

today

The ARBURG Magazine

Issue 36

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MASTHEAD

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"Welcome to Düsseldorf. You're in the right place - we'll take you straight to the ARBURG stand 13 A 13 at the K 2007."





Dear Readers,

On the title page of this issue, you were greeted by the sign "13 A 13" and an airport-like environment. This provides you with the address and gives you a taste of the atmosphere of our K exhibition stand. You can find out more about the new stand's design and communication concept on the first pages of this issue, starting with the "Special K 2007". On page 13, we present the highlights of our K appearance: these include our complete, comprehensive hydraulic ALLROUNDER S series, the expansion of the electric ALLROUNDER A series, various complex turnkey systems and future-oriented applications. You can find out, for example, how an LED light strip can be produced in a single production step.

And to ensure that other articles outside the "Special K 2007" category don't get short shrift, this issue of "today" has been extended from 20 to 28 pages. This issue's international customer report takes you to China, the project report presents a production cell in a production cell, and Tech Talk sheds light on the ever-present subject of efficient use of energy. The colourful mix of subjects is rounded off by information about new products, a report about a German customer with a special strategy, and an interview with Michael Hehl discussing the construction of the new Customer Centre in Lossburg.

We hope you enjoy reading this new issue



A handwritten signature in blue ink that reads "Renate Keinath".

Renate Keinath
Managing Partner



ARBURG

In perfect sh




of the machines is emphasised by the straight lines of the stand. There are no fancy, overbearing elements on the stand to distract the attention - the message is clear: back to clear divisions, forwards to clear expressions of products and services. The stand is clear and comprehensible due to its reserved design, it is informative through its concentration on the most important element: the product.

Credible brand presentation is achieved when the values of that brand are successfully communicated. Through its products, ARBURG has always stood for quality and innovation, all over the world. With the clear, reserved and therefore innovative design of its exhibition stand, ARBURG reflects the key values of the brand. ARBURG's authenticity is not concealed by outsized events.

In the hectic atmosphere of the exhibition, the lounge-like character of ARBURG's stand conveys a well ordered, relaxing ambience. At the same time, the calming style, achieved through the harmonious composition of crash-glass, look-alike concrete and polished panels, creates an exhibition presence of outstandingly high quality.

The background is characterised by an



Purist, architectonic, reduced to its very essence: ARBURG has designed its stand at the K in Düsseldorf as a demonstration of reserve, out of respect for the object of the exhibition. For the product is the star. With their clear lines, natural, high-quality materials and muted colouring, the typical, unmistakable shades of our ARBURG machines are the focus of attention.

Just their very presence allows the nine exhibited ALLROUNDERS to dominate the scene. The clear, geometrical arrangement



ape at the K 2007



unobtrusive composition of black, white and grey, upon which the ARBURG corporate colours can unfold. Visually, too, the stand is a veritable oasis in an exhibition landscape which tires the visitor through its very over-abundance.

The ground floor of ARBURG's 1400 m² exhibition area offers fast, direct communication with short distances. The upper storey plays host to detailed, civilised discussions and relaxation in style, removed from the stress of the fair. Here, a glass cube decorated with trimmings in high-quality black leather spans the official entrance to the exhibition and interconnects the two stands. The atmosphere of an airport, of an exclusive waiting room, is the deliberate result.

And these airport-style attributes subtly communicate the concept of the

"Allrounder International" - ARBURG's motto this year. Crew members take care of visitors to the stand, a departures board provides information about the international ARBURG world, and a flat screen conveys impressions of products and possible applications, as well as of international branches. Airports symbolise the world on a small scale - the ARBURG exhibition stand at the K is a global terminal.

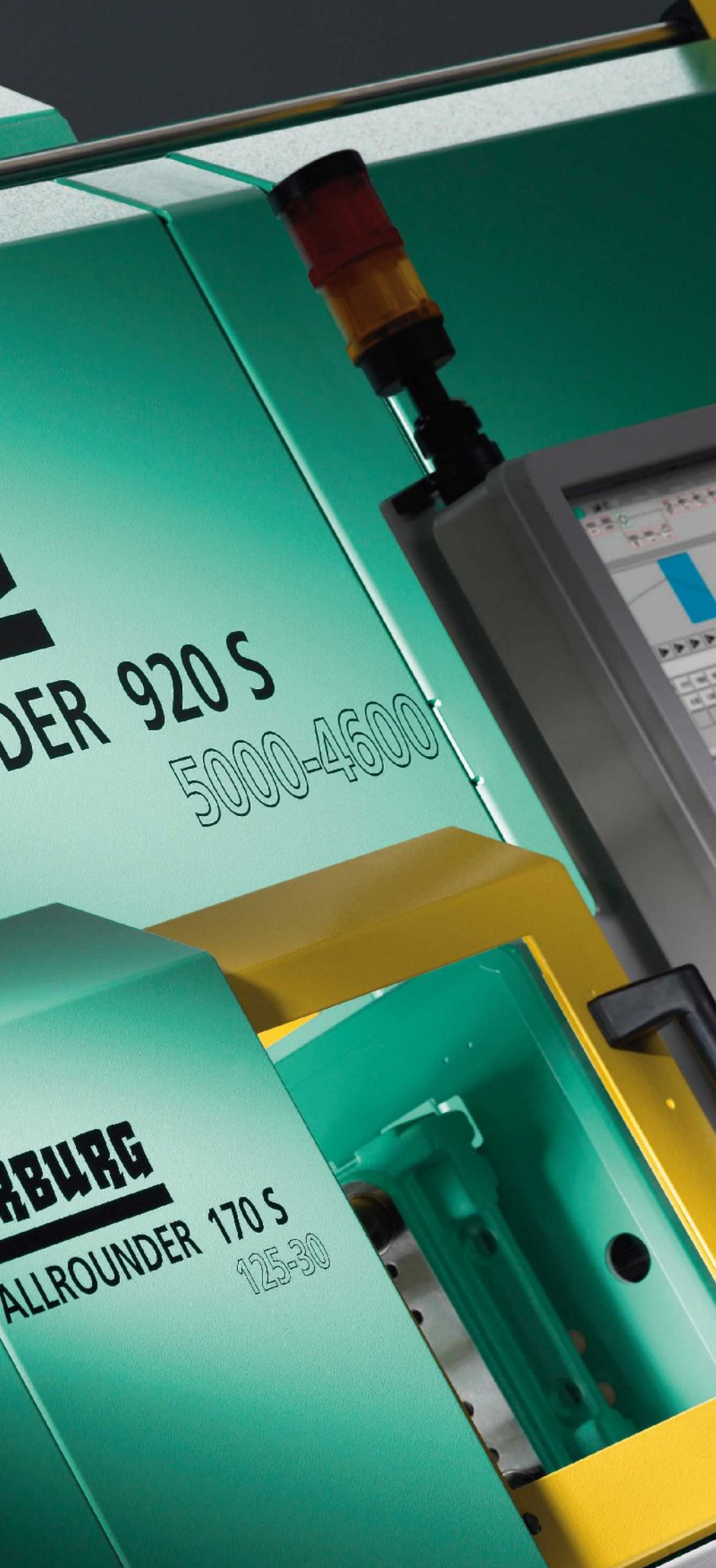
Even at Düsseldorf airport, the key visual of ARBURG's advertising campaign greets visitors to the exhibition and accompanies them throughout the fair with various forms of advertising. As purist as the design of the stand, the information campaign on our international promotional media is compressed to its core: 13 A 13. These boards, too, reflect the atmosphere of an airport. As in the arrivals hall of the airport, the internationally experienced passenger and visitor to the exhibition is met with signs and given directions to his destination.

Internationalism is also at the heart of the new stand design. Modular in design and execution, this sensational exhibition can be adapted internationally to any size of stand - recognition factor guaranteed.

13 A 13: destination ARBURG - these are the coordinates of the ARBURG exhibition stand at the K 2007 (centre).

Juliane Hehl, Managing Partner & Managing Director Marketing, discusses the details of this brand new stand concept with Matthias Uhl, Head of Marketing and Corporate Communications (top).





Standardisation brings obvious advantages. And this is also the case for the new, comprehensive ALLROUNDER S series, which constitutes a combination of all large ALLROUNDER S and ALLROUNDER U models, supplemented by a new size. This measure enables the use of synergies that make the new ALLROUNDER S into ARBURG's most universal hydraulic machine series with the broadest range of applications that the company has ever offered.

