

today

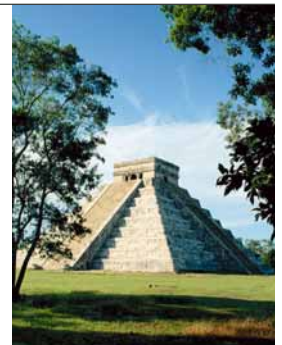
The ARBURG Magazine

Edition 20

Summer 2002



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Corporate design: The ARBURG logo can be found all around the company, including the artistically designed entrance area in the Lossburg headquarters.

ARBURG



Dear Readers,

The ARBURG Technology Days have shown that even during a period of difficult economic conditions ARBURG is staying on course and is setting new milestones in its progressive program development. Only six months after K 2001 we presented the ALLROUNDER C "advance" special model - another milestone on the way to previously untried drive modularity. Yet again we have proven the consistency for which ARBURG is famous - both in periods of good economic conditions as well as during more difficult times.

Modularity in itself has long since been known as the trademark of our company so that drive modularity options were only another logical step in ARBURG's strategy. With the ALLROUNDER ALLDRIVE, presented at the K 2001, and the new special model we are once again providing practise-oriented technology for economical injection moulding. As usual, ARBURG can also be relied on in this respect.

The number of visitors to the Technology Days shows that our

customers view our efforts positively - after all, 3000 visitors took the time to attend our technology show. They received complex technical information during extremely valuable discussions and visited the production facility of 'their' ALLROUNDER. And it is the high quality of technical discussions and presentations that our judgement on the success of the event is mainly based - not purely on the number of visitors. We repeatedly received confirmation that we had achieved our ambitious objective for the Technology Days, to the complete satisfaction of our visitors.

Therefore ARBURG is well equipped for the future - a future which we will dynamically shape, with you and for you. Our demands make it necessary!

We wish you a great deal of enjoyment when reading the latest issue of the "today".

Yours,

Michael Hehl



420 C 1000-350
advance

Neu - New - Nouveau

Elektro-mechanisches
Dosieren
Lagegeregelte Schnecke
AES

Venue -



In spring of this year the ARBURG Technology Days were once again the meeting place for specialists from the plastics sector. 3000 guests from 29 countries visited the headquarters in Lossburg between 21st and 23rd March in order to find out about the latest ARBURG technology, to listen to presentations from the experts and to take a behind the scenes look at the company.

"Modular drives" was the most important topic at this year's Technology Days at which one exhibit was successfully premiered - the new ALLROUNDER "advance" special model, which is technically based on the C series and is also equipped with an electro-mechanic dosage drive, a position-regulated screw and the

ARBURG AES energy-saving system. The special model was presented in the new demonstration room, which is an extension of the previous presentation area and which was inaugurated especially for the Technology Days.

The new special model's placing in the machine line-up can be seen in its position between an ALLROUNDER 420 C and an ALLROUNDER 420 A - the ALLROUNDER "advance" was positioned between the proven, fully-hydraulic ARBURG injection moulding machines and the new ALLROUNDER ALLDRIVE

tation on materials development, focusing on the bond strength of hard/ soft combinations.

The 1300 participants are proof that the specialist presentations, which were given in German and English, were the ideal chosen subjects. Forty percent of these attended the presentation on mould technologies alone.

The ARBURG organisers in particular were also extremely pleased to see so many guests at the Technology Days in Lossburg only a few months after the leading world trade fair, K 2001. Last year's record result was almost re-

Experiencing technological highlights and innovations, such as the "advance" special model, in action, taking a look behind the scenes, meeting business partners and taking part in interesting discussions – all this is on offer at the Technology Days.

Lossburg

series. The latter was presented for the first time at the K 2001 and is equipped with modular drive technology that may, if needed, be expanded into a fully electric version.

The topic was investigated in an in-depth technical presentation given by Martin Hoyer, Manager of Technical Application Development, who provided evidence of the advantages of the "advance" special model with actual test results.

In addition to this the entire product range could be seen with approximately 40 exhibits, including the ALLROUNDER 720 S with a clamping force of 3200 kN, the MULTILIFT modular robotic system with horizontal and vertical variants as well as various complex customer projects. Oliver Giesen, Manager of the ARBURG Project Department, also dealt with this subject in his technical presentation of interesting customer projects.

