some 3,700 square metres. The clean room, measuring nearly 1,000 square metres and to which up to 25 injection moulding machines can be docked, occupies a central position. At six million Euros, the investment volume for the new building represents around a quarter of the annual turnover. Since starting production of medical technology products in 1982, this is the third expansion of this area.

The concept behind the clean rooms, which all comply with classes 7 and 8 is

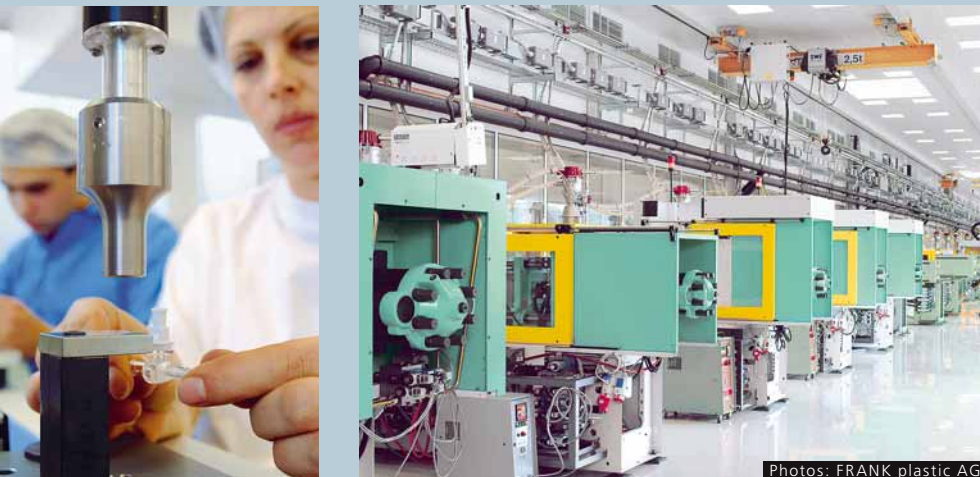


standardised: the machines produce externally, the moulded parts are transported into the clean room via encapsulated conveyor belts, where some 80 per cent are fabricated into assemblies. Various automation systems are used, depending on the requirements.

A paternoster warehouse complying with clean room requirements is available for the interim storage of the parts. The use of SAP R/3 and the comprehensive documentation and complete traceability through a sophisticated logistics system complete the picture.

The medical technology products made by FRANK– including micro-components – are used in the fields of cardiology, intensive medicine, ophthalmology, surgery, dental technology and orthopaedics.

The various divisions all share the tasks which the customers set the company. "Some only have a basic idea in mind, others come to us with finished design drawings," explains Frank, regarding the different customer approaches to new projects.



Photos: FRANK plastic AG

Andreas Ermantraut and Joachim Frank (photo left, from r. to l.) see the future of FRANK plastic AG in medical technology (photos centre and right) and extrusion. The bone cement mixer for artificial hip joints is a combination of both (photo below).



With quality, economy and reliability as the principle focus, individual products or complete assemblies are custom-developed and produced in close collaboration with the customers.

In order to ensure mould quality, the company has its own mould-making department both for injection moulding and extrusion applications. This department produces most of the approximately 150 new moulds every year. Of the current 6,000 moulds, around 4,000 are used on the 70 injection moulding machines with clamping forces from 150 to 4,200 kN. The level of automation is very high. Nearly all the machines, which operate in three shifts, five days per week, are equipped with robotic systems and are connected to the central material supply system.

Regular investments are made in the machine fleet, which is dominated by ALLROUNDERS – in recent years, principally in the

ALLROUNDER C machine series, to which both of the company's two-component machines belong.

"In addition to the excellent technology and the geographical proximity, ARBURG's philosophy also matches ours," says Frank, naming the reasons for the co-operation between the two companies over a period of decades. "Due to our firm commitment to Germany as a production location, we prefer suppliers who also produce in Germany", adds Andreas Ermantraut.



INFOBOX

Founded: 1940 by Herbert Frank in Halle/Saale

Turnover: 25 million euros (2005)

Employees: 250 employees and 21 trainees

Products: Technical parts, medical technology products, instrumentation and control technology products, as well as profiles and pipes

Customers: Medical, electrical engineering, automotive, furniture, plant and machine construction, as well as environmental technology sectors

Machine fleet: 70 injection moulding machines from 150 to 4,200 kN clamping force, 66 ALLROUNDERS

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MILESTONES



When speaking of ARBURG milestones in the history of technology, one period is of great importance: the company's significant contribution to the development of multi-component injection moulding beginning in the year 1961. In conjunction with one of ARBURG's most recent innovations, the implementation of the electric ALLROUNDER A machine series, multi-component processing has gained an altogether new dimension.

size 170 unit can be mounted vertically for injection in the mould parting line. With the larger injection units, a horizontal L-shaped arrangement is possible.

Of course, all the ALLROUNDER A's with two injection units also feature all the benefits of electric drives such as load-independent, dynamic, position-regulated, simultaneous movements, high-precision control and regulating elements owing to the high motor speeds and precise spindle drives as well as low noise emissions and optimised energy consumption. In times of rising energy costs, the relationship between high procurement and low operating costs increasingly favours fully electric machine solutions. In other words, the principle advantage of electric injection moulding machines, i.e. achieving cycle time reductions while maintaining the highest possible precision of all axis movements, is available at an ever lower price.