With the new ALLROUNDER S, for the first time the ARBURG product range now includes a complete hydraulic series from 125 to 5,000 kN. Previously, the U series covered a distance between tie bars from 170 to 520 millimetres. This was followed by the large ALLROUNDER S, with distances of 630, 720, 820 and 920 millimetres be-



High-performing through and through!



tween tie bars. The gap has now been closed by the new ALLROUNDER 570 S, with a clamping force of 2,000 kN. This allowed the creation of a modular, hydraulic high-performance series, which also offers a comprehensive choice of injection unit sizes. As each size of machine can be combined with different-sized injection units, the machine equipment can be precisely adapted to numerous different areas of application in a modular fashion. The impressive range of moulded parts extends from micro-components to products with a maximum shot weight of 2,583 g PS.

A further innovation concerns the control system of the ALLROUNDER S: in addition to the familiar SELOGICA control system, the SELOGICA direct control system with touchscreen and direct access to key machine parameters is available as an alternative for all machine types at no extra cost.

Furthermore, the tried and tested technology of the ALLROUNDER S comes complete with the possibility of individual configuration through

several alternative hydraulic upgrade levels and different equipment versions. The ALLROUNDER S is equipped with fully accumulator-driven technology, enabling it to execute a virtually unlimited range of rapid, simultaneous movements, such as in the production of thin-walled items, for example.

The dosage drive may be powered by an electric servo motor as a further option.

Position-controlled injection units and injection process control for maximum reproducibility of moulded parts are further important features, which distinguish the S series and allow individual configuration of the machine technology.

In this way, the new ALLROUNDER S machines are equally suited both to especially cost-efficient standard applications and to tasks governed by stringent precision and quality requirements - not to mention all special applications and complex automation solutions as well.

The package of measures that has now taken effect ensures that the new ALLROUNDER S is a universal, cost-effective hydraulic machine series, which pro-

Machines for every application: the ALLROUNDER models from the new, comprehensive, hydraulic S series with clamping forces from 125 to 5,000 kN.



vides the perfect solution for all injection moulding tasks.



ARBURG

ALLROUNDER 570 A
2000-800
ALLDRIVE

More ALLDRIVE

In Düsseldorf, ARBURG is presenting its extended range of the electric ALLROUNDER A, the application range of which has consequently been expanded once more. The innovativeness and versatility of this series is amply demonstrated by the four ALLDRIVE exhibits, with applications from the fields of in-mould labelling, two-component injection moulding of thermoplastic and LSR, medical technology and the automated production of small components.

The electric ALLROUNDER A is the series with the most representatives at the ARBURG exhibition stand, enabling trade visitors to gain comprehensive information about the extended ALLDRIVE range.

A newcomer is the ALLROUNDER 520 A, with clamping forces of 1,500 kN and 1,300 kN. The 1,500 kN machine is being presented at the K 2007 with an application from the field of medical technology. Further innovations are the larger installation dimensions, the automatically self-adapting clamping force control, the safety guard, now open at the top and enlarged at the rear of the machine, and the small size 70 injection unit. What's more, the SELOGICA 'direct' control with touchscreen is now available as an alternative for ALLROUNDER A machines, at no extra cost.

The enlarged installation dimensions enable the use of larger, more complex moulds with the ALLROUNDER A.

One example is the new ALLROUNDER 470 A size with a clamping force of 1,000 kN and a distance between tie bars of 470 x 470 millimetres. This ALLDRIVE is exhibited as a two-component machine with an LSR/thermoplastics application.

The automatically self-adapting clamping force control ensures higher part quality. The safety guard, open at the top and enlarged at the rear of the machine, provides more space not only for cooling and electrical connections to the mould, but also for more convenient mould changing. With the small size 70 injection unit, ALLDRIVE machines are now ideal for the production of small and micro-components. This is demonstrated by the ALLROUNDER 370 A with a clamping force of 600 kN, which is integrated in a production cell and produces coil shells.

The exhibition is rounded off by the largest representative of the ALLDRIVE series: the ALLROUNDER 570 A with a clamping force of 2,000 kN is presented



Above: The safety guard is enlarged at the rear to offer more space.

with an IML application from the packaging sector, which is characterised by complex automation sequences.



Distance between tie bars				Clamping force	Injection unit											
570	520	470	370		70		170		400		800					
					18	22	25	25	30	35	35	40	45	45	50	55
			●	500	■	■	■	■	■	■						
			●	600	■	■	■	■	■	■						
		●		800				■	■	■	■	■	■	■		
		●		1000				■	■	■	■	■	■	■		
		●	●	1300							■	■	■	■	■	■
		●	●	1500							■	■	■	■	■	■
		●	●	1600							■	■	■	■	■	■
		●	●	2000							■	■	■	■	■	■

SELOGICA 'direct' all round

eter pages. This reduces set-up times while improving operator reliability. This is also confirmed by Neil McLaren, Joint Managing Director of the British company McLaren Plastics Ltd.: "Machine operators are delighted with the user-friendly touchscreen control, which can be understood and used in a remarkably short time."

Michael Roming, Managing Director of the German company Roming Werkzeugbau GmbH, was initially rather critical as regards this alternative control: "At first, I didn't consider input by touchscreen as particularly necessary, and I was rather sceptical about the screen becoming dirty, too." However, the four ALLROUNDER GOLDEN EDITION machines on his production line soon changed his opinion: "After a short period of familiarisation, I would no longer want to be without the new control interface. The entry of parameters is much clearer and more convenient, and contrary to my initial expectations, the user interface of the SELOGICA 'direct' is in fact less prone to soiling than conventional input terminals."

With its decision to offer the SELOGICA 'direct' for all ALLROUNDERS of the A and S-series, ARBURG underlines its leading position when it comes to "future-oriented control". For with this control system, all applications - including complex automation tasks - can be achieved even more efficiently in the future.

Bottom: The direct touchscreen interface enables rapid access to all setting procedures and parameter pages.

At first, the SELOGICA 'direct' control with touchscreen was only available as an option. With the GOLDEN EDITION series introduced in 2006, it was part of the standard equipment. From the K 2007 onwards, the SELOGICA direct control is now available as an alternative to the familiar SELOGICA control for all ALLROUNDER A and S models, at no extra cost.

The SELOGICA 'direct' with touchscreen and direct access capabilities was presented for the first time at the K 2004. With the sweeping success of the ALLROUNDER GOLDEN EDITION, which is equipped with this control as standard, the SELOGICA 'direct' became internationally known in numerous industries and has impressed customers around the world.

The direct touchscreen interface ensures rapid access to all setting procedures and param-



Integrating injection

In collaboration with Oechsler AG, the mould manufacturer and producer/developer of moulded parts from Ansbach, ARBURG is presenting a production cell at the K 2007, which produces LED light strips. The unit is produced on an automated multi-component ALLROUNDER using high-performance plastics, and is ready for immediate use. This demo part shows that functional injection moulding can achieve an exceptional performance, above all, by integrating several process steps in the injection mould.

Besides Oechsler, initiator and conceiver of the original idea, who also took on responsibility for mould technology, Günther contributed its hot-runner technology, Kiki and Rohwedder worked on automation, Osram Opto Semiconductors provided the LEDs and Siemens supplied the conductive plastic.

The lenses, which were moulded ready for the insertion of three LEDs, consist of transparent polyamide and the light strip

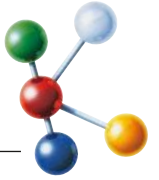
housing is made from ABS. The printed conductors are produced from conductive PA. All three plastics can be processed together without any problems on the three-component ALLROUNDER. In downstream work operations, the fabricated upper casings with inscribed lower casings and battery can be assembled and transported out of the plant as a finished article. The upper and lower casings together with the integrated battery make up the finished light strip.