The two specialist presentations given by external speakers were also extremely well received. Hans Schimek, Technical Manager of Weber-Formenbau, Esslingen presented differing mould technologies for multi-component injection moulding.

Christoph Lettowsky from the Institut für Kunststoffverarbeitung (IKV = Institute for Plastics Processing) in Aachen gave a presen-



ted with 3000 visitors from 29 countries. It is evident that the number of participants from abroad is increasing from year to year. Over 40 percent of this year's visitors (around 1200 guests) came from abroad.

The largest group came from the USA (150 visitors). They travelled to the Technology Days specifically to see where and how the ALLROUNDERS are manufactured. In addition to numerous visitors from all over Europe, including large groups from the Eastern European countries Poland, Rumania, the Czech Republic and Hungary, more exotic countries of origin, such as New Zealand, Columbia, Brazil or Israel, could also be found on the list of participants for the three-day event. All the visitors from abroad took advantage of the opportunity to witness the ALLROUNDER production in operation as part of a tour of the company

premises. The fact that approximately 1,270 people took part on the German-language tour proves that a tour of the company remains an attraction even for visitors who have known the firm for many years.



Versatility in a

KUKA®

Kuka is a well-known name in Brazil for products for babies and young children, despite the fact that the company is operating in a difficult market. Working under extreme restrictions, due to the advertising ban in this particular area, Kuka is counteracting this problem with the only argument that really matters - top quality. This is guaranteed to a large extent by the use of ALLROUNDER injection moulding machines.

The advertising ban for this business sector in Brazil was triggered by a baby food manufacturer's campaign, launched a few years ago, which advocated bottle-feeding using its products, instead of breastfeeding. Illnesses and deaths resulted from the use of non-sterilised water, prompting the government to place restrictions not only on the branch actually concerned, but also on the whole of the baby supplies market. Over night, manufacturers like Kuka were hit by the repercussions, even

though they had not caused the problem in the first place. Jorge Luiz Morilla, the company's owner, counteracted this desperate situation with a consistent, successful quality and marketing strategy. And it paid off. Today, Kuka is one of the largest manufacturers and importers of products for young children in South America.

The company was founded in 1979 in São Paulo and exactly ten years later introduced silicone teats onto the Brazilian market for the first time. The manufacturing technology used was certified in accordance with international quality standards and is still used to produce all Kuka's teats and comforters. The company's philosophy defines the quality of the entire production as being the foremost objective for all their efforts. Quality assurance begins at the in-house laboratory and is continued externally in the form of independent tests in state-approved research centres, such as the "Falcão Bauer Institut". The Brazilian quality seal from the national institute for testing and quality, "INMETRO", is the measure of all things. Kuka products are therefore continually subjected to rigorous safety, resistance and durability tests. Tests which the company's products pass easily, time after time. Kuka's production department uses state-of-the-art mould and machine technology which the company al-

Top: The Sugarloaf Mountain is a symbol of Brazil, known the world over.

Right: A view of the Kuka production area with state-of-the-art ARBURG machine technology.



Difficult Market



machines solely produce silicone items, an ALLROUNDER 420 C 1300-350/150 manufactures moulded parts from two components. Therefore ARBURG has been the main contingent for many years as far as the machines are concerned. The procurement of two more ALLROUNDERS is already being planned and integrating the machines into an ARBURG host computer system is being considered.

In addition to quality, Kuka also puts faith in innovation. In accordance with this philosophy a two-coloured polypropylene comforter is moulded on the multi-component machine which eases children's breathing due to specially integrated openings. This fits in completely with the company's motto - "Teach children to go their own way. When they have grown up they will take their bearings from this path!"



most exclusively procures on the European market, in Italy, Austria and Germany. In addition to baby accessories the company also has toys and sanitary articles, such as toothbrushes, in its sales range. Cleanliness is the main focus in Production. Baby bottles are manufactured without burrs, therefore without the need for secondary operations - they are untouched by the human hand. A total of 150 employees ensure that department stores, distributors, drug stores and shopping centres across the whole of Brazil are supplied without a hitch.