With the electric two-component ALLROUNDERS, ARBURG has been successful in expanding the application range of its electrical machines into a process segment in which the company has played a pioneering role for a very long time. The rapid and clean production of high-precision multi-component moulded parts, for instance under clean room conditions, is one of the domains of the ALLROUNDER A. The increasing demand for this machine version confirms that ARBURG has tapped into a growing trend.

The multi-component milestones extend from the first two-component ALLROUNDER in 1961 (above) through to today's electric two-component ALLROUNDERS of the ALLDRIVE series (below).

As soon as it became clear that ARBURG would extend its range with an electric machine series for the 'K' 2004, the move was always accompanied with considerations as to what an electric machine for the processing of several plastics would look like. Particularly in terms of precision and speed of part production, new opportunities for combining modular electric machine technology with multi-component processing were anticipated.

With the ALLROUNDERS 320 A, 420 A, 520 A and 570 A, the ALLDRIVE series currently comprises four performance stages. The A machines cover the clamping force range between 500 and 2,000 kN, whereby all machines can also be used for two-component applications. All the axes are driven electrically as standard. The auxiliary axes can however also be moved hydraulically, depending on the operating requirements. As with the standard ALLROUNDERS, all the previously available injection unit sizes, i.e. 170, 400 and 800, are also available for the two-component ALLROUNDER A machines, whereby the





TECH TALK

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

Drying assures quality

Optimum flow characteristics for plastics are a basic prerequisite for the quality of moulded parts. For hygroscopic materials, drying of the material prior to processing on the injection moulding machine plays a crucial role.

The aim of drying is the extraction of humidity absorbed by hygroscopic materials and the prevention of moisture deposits in the plastic granulate. Mainly air driers and in some cases also vacuum or infrared driers are employed.

With air driers, the plastic granulate is dried by air and sometimes also with nitrogen as an inert gas. The air absorbs the humidity in or on the granulate. The higher the temperature of the drying

air, the more humidity can be absorbed. At the same time, however, the plasticising process of the plastic granulate is also promoted by heat during drying. The air temperature cannot therefore be increased above a certain level. In order to enhance its moisture absorption capacity and consequently its drying performance, the humidity level of the air can be reduced prior to heating. In this case, the air is referred to as dry air rather than warm air.

In contrast to working with warm air, dry air also has the advantage that the moisture content of the air can be regulated precisely. The drying time of the plastic granulate can then be determined in a targeted manner. The lower the moisture content of the air, the shorter the drying time.

Although drying of the material can be a complicated process, optimum material preparation still forms the basis for consistently high injection moulding quality. The key to stable, top-quality moulded part production is the overall consideration of all production steps. This also always includes perfect drying, conveying and dosing of the plastics used.

Service meeting

For the sixth time in 2006, this meeting was held for the ARBURG service staff at the five service locations across Germany. The main focus of the one-day events was a retrospective look at the year 2005 and the presentation of new objectives, as well as specific safety instructions for the highly-qualified service staff.

A total of around 60 participants took advantage of this compulsory event for a lively exchange of information. In addition to the professional component, informal conversation was not neglected. Originally, the annual ARBURG service meeting in Germany was based on the idea of



optimal customer orientation. The results ensure a uniform, high level of training for the service technicians, which customers throughout Germany benefit from. In order to ensure a high level of service quality worldwide, the international service meeting will follow in December.

Eckhard Witte (left), ARBURG Head of Service, provided information on current service topics.



The first hand-operated series produced machine



New size and clamping force

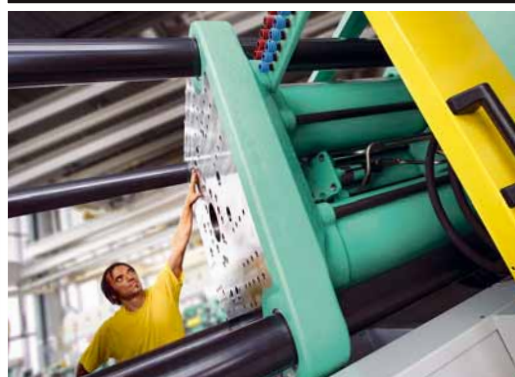


50 years of ARBURG injection moulding machines

Modular injection units



Generous mould installation space



Max. moulded weight of approx. 2000 g



50 years – more ALLROUNDERS!

In the anniversary year 2006, we are getting even bigger. Consequently, there will be a world premiere at the Fakuma show: our new ALLROUNDER 920 S! The machine impresses not only through its clamping force of 5,000 kN and a distance of 920 x 920 millimetres between tie bars, but also through its modular design and intelligent attention to detail. These include the sturdy, fully-hydraulic three-platen mould clamping arrangement, high-performance injection units and the practical mould-height adjustment with a maximum platen clearance of 1.95 metres. Of course, the 920 S has the same degree of reliability and long service life as all our ALLROUNDERS. After all, 50 years of ARBURG injection moulding machines also means 50 years of innovative technology.



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