The injection units of the ALLROUNDER 370 S 600-70-30-30 three-component machine are arranged in an L-configuration. Here, one unit injects through the fixed platen, a second vertically into the parting line and the third from the rear of the machine. The MULTILIFT V robotic system takes the moulded parts vertically out of the mould. The three servo-electric axes of the removal robotic system are also

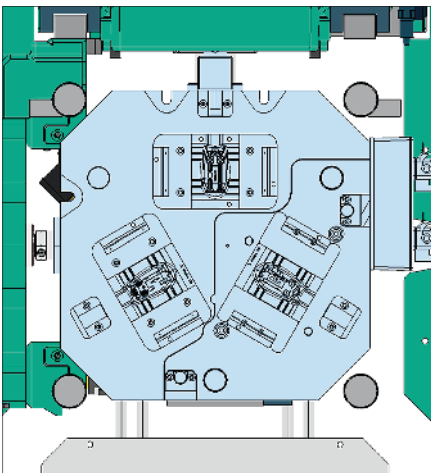
capable of executing complex set-down operations quickly and precisely.

During the production cycle, first the housing is moulded, then the lenses are injected into the corresponding recesses. The MULTILIFT robotic system then inserts the resistor and the three LEDs. Next, the upper casing is completed by the addition of the third, conductive PA component, and removed from the mould. Sub-processes in the mould reflect the complexity of the task. The three-component injection moulding process involves not just the production of the housing and lenses: the highly conductive plastic is inserted in the mould using hot-runner technology, the electronic components are encapsulated and the contacts formed, and the LEDs and lenses are mounted in the casing. To achieve all this, the mould technology combines a full hot runner with a hot-





functions in the moulding process



runner/cold-runner three-platen system in a three-station rotary mould.

Dr. Dietmar Drummer, Oechsler AG's contact person with responsibility for this complex exhibition project, summarises the joint commitment of the involved companies as follows: "This system is intended to show what processes we are already able to combine in one injection moulding operation, in a way that makes sense in both machine and mould, in terms of production, insertion, function integration and assembly processes. At the "K", we are demonstrating the integrated production of the upper, functional casing, but in principle the final production of the complete light strip through individual, downstream assembly processes would not pose any problems. A conventional

9-V block battery is employed. With the additional lower casing, the light strip can also be used as a torch. To this aim, the design of the assembly includes a button in the head. This also helps to show how the selection of plastics, the design of components/assemblies and modern processes can successfully combine to integrate functions in the most intelligent way."

Integrating complex functions in a single production cycle through the intelligent design of moulds and processes - this is one of the futuristic trends demonstrated to perfection in a standard production environment at ARBURG's exhibition stand at the K.



Cast from the same mould: Complex functions can be integrated in a single injection moulding process. A three-station mould (right) produces the upper casing (top left) of a light strip complete with lenses and LEDs.

INFOBOX

Project idea: To produce a fully functional LED light strip in three-component technology

Project partners: Oechsler (initiator, responsible for mould and injection moulding technology), ARBURG (machines and robotic systems), Günther (hot-runner systems), Kiki/Rohwedder (automation), Osram Opto Semiconductors (LEDs), Siemens (conductive plastic)

Project goal: To demonstrate a combination of innovative technologies

Contact: Oechsler AG, Dr. Dietmar Drummer, Matthias-Oechsler-Str. 9, 91522 Ansbach, Germany, www.oechsler.com



Injection mou

and two long side pieces.

The mould is equipped with a full hot runner and cascade control.

The finished folding crate measures 40 x 30 x 15 centimetres and weighs one kilogram. The parts are removed from the mould by a MULTILIFT V robotic system in overhead design. All five parts are removed simultaneously and placed one after the other in the separate assembly station. For the connection of the side pieces, they are positioned with precision on the base and pressed together using caulking units. Assembly is parallel to the injection moulding process, so that no time is lost. The SELOGICA machine control system of the ALLROUNDERS not only controls the machines, but also the robotic system and complete assembly operation. In this way, the assembly station sequences can be integrated in the familiar graphic editor and programmed there as required.



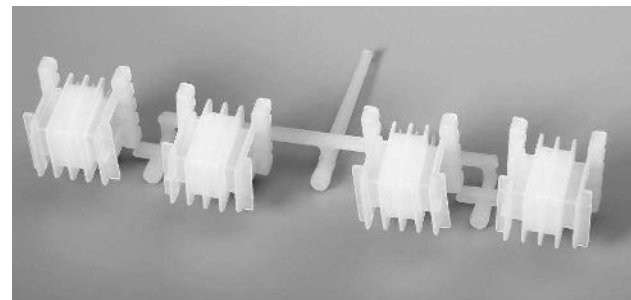
On this machine, high-quality production is additionally guaranteed by pressure and temperature measurement that is integrated in the mould, and which supplies the basic data for "quality control".

After the injection moulding process, the robotic system moves the coil shells individually to an optical inspection station, which uses a camera with light to check whether the moulded parts are complete and the thin gutters for the insertion of the solder pins are perfectly formed. In addition, the image processing system measures the function-relevant dimensions of the coil shell.

A key focus of ARBURG's stand at the "K" lay in demonstrating the great flexibility of ALLROUNDER injection moulding technology. Integrated in project systems with upstream and downstream processes, the ALLROUNDERS proved their aptitude for integration and high performance. In this they were assisted by their modular design, special equipment packages and the universal SELOGICA machine control.

On an ALLROUNDER 920 S 5000-4600, for example, ARBURG is producing a complete plastic folding crate. For this purpose, the new, largest size 4600 injection unit, with a choice of screw diameters of 80, 90 and 100 millimetres and a maximum possible shot weight of 2,583 g/PS, was employed for the first time. The five parts that make up the complete crate are produced in a common injection operation in five different cavities. The parts in question are the base, two short

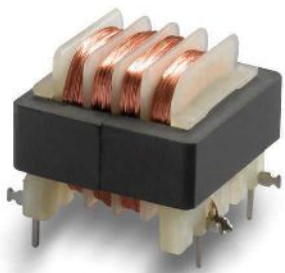
A new size 70 injection unit is also employed in the production of coil shells on an electric ALLROUNDER 370 A 600-70, which can be equipped with screws of 18, 22 and 25 millimetre diameter. Its range extends from miniature parts to moulded parts with a maximum shot weight of 40 g PS.





Labeling and more

The reference characteristic or quality control function enhances the familiar injection process control with a new, user-friendly version. The aim is to record the holding pressure as close to the moulded part as possible, and to regulate it in order to minimise disturbing influences. Once the optimum setting for high-quality moulded parts has been found, this curve profile can be recorded for all relevant signals. The reference model can be stored in the machine control system. Extensive tests have shown that with reference characteristic control, precise process control is achieved in a user-friendly way, ensuring lasting high quality of moulded parts in the production sequence. Thus, with this method the injection moulding process can be stabilised quickly, conveniently and in a practice-oriented manner to produce a specified part quality.



Speed coupled with precision are the key aspects of an in-mould labeling project presented by ARBURG at the K 2007. This process demonstrates the extremely cost-effective production of labelled yoghurt tubs in a six-cavity mould. All the necessary automation elements were designed based on an ALLROUNDER 570 A which, at 2,000 kN and with an 800 injection unit, is currently the largest



electric injection moulding machine in the ARBURG machine range.

First of all, six labels are picked up together by the handling device, placed on the fixed half of the mould by a precision-adjustable transfer hand, and exactly positioned. The tubs are simultaneously removed from the ejector side. This process has a complete cycle time of under four seconds. Time is saved during production not just by rapid peripheral routines and the short in-mould lamination cycle, however, but also through the fact that part removal and label insertion are executed simultaneously.

With these three systems, ARBURG impressively demonstrates how moulded parts should be economically produced in the future: with fast, precise, complete systems, which incorporate several production steps and thereby enable even complex manufacturing operations to be controlled reliably and clearly.



Money-saving project at the ARBURG stand: Folding crate (top left), injection moulded and assembled in an integrated process, highly precise coil shells (bottom and centre left) and yoghurt tubs in the IML system (top).

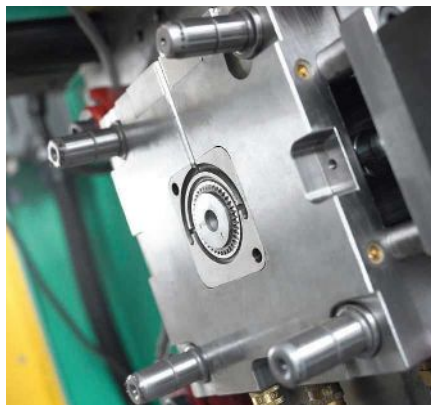
Stable and durable

A co-operative project under the direction of the chair of plastics technology (LKT) at the University of Erlangen shows how plastics can be intelligently combined to achieve high stability and durability, in moulded parts employed in exposed locations, for example. This project, to which ARBURG is contributing the two-component machine, is presented at the university chair's exhibition in Hall 12, Stand B 49 at the K.