A total of nine ALLROUNDERS, mainly Ms, Cs and Ss, are in operation around the clock at Kuka in three-shift system. Of these, three



KUKA INFOBOX

Founded: 1979

Employees: 150

Core areas of expertise: The manufacture of baby supplies and toys from plastics and silicone - multi-component injection moulding

Production area: 10,000m²

Company headquarters: Av. Henry Ford, 312 - CEP 03109-000 - São Paulo-SP, Brazil
www.kukababy.com.br



electronic direct dosage drive. In addition to this a large dosage time window and simultaneous machine movements can be achieved in connection with a needle type shut-off nozzle. The resultant reduction in cycle time amounts to seconds. Shear-sensitive materials can be processed more gently. Equipping with AES means that the drive power of the frequency-regulated pump motor is adapted to the actual power requirement during the individual phases of the injection cycle, thus reducing en-

A Guaranteed Advantage



Premiere at the Technology Days - the new special model ALLROUNDER C "advance". As its name suggests this advance model optimally unites the Advantages of hydraulic and electrical drive concepts. The ALLROUNDER "advances" are high-precision machines which are fast and economical.

The machines are technically based on the ARBURG hydraulic C series and come equipped with an electromechanical dosage drive, the ARBURG energy-saving system AES and a position-regulated screw. The advance technology is available for all machine sizes in this series, from the 270 C to the 520 C.

A high level of reproducibility, energy optimised injection moulding and a reduction in cycle times – these are the advantages of the new special model which result from the performance of the module.

A high level of dosing accuracy and lower energy consumption are guaranteed by the

energy consumption. The screw position regulation results in excellent dynamics and reproducibility on the injection side.

The features of the special model become obvious when used in everyday injection moulding operation. For example, the use of the hydraulic, position-regulated screw really pays off in the production of technical precision parts with respect to excellent injection dynamics and process reliability. The advantages of the electro-mechanic dosage drive can be seen above all in higher throughputs and shorter cooling times. Typical applications in this sector are thin-wall moulded parts or parts with a small projected area in multi-cavity moulds with a high plasticising capacity.

And finally the hydraulic drive, with its optimised level of effectiveness, also makes its contribution to the increased economic efficiency of the "advance" machine. The "advance's" favourable cost-performance ratio makes the technical features even more attractive.



Top: Electro-mechanic dosage drive and position-regulated screw come as standard with the special model.

Bottom: The ALLROUNDER advance is based technically on the proven C machine series.

In-Feed Behaviour with Plasticising Systems

The principle of transporting material in the plasticising aggregate is based on the different friction coefficients of the plastic granulate on the screw and the cylinder wall. If the ratio is no longer correct the conveying action becomes impaired with lasting effect and this is reflected in the granulate's feeding characteristics.

The influence of different friction coefficients on the conveying action can be seen using the example of a turning screw with a nut placed on it. If the nut is not held it immediately turns as well – held by the frictional force in the threads–. However if the nut is held on the outside it will move along the screw axis.

This principle is used to convey the granulate in the plasticising system. Just as in the example with the screw and the nut the granulate must also be held on the outside on the cylinder wall in order to be driven forwards by the thread.

Therefore the surface of the screw must be smoother than the surface of the cylinder. However if the material adheres to the screw threads it will be turned when the dosing axis rotates.

This effect could result in feeding problems, caused by contamination, deposits or oily films on the surface of the screw. Deposits are largely formed as a result of thermal damage to the material. Therefore the cycle temperatures in the first two heating zones should be set as low as possible in the event of long material dwell times in order to prevent this type of material decomposition (please observe the recommended processing conditions from the material supplier).

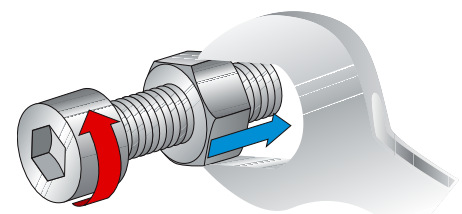
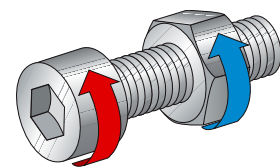
The behaviour of regranulate and dust-laden materials is critical - the material begins

to fuse within a very short period of time due to the small particles. This "clogging" results in unsatisfactory material transport. Sieve systems, connected in series, which ensure a uniform grain size redress this problem. The fusing process begins much earlier than desired with colour additives and master batch dyes too, whereby oily films can form which prevent the granulate from being fed in.