During their research, LKT engineers succeeded in developing a stable cogwheel from two combined plastics, which achieves optimum friction and wear characteristics thanks to the second thin layer on the flanks. The specially designed mould for producing this second, extremely thin layer ensures that the part is stable and wear-resistant on the one hand, and that it suffers minimal friction during use on the other hand. At the K 2007 in Düsseldorf, a two-component ALLROUNDER 370 U 700-30-30, with a clamping force of 700 kN and two size 30 injection units, is used to mould a cogwheel in which the first, interior component consists of a solid material (POM GF30, Ticona), and the second, exterior component of a thin-walled plastic with optimised tribological properties (POM with PTFE, Ticona). With this process, two properties of the respective plastics can be used in combination, endowing the cogwheel with internal stability and simultaneously redu-

cing friction and wear on the outside.

This cogwheel points the way towards the future processing of plastics: in a few years, it will be possible to "put together" plastic end products according to the customers' wishes. At the same time, undesirable effects and properties



will be eliminated, desirable characteristics on the other hand enhanced and freely combined. The cogwheel, which owes its sturdy construction and durability to the self-lubricating properties of the outer plastic component, can be put to use in medical technology in infusion pumps or dialysis units, for example, or in improved car window winders, effective photocopiers, printers or fans.



The cogwheel of the future (top): The interior plastic component ensures high stability, the exterior component low friction and thus minimal wear.



INFOBOX

Founded: 1989

Employees: approximately 50

Service offer: The university chair for co-operative relationships and the transfer of research and technology offers advice, commissioned research and damage clarification in the field of plastics processing, conditioning and testing

Contact: Lehrstuhl für Kunststofftechnik Universität Erlangen-Nürnberg, Am Weichselgarten 9, 91058 Erlangen-Tennenlohe, Germany
www.lkt.uni-erlangen.de



By trainees from start to finish

Trainees at the Hasco and ARBURG companies presented the results of another co-operative project during the K 2007 at the exhibition stand of the Lüdenscheid Plastics Institute in Hall 6, Stand C 76. The exhibit involves a mould for producing CD sleeves to be filed in a standard, commercially available folder.

The duration of the project is one year. During this time, the inter-company team of trainees and their trainers worked together on precisely allocated tasks, not just to elaborate the idea and concept for production of the mould, but also to produce the components and carry out assembly and injection moulding tests at the ARBURG Technology Center (ATC) in Radevormwald. The co-operative venture was also planned and put into practice with a view to economical considerations. Costing and purchase of the required materials and parts were also under shared responsibility.

Several mutual visits between the two companies were necessary in order to consult, exactly plan the execution of the mould and get to know one another and each other's companies better. Parallel to the costing and organising processes, the required machine - an ALLROUNDER 520 A with robotic system for part removal - was built at ARBURG. The special grippers used for the robotic system were designed and built by ARBURG trainees with the assistance of their trainers and the mould-



making department. Trainees at both companies were very happy with the organisation of this co-operative project, and justly proud of the result: a perfectly functioning mould. The trainees were able to gather knowledge and experience beyond the boundaries of their own area of training, and there was no lack of enjoyment in working together, either.

In addition to this project, a few other ALLROUNDERS will be exhibited and will produce various moulded parts at the stands of our co-operative partners. These are a two-component ALLROUNDER 470 A 1000-70-70, which is producing LSR parts for Silcotech (Hall 05, A 41), an ALLROUNDER 470 U 1100-400 for manufacturing caps at the Hasco stand (Hall 01, A 23)

ARBURG trainees Nico Limberg and Hans-Jörg Faisst (2nd and 3rd from the right) with their colleagues Timon Kuhlmann, Antonios Sioumentis (1st and 2nd from the left) and Ruven Renfordt (right) from Hasco.

and an ALLROUNDER 320 A 500-100 for Hilma Römheld (Hall 11, B 78). The Lauffer stand (Hall 13, A 14) presents a rotary table ALLROUNDER 1200 T 1000-400 GOLDEN EDITION, while at the Velox stand (Hall 06, A 23), an ALLROUNDER 420 C GOLDEN EDITION demonstrates the cylinder cleaning process. Finally, the Barlog plastics company is exhibiting an ALLROUNDER 170 U 150-30 at its stand in Hall 06, Stand C 76.





Photo: Ulrich Otte, Düsseldorf & Tourismus GmbH

The city on the Düsseldorf



Panoramic view of the Rhine with the Rheinkniebrücke bridge, TV Tower and City Gate in the background. From the banks of the Rhine you come directly to the "longest counter in the world" - Düsseldorf's world-famous historic centre.



Cup is a fixture in the international tennis calendar, and the Ski World Cup Event on the banks of the Rhine plays host to champion cross-country skiers. But the "Düsseldorfers" were already sporty back in 1288: as legend has it, following their victory in the Battle of Worringen against the Archbishop of Cologne, when they were granted the right to call themselves a town, they apparently turned cartwheels for joy. Ever since, the "Düsseldorf Cartwheelers" have been a part of regional culture, and can be found in modern sculptures, door knobs, drain covers and in the Radschlägerbrunnen fountain.

The "Dorf" (village) on the Düsseldorf has long since evolved into a pulsating, international city with 600,000 inhabitants. The Düsseldorf still flows quietly through the city into the Rhine, a position which has always benefited the Düsseldorf people; today with the imposing promenade on the banks of the Rhine and direct access to the historic city centre, in days past for the vital passage of ships. Hence the anchor in the city's coat of arms.



The Oberkassel district, above the Rhine, is also a must for gaining the best views of the city.

Here, your gaze extends from the Tonhalle concert hall, the castle on the Burgplatz, the Mannesmannufer on the banks of the Rhine, to the harbour. To reduce Düsseldorf to its "Königsallee" - where a stroll along the avenue takes you past exclusive shops - and historic centre would in no way reflect the fascination and diversity of this Rhineland metropolis. Düsseldorf is a

fashion city and cultural metropolis of international repute. Personalities such as the poet Heinrich Heine, artists Joseph Beuys and Jörg Immendorff and composers Robert Schumann and Felix Mendelssohn Bartoldy have all made their mark here - but so too have rock band Die Toten Hosen and singer/actor Marius Müller-Westernhagen. Numerous galleries, museums and theatres echo the cultural dynamism of the Düsseldorf City. As for sport, the people of Düsseldorf follow the fortunes of local football team Fortuna Düsseldorf, and ice hockey players DEG Metro Stars. The ARAG World Team

In addition to the countless fountains and sculptures, the Media Harbour is another must-see. Architectural highlights such as the "Stadttor" City Gate and the famous Gehry buildings alternate with renovated former industrial estates - now restaurants, advertising agencies and residences. Walking back along the Rhine we return to the famous historic centre and the Königsallee. But even the alleyways of the historic centre and the other, seemingly unpretentious side of the Königsallee hold new impressions untouched by tourism.



Growth of a successful family

To further expand successful ideas and transfer them to other areas: ARBURG is consistently pursuing this strategy, and on this basis is expanding its range to include the large ALLROUNDER 920 S GOLDEN EDITION and the two vertical rotary table machines ALLROUNDER 1200 T 800 GOLDEN EDITION and ALLROUNDER 1200 T 1000 GOLDEN EDITION.

The hydraulic ALLROUNDER GOLDEN EDITION models offer high-quality equipment at a low price and, like all ARBURG machines, are produced exclusively at the Lossburg parent factory.

With the new ALLROUNDER 920 S GOLDEN EDITION, the series has enjoyed a decisive growth spurt. This machine, with a distance between tie bars of 920 x 920 millimetres, features a clamping force of 4,600 kN and works with a size 2,100 injection unit. Screw diameters of 60, 70 and 80 millimetres are optionally available and the maximum shot weight is 1,286 g PS.