If a deposit has formed in the area of the in-feed the injection unit must be cleaned by running a cleaning granulate through it. The screw must then be removed and cleaned with soft tools (brass-wire brush). At the same time the screw surface is to be inspected for damage and signs of wear, as areas roughened by abrasion or corrosion increase the risk of deposit formation.

In order to prevent feeding problems and therefore fluctuations in quality regular cleaning of the injection unit is recommended – either after a particular number of cycles or in accordance with defined schedules.

A look at a material funnel - the shape of the granulate and aggregate can have a negative effect on the feeding behaviour





The Art of Sh

Precision in plastics – this claim recorded in Weißer + Grießhaber's company slogan can only be achieved if know-how and technology work together hand in hand. This is why the company's owners, the Weißer and Grießhaber families, pay great attention not only to the machine technology which is integrated into production, but also to the people who support the development, design and production of moulded part forms and plastic parts.

Those responsible all agree - high-quality production can only work when man and machine co-operate in perfect harmony. The company has remained true to this view point since its foundation. Weißer & Grießhaber has used the industry's efforts to replace technical parts made of traditional materials with those made of plastics to its own advantage. Coupled with the strategy of committing customers, suppliers and employees to Weißer + Grießhaber for as long as possible, the company has experienced continual growth over many years.

Weißer + Grießhaber specialises in the production of technical precision parts. This is based on tradition as the company made their name as a supplier in the clock-making industry, located in the South-West. Part weights of between 0.01 grams and 250 grams are produced, whereby the focus is on parts which weigh between one and ten grams. According to Ute Grießhaber, Managing Director of the firm alongside Lothar Weißer, the company offers complete concepts to its customers, which extend from product development, design and mould construction to the production of moulded parts and their further processing. Examples? What about grinding mechanisms for

aping Material

coffee machines or casings for electric toothbrushes. And you can also find many W+G components in the fields of heating, air conditioning, hygiene and communications as well as the automotive industry.

The focus of the corporate activities lies in Europe, however expanding the production abroad is also being considered.

Long-term relationships with customers, suppliers and employees - the latter being taken on board as early as possible. This is why Weißer + Grißhaber have been involved in training young people for more than twenty years. As solid training base is often the foundation of a life-long commitment between

the employee and the company.

The keyword is expansion. According to the leadership, "You only need to take a look at the company's past. Throughout Weißer + Grißhaber's history we have invested in the future." Creating space for new injection moulding capacity has been an important reason for this. At the end of the year 2000 there were 75 ALLROUNDERS from a total of 86 injection moulding machines with an emphasis on the M,C and S series. Special equipment, such as hydraulic accumulators and position regulation ensure fast, high-precision parts production. The company is certified in accordance with DIN EN ISO 9001:2000 and works on the basis of a process-oriented integrated management system (IMS).

So much for theory. But how does order processing work in practise? What is most important is completion

on schedule. A current example is twelve items for a digital measuring instrument in just twelve weeks! This demands simultaneous work. Therefore developers and designers carried out intensive discussions on the subject of material selection and modifications to the design of the parts as early as the bidding phase. 3D models of the large components provided data for stereo lithography parts which are available within 24 hours and can be used later to test the subsequent functional capability of the moulded parts. Within twelve weeks from receipt of the order all the twelve items had been sampled and the first prototypes had been constructed. In this way the expense involved in optimisation could be kept within limits on a long-term basis.

Immediately after these discussions the customer granted release for pilot production. Theory put into practise – this

is precision in the field of plastics as defined by Weißer + Grißhaber for the benefit of their customers.



Left: With state-of-art mould technology W + G produces parts for companies known the world over.

Top: Quality inspections safeguard standards and customer satisfaction.

Illustration: W + G



Präzision in Kunststoff
W+G
 Weißer + Grißhaber GmbH

W+G INFOBOX

Founded: 1969

Turnover: 20.96 million EUR (2000)

Employees: 190, including 13 apprentices (2001)

Core areas of expertise: gearing and drive technology, micro filter technology, optical components, lenses and fibre optic light transmitters, components for sensor technology, multi-component injection moulding, in-mould processes

Production area: Over 10,000m²

Location: Waldstr. 11, D-78087 Mönchweiler
www.weisser-griesshaber.de



Injection Moulding on Wheels



Left: ARBURG is involved in the roadshow with a machine which can also be operated in the truck.



Right: Information, completely mobile. Extensive knowledge is presented in a concise way in the truck.

In France one comes into contact with plastics on a daily basis, but prejudices about the material and employment in this business sector are still prevalent, just like in Germany. A new concept promises to rectify this situation - the info truck "Destination Plasturgie", which has been on the road since last year.

This information and training truck was first introduced on 4th July 2000 at an inauguration ceremony attended by the then French Minister for Industry, Christian Pierret. The objective of the roadshow is to provide information on plastics and their universal options for application, as well as on the professions which are open to young people in this sector. 29,000 young people have already visited the training truck.

A similar concept was used a few years ago when ARBURG successfully used training and information buses (named "Informants")

at trade fairs and customers. The French lorry, which can be expanded to an area of over 70m², has a completely self-sufficient energy supply. It is equipped with several machines and provides theoretical and practical information on the three moulding processes - injection moulding, thermoforming and extrusion. Visitors were provided with additional information through videos, brochures and discussions with the machine operators in person.

The main target group for this information campaign on wheels is school pupils who want to become a part of an innovative professional environment with prospects after leaving school. The plastics processing industry is booming in France as well, but there is not nearly enough qualified personnel. This the reason why ARBURG was involved with equipping the training truck from the beginning, providing an ALLROUNDER 320 S for "training purposes". The French are also convinced that this type of information centre on wheels does work.

The ARBURG application engineers have at last been given more space - after moving at the beginning of the year there is now a second technical centre at Lossburg.

This new area provides engineers and ARBURG customers, who would like to observe the ALLROUNDERS under production conditions, with the necessary space. The necessary



More Space Behind Glass

space has also been provided for the production of in-house parts. The moulds have been fixed onto the machines and are used for demonstration purposes when customers visit the plant.

The mechanical training shop used to be housed in Application Technology's new home. The annex to the showroom for the large ALLROUNDERS was one of the main reasons for the expansion of capacity. With the new ma-

chines which involve larger clamping forces it was increasingly becoming more and more difficult to present an overview of the company's complete machine range. This can now be achieved again without exceptions. As usual ARBURG is remaining true to its company philosophy and is providing complete transparency. As in the case of ARBURG II all passers-by will be able to gain a new impression of working on and with the ALLROUNDERS and their pe-

ripherals, such as the MULTILIFT robotic system, through a glass partition. This genuinely open atmosphere encourages people not only to observe, but also to exchange ideas. After all, this is why our customers visit the factory.

The big little world of plastics

A total of 50 million LEGO bricks have been used to create a unique theme park in an area of 60 hectares in Günzburg, Bavaria - LEGOLAND Deutschland. ARBURG is also represented in the park as the 40+ attractions include a demonstration of how LEGO bricks are produced.

On 17th May, 2002 LEGOLAND Deutschland opened its gates to visitors for the first time. 80 model designers worked on the traditional centrepiece of the park alone - Miniland, where you can go on foot on a small, animated tour of Europe in a scale of 1:20.



ARBURG plays its part where the famous LEGO bricks are produced - in the LEGO factory. An ALLROUNDER 320 S works on a production line which clearly demonstrates the production of plastic building bricks from when the granulate is fed into the machine to the production

Official welcome in the LEGO factory, in front of the ALLROUNDER (f.l.t.r.) Stephan Doehler, ARBURG sales manager, Europe Kjeld Kirk Kristiansen, president and proprietor of LEGO and Eddie Oswald, subsidiary manager in Denmark.

and packaging. In addition to this visitors are provided with information on the principles of the production process via a large screen. In order that the day spent at LEGOLAND is not forgotten, each visitor can take "their" LEGO brick home, directly from the ARBURG production line.



Lamas, Pampas, The Pan-Americana



Those who have completed the 5280 kilometre long journey between the USA and Panama, i.e. the so-called northern part of the Pan-American Highway, still have a very long journey ahead. There are a further 13,029 kilometres of South America until a hint of the South Pole can be discerned in Fireland. These figures are proof of the genuinely immense sub-continental expanse which one has to cover in Latin America.