In addition to the horizontal versions, GOLDEN EDITION machines are now also available as vertical models with a rotary table for inserts and encapsulated parts. The ALLROUNDER 1200 T 800 GOLDEN EDITION and ALLROUNDER 1200 T 1000 GOLDEN EDITION feature a table diameter of 1,200 millimetres and also offer fixed clamping force/injection unit combinations as well as the SELOGICA direct control system. The first machine combines a clamping force of 800 kN with a size 100 injection unit, the second a clamping force of 1,000 kN with a size 290 injection unit. These rotary table machines also make use of the new injection units. The aim of



these developments was to dramatically reduce cycle times. This is achieved by the rotary table's servo-electric drive, which considerably shortens the table rotation time, for example, and by the addition of a light curtain as standard, which enables faster pick-up times and also reduces the number of moving protective parts.



Also new to the range: the large ALLROUNDER 920 S GOLDEN EDITION.

New robotic system technology

Now available: for ALLROUNDER machines of all sizes from the A and S series, ARBURG is offering a newly configured, low-cost MULTILIFT V SELECT robotic system.

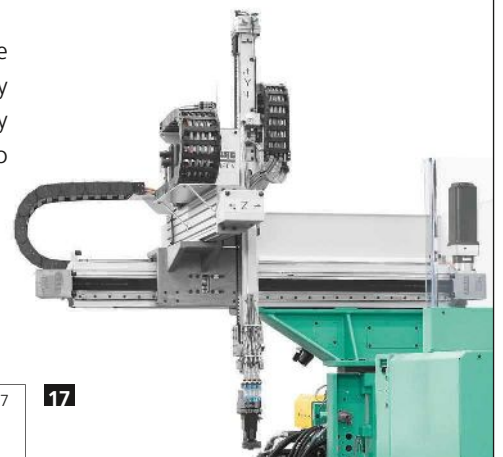
A MULTILIFT V SELECT, which is based on the tried and tested vertical cantilever-type MULTILIFT V, has been specially designed for each machine. The sequence for removing and setting down moulded parts, which can also be individually extended, is already predefined and integrated in the SELOGICA machine control system. In this way, many standard robotic system tasks can already be accomplished

without spending a great deal of time on programming. The far-reaching monitoring system integrated in the control offers a high level of reliability.

With its predefined features, such as axis length, load weight, enclosure and gripper, the price of the MULTILIFT V SELECT is especially attractive.

The other advantages are obvious: the robotic system and machine are perfectly harmonised, assembled and tested by ARBURG and can therefore be put into operation by the customer easily and quickly.

The MULTILIFT V SELECT can manage numerous standard tasks.



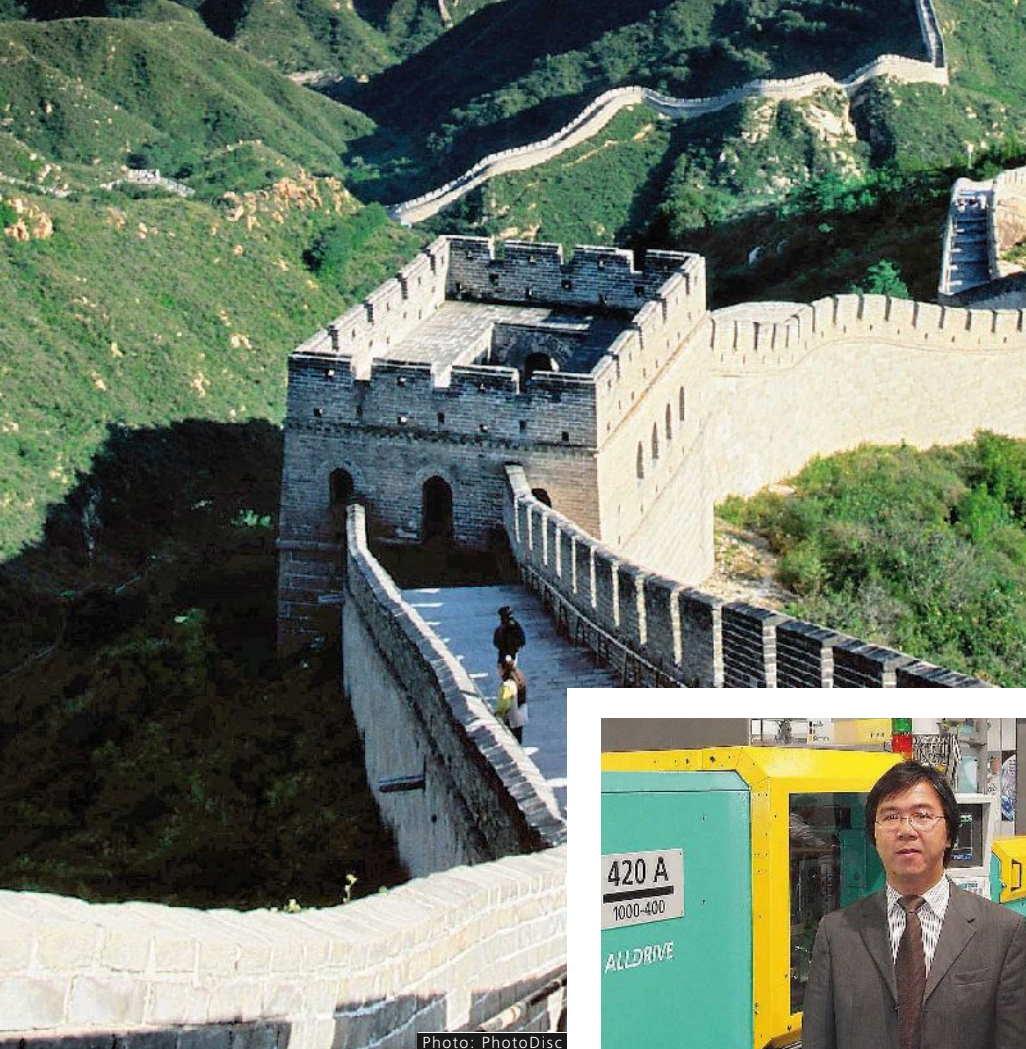


Photo: PhotoDisc

Success



Since its foundation in Hong Kong in 1989, continuous growth and success have become the norm at LINTALL INTERNATIONAL HOLDINGS LTD. This success is based on quality and absolute customer orientation. "Customer first, quality first" - the motto describes the two core objectives just as appropriately as other Chinese proverbs. The addition of "Do things right the first time" makes the intention even clearer.



Photos: LINTALL

From modest beginnings with ten employees on a production area of about 800 square metres, a company group exporting throughout the world has been created with almost 100 million euros in turnover.

The plastics processor produces for reputable customers from the mobile phone, copier and printing and automotive sectors, to name but a few. It is no surprise to find names such as Casio, Canon, Toshiba, Philips and other major brands in the list of the proprietor. Since the beginning, this has been Kwok Cheung Ling, who now has over 5,000 employees at the holding

subsidiary's three sites. Two production facilities are located in Shenzhen near Hong Kong on an area of 30,000 square metres, and another factory is situated in Dongguan. Before the end of the year, a total production area of 80,000 square metres will be put into operation in Ningbo. The company is particularly proud of this new development. Through modern architecture and an ideal arrangement of the various buildings, it conveys the impression of clear, high-tech aspirations.

However, these aspirations must first and foremost be satisfied by the products. For this reason, at LINTALL great

importance is attached to quality in all areas. The company is certified according to DIN ISO 9001: 2000 and 14001: 2004 as well as TS16949. In the production of automotive components, for example, process sequences are regularly checked with a stopwatch. On the one hand, this ensures a stable workflow and on the other hand, the transparency gained in this way enables the manufacturing steps to be optimised.

Supplementing the comprehensive injection moulding production, screen and tampon-printing technology, UV painting, hot stamping, assembly operations



“Made in China”



Kwok Cheung Ling (furthest left) founded the company in 1989 with ten employees, and this year is planning to open another production complex. Continuous quality control according to international standards is an absolute prerequisite for market success (left).

and more are fixed downstream processes that form part of the internal added-value process. Where software is concerned, too, at LINTALL the latest versions and program updates are used in all areas of application.

Internal added value is compounded by in-house production of the moulds. Over 400 employees produce between 100 and 120 moulds each month, for in-house production as well as for customer orders.

The machine fleet for all production facilities comprises a total of 283 injection moulding machines including, in addition to machines from Japanese suppliers, 71 ALLROUNDERS from ARBURG. The reasons for this lie in the different clamping force ranges. On the Japanese machines, large moulded parts for the automotive sector are primarily produced, while smaller components are manufactured on the ALLROUNDERS. As special processing methods, two-component injection moulding and the gas-injection technique are used. At LINTALL, all types of plastics are processed in an operation consisting of two twelve-hour shifts.