Latin America is the collective term for the Spanish, Portuguese or Brazilian speaking countries from Argentina to Mexico. These states, with their 524 million people, represent a much larger market than North America with Canada and the USA.

In this important part of the world ARBURG makes use of the proven method of operating in the market with a combination of cooperative representatives and its own subsidiaries. In this way ARBURG has an on-site presence in 11 of the 17 countries. An ARBURG subsidiary was opened in the year 2000 in São Paulo/ Brazil, with Alberto Kolm in charge.

Further figures will illustrate the market potential which is available in Latin America. Between 1983 and 2000 ARBURG sold more than 1,000 ALLROUNDERS in this part of the world. The most important markets are in Brazil, Colombia and Mexico, due to the automotive pro-



duction present in these countries. In the case of Mexico, their membership of the North-American free trading zone (NAFTA), makes the country very interesting. Another interesting fact is that many of the most important German injection moulding companies have a production site in Latin America which requires machine technology. This is another reason why on-site specialist customer support is practically indispensable.

The representatives and subsidiaries can exchange ideas and attend training courses at the annual "Latin Representatives Conferences" in Germany. The next one will take place in October and will include a visit to the Fakuma trade fair in Friedrichshafen.

It is often the case that not only the machine but also the injection mould has to be delivered at the same time, including product and cycle

warranties. In these countries multi-colour technologies are as much in demand as the ARBURG PRELINER for producing PET performs for plastic bottles. Columbia, Brazil, Venezuela and Guate-

TRADE FAIRS INFO

Plastimagen

Mexiko City, MEX
03. bis 06. September 2002

Colombiaplast

Bogotá, COL
01. bis 05. October 2002

Brasilplast

São Paulo, BRA
10. bis 14. March



Left: Contrasts characterise the subcontinent. Ancient cultures clash with typical problems in emerging economies caused by a high level of mechanisation and inflation.

Bottom left: High-tech in a line - injection moulding production at Sorg in Mexico.

Bottom right: Supporting Latin America - the managers of the ARBURG representatives meet regularly in Lossburg for training.



mala are important delivery addresses for these products.

The name Gabelsberger has been known in Argentina for years for its successful cooperation with ARBURG. Well-trained engineers are also on the road in a supporting role in the neighbouring countries. We have been cooperating with the representative in Chile for more than ten years, for which Carlos Montenegro has sole responsibility. The representative in Peru was new last year. Peter Henningsen sen. and jun. have been able to open up new opportunities in this country since beginning their cooperation with ARBURG. Claus-Peter Dittmer has been selling the ALLROUNDER injection moulding technology in Ecuador's small market for 15 years. Octavio Guzman and his team are very active in Columbia and have achieved a great deal of success in this country. Hans Pe-

ter Schmid and Juan Niemann, in Venezuela and Guatemala, are the longest serving ARBURG representatives in Latin America. In addition to Venezuela, Schmidt is also responsible for sales and technical service in Panama, Costa Rica and El Salvador. Since 1994 Juan Carlos Lachica has been representing ARBURG's interests in Mexico Therefore those who come across mint-green/ yellow along the Pan-American Highway and elsewhere in Latin American need not be surprised - ARBURG is well-represented in this part of the world as well.

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A Mixed Bag

Visitors to the ARBURG exhibition stand at the Aseanplas in Singapore were provided with information all round (left). Subsidiary Head, David Chan, was extremely pleased with the successful trade fair appearance (middle left).

Injection moulding of plastic buggies was an attraction at the IBM exhibition stand (right).

In discussion (from left) - Erwin Staudt, Chairman of the IBM Deutschland GmbH management team, Erwin Teufel, Baden-Württemberg's minister-president, Andreas Dümmler, Head of Information Systems at ARBURG and Werner Blessing, Director Industrial Sector, IBM Deutschland GmbH (middle right).



In the first quarter of 2002 many different trade fairs throughout the world were listed in ARBURG's busy calendar. From the Aseanplas in Singapore, the PETpoint in Essen and the KMO in Bad Salzflufen to the industrial trade fair and the IT fair, CeBIT, in Hannover.