The Black Forest machine manufacturer

and LINTALL have been co-operative partners since 2002. The ARBURG machines were purchased mainly for the production of gear wheels and mobile phone shells, as requirements facing the mobile phone housings are particularly demanding. In addition to the essential dimensional stability, durability and high level of reproducibility, high output levels and a high degree of flexibility must also be achieved due to the increasingly short life cycles of the products. Kwok Cheung Ling seemed very impressed during a personal conversation at Chinaplas 2007: “The high precision at fast processing speeds and the consistent, stable injection moulding results are what we particularly like about the ALLROUNDERS. Furthermore, the machines are very service-friendly and are easy to handle during mould changing.”

LINTALL also makes use of the on-site service for the further training of its employees at courses and seminars offered by ARBURG’s Chinese subsidiary.

“Service is excellent,” says Ling, adding that his ARBURG machines are definitely a positive image factor with his customers in America and Europe.

INFOBOX

Founded: 1989 in Hong Kong

Turnover: approximately 100 million euros

Employees: over 5,000

Products: Predominantly automotive, mobile phone shells, domestic appliance technology, etc.

Machine fleet: 283 injection moulding machines from 200 to 18,000 kN, including 71 ALLROUNDERS

Contact: LINTALL INTERNATIONAL HOLDINGS LIMITED, Hong Kong
www.lintall.com.hk



The touchpap

SITEC Industrietechnologie GmbH is at home in Chemnitz. Its key focus is the construction of innovative, custom-made machines. The company has a large division dedicated to assembly system solutions. ARBURG was SITEC's system partner on as many as three complex assembly lines for the automated production of supplied parts for the automotive industry. The systems are now all working faultlessly at Siemens VDO Automotive in Limbach-Oberfrohna.

SITEC's customers all over Europe particularly appreciate the company's specialist expertise. Conducting research and development in a production-based environment is a matter of priority at SITEC, and creates the foundations for innovative products and services. To ensure the high level of qualification of all employees, SITEC employs an integrated quality management system to DIN EN ISO 9001 and implements a teamwork strategy in bringing projects to fruition. At the same time, state-of-the-art technology, modularity and adaptability are the hallmarks both of the company organisation and the products. This guarantees short order processing times and ensures that full use is made of available resources.

In the field of assembly system solutions, the SITEC experts plan and create complete assembly lines and hybrid systems, as well as highly productive as-



sembly robotic systems, in accordance with the customer's requirement specification.

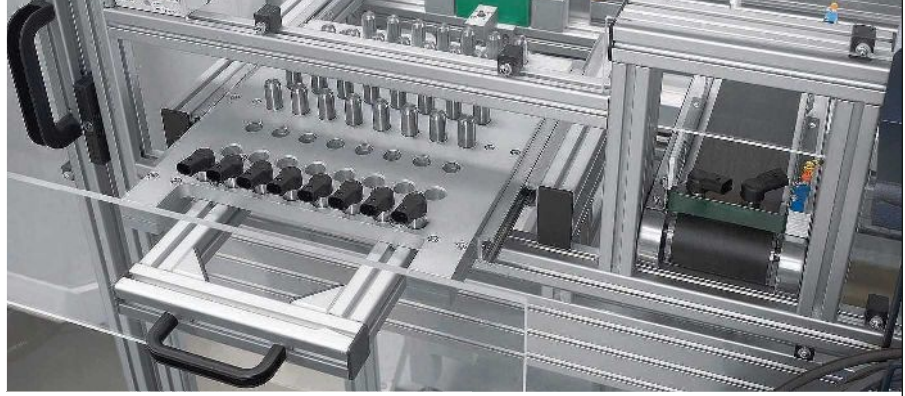
The co-operative venture with ARBURG concerned the fully automated encapsulation of a component for injection nozzles with integrated piezo, which controls the release of fuel injection in modern passenger cars. It functions like this: charged with electricity, the piezo expands and activates the fuel injection process. The advantages of this type of control are short, precise switching times and distances and a low-wear component function, resulting in a longer service life.

As the main contractor, SITEC was responsible for all three assembly lines, from their design to their technical implementation and organisation. Each assembly line consists of the production complexes preassembly with integrated laser processing, connector encapsulation and inspection including final assembly. In this project ARBURG worked in co-operation with FPT Amtzell on the connector

encapsulation production complex, which incorporates fully automated handling, encapsulation and removal, as well as the forwarding of inserts to downstream processing stations.

The vertical ALLROUNDER 1500 T 2000-350 machine with a clamping force of 2,000 kN and size 350 injection unit, which is integrated in the production complex, works with a rotary table that rotates forwards and backwards in two cycles. It is connected to the overall system by means of a Euomap interface, which indicates when the parts are free and the rotary table is in the filling position. The SELOGICA machine control system ensures a smooth encapsulation process, while a separate Kuka control provides problem-free automated sequences.

In addition, three eight-cavity moulds were built for a total of three different types of engine. Inserts with connector head at 0°, upright in the mould, inserts with connector head at 12°, lying in the mould, and inserts with connector head at



er for exciting ideas



30°, also lying in the mould, can be produced in this way. These parts can then be used to equip vehicles with pump-jet engines and common rail injection.

The injection moulding sequence is executed as follows: inserts and finished parts are handled and conveyed by a robotic cell, which comprises a three-axis overhead-type unit and an additional three-axis gripper, and a further three-axis traversing robotic system. The robotic cell is designed to make inserts available or to place finished parts in the ready workpiece carriers in an orderly manner, and allows the three-dimensional handling of the items over a total of six axes. This is essential, because the single gripper has to be able to perform rotary, tilting and insertion movements for all three parts. And there is a reason for this: at the customer's wishes, all three systems have been designed to be so flexible that all three moulds can be employed on any one of them. The cycle time of 48 seconds

for encapsulation plus 1.5 seconds for rotating the ALLROUNDER tables makes this method possible, as the systems can therefore make parts available, remove or encapsulate them simultaneously. Because components such as moulds, insertion and removal grippers or sliding table inserts are changed rapidly, the set-up times are also kept to a minimum.

In general, the injection moulding sequence is as follows: first, the robotic cell removes the parts to be encapsulated from the supplied workpiece carrier and places them in an eight-piece sliding table in the correct position. This sliding table has two levels, which travel to and fro in alternation and from which the traversing robotic system either removes the ready parts or to which they are returned after the encapsulation process. While the machine is starting up, the fast robotic cell places dummy inserts from a separate drawer in the sliding table for encapsulation. The plastic encapsulation can be removed from these aluminium lathed parts, so that they can be reused. There are two additional separation and removal channels for the purpose of quality control: via separate conveyor belts, random samples for QA and "not OK" parts can be collected.

The injection moulding solution described above was integrated by SITEC in a downstream automation solution, which also incorporates the supply of inserts and the finishing of the encapsulated components. The fully automated production sequence runs in three shifts.

The connector encapsulation production complex with rotary table ALLROUNDER and robotic cell (centre left). The finished part is placed in the workpiece carrier (centre right) either upright or lying down, depending on the product version (top left). Dummies are inserted during the start-up phase (top right).



INFOBOX

Founded: In 1991 as a planning and engineering office

Employees: around 140

Products: Test stands, laser systems, machine and operating data acquisition, electrochemical metalworking, production of system components and assembly system solutions, diverse engineering services

Contact: SITEC Industrietechnologie GmbH, Bornaer Str. 192, D-09114 Chemnitz, Germany, www.sitec-chemnitz.de

We're building for you!



Michael Hehl (top left), Managing Partner and Spokesperson for the Management Team with ARBURG architect Manfred Wolfer.

This slogan, which is well known to drivers in Germany from major roadworks, perfectly describes what is currently springing out of the ground at ARBURG's parent factory in Lossburg: the new ARBURG Customer Centre. And the name is fixed, as confirmed by Managing Partner Michael Hehl, who is also responsible for the Premises Development unit, in this interview.

today: Why was it necessary to add a Customer Centre to the parent factory in Lossburg?

MH: We wanted this representative expansion, with more than 10,000 square meters of useable floor space, to send out a clear signal about our first-class customer support. Of course, our customers both in Germany and elsewhere have always been able to make the most of our extensive support expertise in Lossburg, but not in the centralised manner that we are working to achieve today.

today: What do you mean exactly by "centralised"?

MH: Our clear objective with this build-

ing was to achieve perfect customer support with short distances. In future, our customers should be able to find not only all the technology, but also all the necessary related services in one central building. For this reason, we are incorporating the reception, demonstration and conference rooms and all customer-related departments, such

as applications technology, domestic and international sales and project management, in this new building complex or in the immediate vicinity. This ensures that all potential contact persons are directly at our customers' disposal, to deal with their questions in detail and to respond to them as a team. Last but not least, a complex such as this also makes it absolutely clear to our international clientele that our accumulated expertise is concentrated centrally in a single location, and even the longest journey to us is worthwhile if you want to gain knowledge of innovative injection moulding processes.

today: With a surface area of around 2,800 square metres, the demonstration area, in particular, is extremely generous. How does that benefit customers?

MH: It is here that the advantages of our centralised approach are most apparent. Until now, our ALLROUNDER machine range could only be observed in its entirety divided between two demonstration rooms. With the new demonstration area, it will be entirely different. Here, we will have the necessary space to present the complete machine range to our customers as it would be in a real-life application.

And to show them, for example, where the technologies are similar, and where they are different. This produces greater transparency where our machine range and our sales arguments are concerned, and thus provides our customers with a clearer overall view.

today: Concerning the catchphrase "environmental awareness": questions about this are bound to arise in a construction project of this size. What is ARBURG doing in this respect, in order to satisfy the requirements of this holiday region?

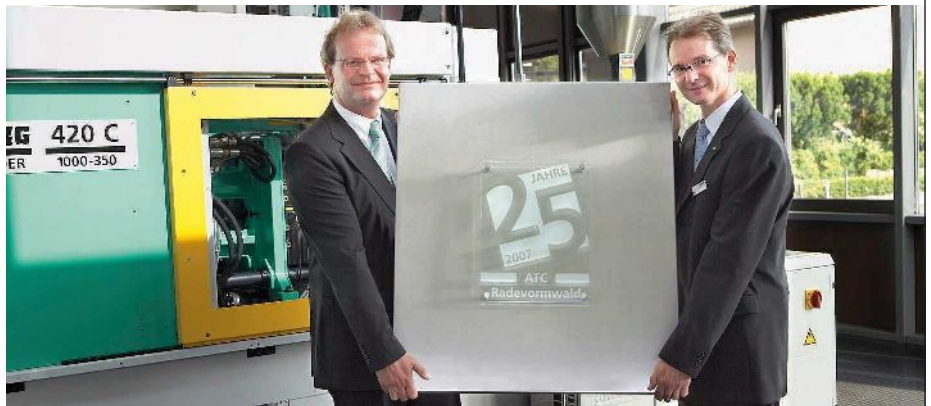
MH: ARBURG has always been environmentally aware in its construction projects and has consistently put this awareness into practice. This project won't be any different. We are using geothermal energy harvesting for our air conditioning, making use of rain water and are also working on the development of a photovoltaic system so that this complex can exploit regenerative solar power. This also demonstrates how much we see ourselves as a high-tech company in every respect. Our technological know-how is incorporated not just in machine innovations, but also in this future-oriented building infrastructure. And in the end, all our customers also benefit from this.

today: Mr Hehl, many thanks for talking to us.

25 years of ATC Radevormwald

On 14 and 15 June, the ARBURG Technology Centre (ATC) in Radevormwald celebrated its 25th anniversary. Michael Hehl, Managing Partner and Spokesperson for the ARBURG Management, officially opened the anniversary event and welcomed the guests.

In his speech, Michael Hehl emphasised the advantages that have resulted from the foundation of ARBURG's Radevormwald site in the year 1982: "By having its own building complete with demonstration room, spare parts store and training rooms, the range of services at Radevormwald has been considerably expanded. Extensive product and application-related advice were added to the existing on-site services." For the first time outside Lossburg, at Radevormwald not only were customers able to experience ARBURG technology at first hand, but also



configure sample moulds, run tests and attend training courses. The event was rounded off by technical support for customers' applications concerning questions on mould or part design, for example, and an excellent after-sales service. Radevormwald therefore sets an example to all international ARBURG organisations. For the original intention remains the same:

to bring the complete range of technology and service direct to the customer's doorstep.

Michael Hehl (left) hands the anniversary sculpture to ATC Manager Ulf Moritz.

Partnership for Vietnam

Since 1 July, ARBURG has had a representative in Vietnam in the form of the subsidiary of EDSTACHEM (M) SDN BHD, based in Malaysia. In future, ARBURG machines and associated services will be available locally in Hanoi and Ho-Chi-Minh City - that is, in the north and south of the country. Two employees will receive comprehensive training on ARBURG machines for this purpose.

Owing to their ideal structure, the two EDSTACHEM subsidiaries are flexible, fast-acting and maintain excellent networks within the country.



Vietnam is growing relatively unnoticed in the shadow of the powerful giant, China. At the moment, costs here are significantly lower than in China.

However, there are currently few high-end sector customers based in the country. But ARBURG has been supplying these customers with machines for over ten years. With this trading partnership, on-site service is now also being intensified. ARBURG is now the first reputable injection moulding machine manufacturer with a presence through representatives in Vietnam.

The two future Vietnam representatives with David Chan (centre), ARBURG Singapore, at the Chinaplas.

Flexibility with no ifs



Photos: Plastro Mayer & Kärcher

If you ask Johannes Grupp, sole managing director and proprietor of Plastro Mayer GmbH in Trochtelfingen, about his recipe for success, he immediately sums it up as follows: "Unlimited flexibility." To achieve this and thus be able to satisfy individual customer wishes, his company's policy is based on a high level of automation and large storage capacities.

"What our customers most value in us is our uncomplicated way of dealing with things, the good communications, high quality and a high degree of flexibility," says Johannes Grupp, for whom his customers' wishes have top priority. Whichever industry you look at - automotive, electrical and domestic appliances, furniture, electronics, medicine or machine construction - Plastro Mayer's technical injection moulded parts and cable sets are everywhere. It moulds parts with weights ranging from one gram to four kilograms. As materials, all common thermoplastics are employed, including talcum/glass fibre-reinforced and plasticised PVC.

Its service range is complemented by downstream production processes such as making up - which includes screen and tampon printing, hot stamping, ultrasonic and butt welding - assembly of component groups and assembly of the complete unit. The majority of products are manufactured for the German market. Only 10 % is destined for export, primarily to Switzerland.

Through a process of continual expansion, Plastro Mayer in Trochtelfingen, in the mountainous Schwäbische Alb region of Swabia, now consists of two factories with a total production area of 22,000 square metres. One plant houses all cable production and making-up processes, which call for a high level of vertical



integration and a high degree of automation. The same applies to the injection moulding plant, in which all machines are equipped with robotic systems and connected to the central material supply system. Thanks to automation, most of the machines work around the clock in three-shift operation, which also ensures that downtimes are reduced and the number of rejects kept to a minimum.

Ever since the company was founded in 1957 by senator and consul Dr. Franz Grupp, the father of Johannes Grupp, it has produced and sold technical injection moulded parts and cable sets - both areas in which there are no holds barred when it comes to competition.

One example of how Plastro Mayer has raised itself above the competition is its expansion in 2006 of its storage area by the addition of a new 2,100 square-metre warehouse. A storage system ensures that storage capacities are exploited to the full and guarantees the orderly flow of materials.

"This allows us to produce high volumes economically, warehouse the products and provide our customers with small batches in a just-in-time situation," says Grupp, explaining the company's strategy.

This means that he takes full respon-

and butts

sibility for the risk of product modifications. But Johannes Grupp, who has been the company's managing partner since October 1979, knows the industries and his customers sufficiently well to minimise this risk.

Thanks to this expertise, he also dared to invest in a two-component machine even before he had received concrete orders. As expected, however, these



pm plastromayer

weren't long in coming, so that Plastro Mayer's machine fleet now includes three two-component ALLROUNDERS. This incorporates a total of 50 injection moulding machines with clamping forces ranging from 250 to 11,000 kN. When ARBURG has the right machines in its range, the company trusts in this tried and tested technology from Lossburg.