ARBURG was well-represented at the Aseanplas in Singapore, the leading plastics trade fair in the Asian region, from 12th to the 15th March 2002. On an exhibition stand of almost 300m² the Asian trade visitors were provided with an extensive overview, with various exhibits from the series S, C and K as well as the robotic system MULTILIFT H. The visitors were assisted by the staff of the four ARBURG locations in the region – the subsidiaries in Singapore (headquarters), Malaysia and Thailand and the representative office, Indonesia – and from representatives of the German parent company.

There were huge numbers of visitors on all of the four exhibition days. In addition to nu-



merous managing directors and decision-makers from large companies David Chan, Subsidiary Manager of ARBURG Pte. Ltd. in Singapore, and Michael Grandt, ARBURG Managing Director, Sales and Controlling, were also able to welcome the guest of honour at the Aseanplas opening ceremony to the ARBURG stand - Raymond Lim, Singapore's Secretary of State for Foreign Affairs, Trade and Industry. David Chan was extremely pleased with the entire exhibition, where numerous inquiries were received from both regular and new customers,

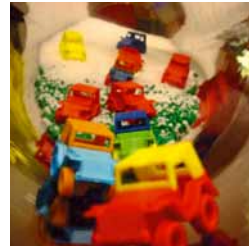


est industrial trade fair in Hanover. ARBURG supported this year's special exhibition at the Hanover trade fair, "The Future of Automation", with an ALLROUNDER 270 C 500-100, equipped with the compact version of the MULTILIFT H robotic system. Various exhibitors presented trends and developments in automation systems at this special exhibition.

The appearance at CeBIT, the global IT trade fair, was extremely unusual for a machine construction company. ARBURG was introduced by the IBM industrial sector as a reference customer. This unusual form of cooperation at the trade fair was prompted by the achievements that the machine construction company has recorded in the field of e-business with ARBURG Online – a highly-integrated

internet portal based on an IBM WebSphere for product inquiries, configuration, remote diagnosis, important after-sales service and processing replacement parts, with orders directly from the net. An ALLROUNDER was used on IBM's main stand in Hall 1 as the visual focus

of the presentation. The machine was used to produce plastic buggies during the trade fair.



despite the difficult economic situation.

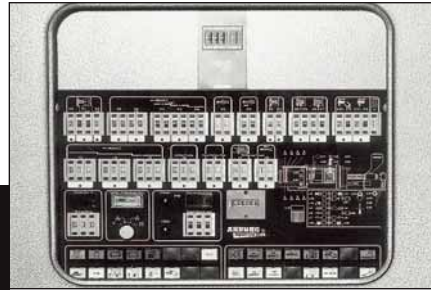
While the complete product range was of interest to the trade visitors at the Aseanplas, the focus of the PETpoint in Essen, the first international trade fair on PET processing, was one of the company's specialist areas - the production of PET performs. A PRELINER 420-60 V was presented which produced performs in abundance, thereby attracting a lot of attention amongst the international trade visitors. The exhibition stand constantly received visits from the numerous interested parties, in-

cluding many from the important PET markets such as South-East Europe and South America. The PETpoint clearly showed that ARBURG has a good reputation in the PET sector as well and that its PRELINER systems are very interesting in terms of the sector for small and sample series production.

ARBURG's appearance at the KMO in Bad Salzufflen, which took place at the same time, was equally successful. This fair, which is also described as the workshop of the plastics sector, clearly focuses on the realisation of technologies. In addition to the two-component ALLROUNDER 630 S, with a three-station rotary mould from Weber-Formenbau in Esslingen, ARBURG was the only machine construction company who, even though the K 2001 was only a few months before, was able to introduce a new machine at the KMO - the ALLROUNDER C „advance's" special model.

However the company was not only represented at plastics trade fairs in the spring of 2002, it was also present at the world's larg-

MILESTONES



In 1975 ARBURG was the first manufacturer in the world to equip its ALLROUNDERS with microprocessor control systems – this is recorded plainly and simply in the company’s history. However the technological leap which is behind this advance can be seen by taking a look at the information on the HYDRONICA machine control system.

fall back on three pressure/ speed levels for the clamping unit’s closing and opening movements, or two speed and three pressure levels for the injection process. The digital entry of the most important speeds, times and pressures brought a level of reproducibility never seen before as well as fast machine set-up. High-precision operation could be realised due to the interplay with proportional valve technology. Cycle sequence monitoring by the microcomputer protected the machine and the mould from damage, the use of inductive and therefore contact-free proximity switches meant less wear, and showing the causes of malfunctions via an integrated display made setting and operating the ALLROUNDER a reliable, comparatively fast and convenient procedure.

Bottom: In the middle of the 1970s the ALLROUNDER Hs were the world’s first series injection moulding machines with microprocessor control systems.

The main difference lay in the use of the microcomputer system - the benefits of which were in its programmed, rather than a hard-wired, command structure. Or as the machine

The high level comprehensibility of the central control unit was of the greatest relevance to actual operation. Setters and operators could effectively operate the entire machine from a central location and monitor its functions. Increased use of technology and miniaturisation, coupled with a dramatic increase in the performance of the machine and the control system, gained a foothold in the production of moulded parts due to the microchip. The next step was to followed on quickly - the first machines with computer control...



brochure of the time put it, “The use of a microcomputer system is a considerable advance compared to conventional electronic control... which replaces numerous circuit sections and discrete components (hardware) with appropriate programming of semiconductor memory (software)”. From then on setters and operators had several program variants available when previously they had only had individual options. For the first time it was possible to



TECH TALK

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

A Question of Design: the ALLROUNDERS' Technology Stages

Technology stages T1 and T2 with servo control: when an ALLROUNDER from the series C or S is being designed, these two terms come up again and again. What are the differences?

In principle, the modular concept of all the ALLROUNDERS is based on the philosophy of being able to provide the customer with technology tailor-made to their applications, using the basis of the injection moulding machine as the starting point, – i.e. the hydraulic system, – which can be adapted to the machine's range of applications via different technology stages. In most cases the technology stages T1 and T2 are available in servo-regulated form. All

hydraulic ALLROUNDERS are equipped with technology stage 1 as standard. A regulating pump ensures regulated machine movements in series, thereby covering the majority of the standard applications for which a serial sequence of the relevant cycle stage is sufficient.

From technology stage 2 onwards the hydraulics operate with a main pump and a high-pressure pump. An additional servo valve, near to the mould clamp, ensures increased accuracy for machine movements and positioning in the servo-regulated version. The locking force is held via a second pump and regulated accurately by the servo valve so that a graduated pressure profile can be achieved.

And one thing is even more important -

from this technology stage onwards simultaneous nozzle, ejector and optional core pull movements are possible. Therefore the choice of the servo-regulated T2 instead of the standard T1 provides economic advantages anywhere that an effective reduction of the cycle time can be achieved through simultaneous sequences. Servo-regulated T2 is also the basic requirement for the "position-regulated screw" option, which guarantees a completely accurate injection and holding pressure behaviour.



Top: Narrowboats - previously for transport, now used for leisure trips.

as for ARBURG can also be seen in Peter Lang's hobby, which he shares with his son David. He restores old, diesel-powered narrowboats which used to be used on Britain's internal canal system as a means of trans-

portation, to whom they can offer an extensive range of services from planning, through mould design to injection moulding. This intention, coupled with striving for the highest degree of precision in mould construction and production, generates new, innovative solutions time after time. In this way High-Tech Plastics has become one of Great Britain's leading mould constructors and producers of moulded parts. Parts are produced chiefly for the pharmaceutical, electro-mechanic and automotive sectors. ALLROUNDERS can be found in the production halls as well as in the clean room, for producing medical components. High-Tech Plastics bought the first 630 S 2500-1300 to be delivered to Great Britain as early as the year 2000.

Highly Technical

Special customers have special hobbies - we are talking about Peter Lang, the founder of High-Tech Plastics. The company in Blackburn, in the north of England, is an ARBURG customer of many years and produces high-precision technical parts.

The fact that tradition and innovation belong together for High-Tech Plastics as well

portation. The Langs have already used these narrowboats on numerous day trips and holidays. This is proof that high-tech can be seen even in the smallest details, especially with such an innovative material as plastics. But this is not all...

High-Tech Plastics is so successful in the marketplace as the company invests in both highly-qualified employees and in technology.

The company views their customers as part-

advance
advance

Dimension

The New

Optimised! *

* Our special ALLROUNDER „advance“ model: Take advantage of this financially interesting offer in terms of reproduction, cycle time reduction and energy optimisation. Electrical equipment features combined with hydraulic technology: Your introduction into the world of electric drives!



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