Shortly after the large ALLROUNDER 630 S was introduced onto the market, for example, the first machines went to Trochtelfingen. This pattern was repeated with the current largest ALLROUNDER 920 S. For the most part, the ALLROUNDERS work with position-controlled screws, and are equipped with several core pulls, so that more complex moulds can also be used.

In total, Plastro Mayer has approximately 1,200 injection moulds in opera-

tion, and around 100 new ones are added every year. Most of these are produced externally, for the company's in-house mould-making division, which employs 15 workers, is full to capacity with the optimisation and maintenance of existing moulds and the construction of a few new ones.

The workforce numbers 210 employees in total, of whom around ten are trainees, plus 20 agency workers. "We provide training for our own workforce demands, so that we can then take on fully trained, specialised staff and offer them good future prospects," explains Grupp. This sense of responsibility and the resulting positive work environment is also reflected in the fact that around 70 % of employees have been with the company for more than ten years. One of them has even been there from the very beginning, and can celebrate his 50th anniversary together with Plastro Mayer. Five decades of success in the market and constant growth in recent years prove that Plastro Mayer's strategy is a winning combination. In 2006, the company achieved a turnover of 20.5 million euros, with 25 million expected this year, or a rate of increase of over 22 % - a prime reason to invest in new injection moulding machines! So, nine new machines have been ordered from Lossburg, including two large ALLROUNDER 920 S models with a clamping force of 5,000 kN, and a two-component ALLROUNDER 820 S with 4,000 kN.



Plastro Mayer's service offer includes the production of cable sets and technical injection moulded parts, as well as complete unit assembly, such as the Kärcher high-pressure cleaner (bottom).

INFOBOX

Founded: In 1957 by senator and consul Dr. Franz Grupp

Turnover: 20.5 million euros in 2006, 25 million euros expected for 2007

Employees: 210, including ten trainees and 20 agency workers

Products: Technical injection moulded parts and cable sets, plus making up, component group assembly and complete unit assembly

Customers: The automotive, electrical and domestic appliance, furniture, electronics, medical and machine construction industries

Machine fleet: 50 injection moulding machines from 250 to 11,000 kN

Contact: Plastro Mayer GmbH, Mühlthalstrasse 11, 72818 Trochtelfingen, Germany. www.plastromayer.de



TECH TALK

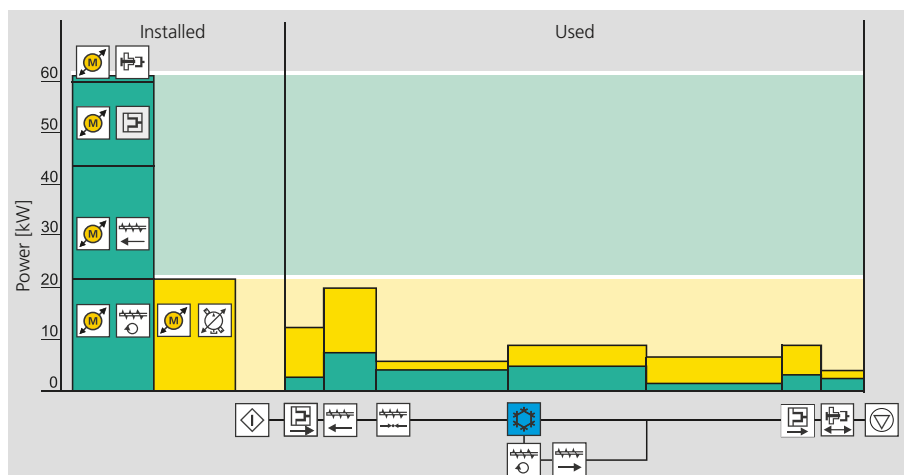
Dipl. Ing. (BA) Oliver Schäfer, Technical Information

Efficient energy

For some years now, the development of injection moulding machines has been strongly influenced by the discussion on hydraulic versus electro-mechanical drives. Today, the available machine designs range from hydraulic to “fully electric”. In addition to productivity, reproducibility and noise levels, however, the type of drive system also has an effect on the energy consumption of an injection moulding machine.

A standard injection moulding machine has at least five axes of motion: the movements mould, ejector, dosage, injection and nozzle. In hydraulically powered machines, these axes of motion are all supplied by a central hydraulic drive with electric motor and regulating pump. Electric machines, on the other hand, are equipped with mutually independent electro-mechanical direct drives, with an electric motor for each axis of motion. The independent nature of the drives enables movements to be executed simultaneously, making it possible to cut cycle times. However, in order to provide a power reserve, the outputs of the individual loads have to be totalled, which inevitably results in electric machines having higher installed power (diagram, top left). This in turn influences the electrical bay installation in terms of fuses and supply cables.

Installed power has nothing to do with a machine's energy consumption, but rath-



Electric machine

Hydraulic machine

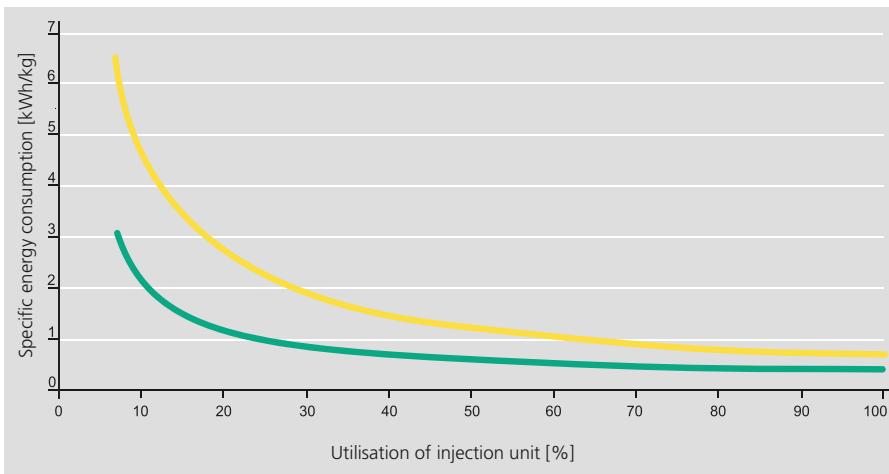
er is a measure of its capacity. The defining element of energy consumption is the actual power input, which depends upon the ON time, utilisation and efficiency of the switched on loads. These factors are, in turn, influenced by the injection moulding cycle.

As a result of fluctuating energy requirements in the individual phases of an injection moulding cycle, an energy-efficient drive must be capable of providing the energy required at any one time in a demand-oriented manner. Electro-mechanical direct drives have advantages in this respect, as they are only switched on during use and consume considerably less power in power-down mode (diagram, top left). In the cooling phase, above all, energy is saved due to lower no-load losses. In the end, the efficiency of electro-mechanical

direct drives also contributes to lower energy consumption. This becomes particularly clear when we look at the example of the rotating dosage movement, the efficiency of which is 60 % higher than its hydraulic alternative. Moreover, since losses in efficiency are usually dissipated in the form of heat, this also reduces the expenditure on the cooling of electric machines.

If we only examine the energy consumption of injection moulding machines, various process settings and sequences are not taken into consideration. Therefore, it often makes more sense to employ specific energy consumption as a comparative quantity. This quantity incorporates the shot weight and cycle time, enabling us to ascertain energy savings in direct relation to the application. In terms of the energy efficiency of injection moulding machines,

use



specific energy consumption permits a realistic comparison.

Basically, with the same material throughput, electric machines work in a significantly more energy-efficient manner than hydraulic machines (diagram, top right). Potential energy savings amount to 25 to 50 %, and even up to 75 % in individual cases. Furthermore, the diagram illustrates that low utilisation of the machine results in higher specific energy consumption. Low utilisation occurs when comparatively small injected parts are produced with a long cycle time on a large machine. Thus, the design of an injection moulding machine is a decisive factor in the efficient use of energy. This wide-ranging subject will be examined in depth in the next issue of "today", along with a description of the advantages of modular machine technology.

Diagram, left: Relationship between installed power and power input in the individual phases of an injection moulding cycle.

Diagram, right: Specific energy consumption as a function of material throughput.





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All in One. ARBURG continuously develops new, creative and customer-oriented machine concepts. Our latest product speaks for

itself - the new, comprehensive ALLROUNDER S hydraulic machine series with a clamping force range from 125 kN to 5,000 kN. With innovative control technology and a full selection of injection unit sizes for an even broader application range.

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