Personnel-intensive production in Germany? At first glance, this seems like an anachronism. But if we take a look behind the scenes at Franz Binder GmbH + Co. elektrische Bauelemente KG in Neckarsulm, a world market leader for circular connectors, we will see that this is not the case. Thanks to modern production technology and organisation, this family-run company produces extremely cost-effectively despite high numbers of personnel.

“We decided to take this route in 2006 with the appointment of team managers and the introduction of lean management processes,” explains Managing Director Markus Binder, son of the company founder, Franz Binder. This was followed in 2007 by the reorganisation of the production areas, as previously production, assembly and the warehouse were located at three different sites in Neckarsulm, so that a great deal of time and expense were spent on logistics and organisation. “This situation simply arose organically through our continuous expansion in Neckarsulm,” explains Franz Binder. Thanks to his responsibility for his workforce, which he refers to as his “most important capital”, and his entrepreneurial courage, which he has proven with a strategy of “continuity even when times get tough”, Binder has made his company a world leader. In order to maintain this position, Markus Binder has charted a course towards lean production, with the aim of achieving short delivery and development times through modernisation and improved flexibility. In addition to long transport distances and the large warehouse, the company also faced the problem of different production, tooling and machine concepts and the resulting high set-up times and costs.

Simultaneously the company was confronted with changing market requirements such as faster delivery times, high adherence to deadlines, accuracy of production numbers, increasing version diversity, reduced batch sizes, greater product customisation and higher quality requirements. In order to comprehensively satisfy these demands, the “Binder Added Value System (BAVS)”, which is based on lean management and the Toyota Production System (TPS), was introduced. Key elements of this strategy are, for example, the concentration of added value in a single location where possible, the...
and efficient

training of small, independent production units, and the shifting of responsibility and decision-making as far down the hierarchy as possible, in order to promote fast, flexible reactions. A further element is the implementation of objectives through workshops, in which employees work on solutions together with managers and specialist personnel. Markus Binder sums up the advantages as follows: “When everyone knows what the goal is, everyone can contribute.”

One of the first steps was to divide the sites according to production fields and to establish production teams. The result is that there are no more central departments for quality assurance, production control and planning or procurement, for example. Rather, each team is made up of employees from these areas who, together with their colleagues from Production, assume responsibility for the products in question.

Due to the small batch sizes of 250 to 300 units on average, frequent mould changes - around three per shift - are the order of the day. To keep the set-up times short, Binder increasingly makes use of master moulds with cassette technology. As only the cassettes are changed, set-up times were cut by around 80%. Today, 20 of the 50 moulds employed for cable production are cassette moulds, almost all of which are produced by the company.

Further steps were the segmentation of products into medical, sensor and industrial technologies, the standardisation of work operations and the establishment of decentralised individual stores directly on the production lines, as well as linkage of the individual workstations. A good example of lean production is provided by the production lines for encapsulated connectors, each of which consists of a compact, flexible cable cutting system, an automatic crimper machine with process monitoring for reproducible connections, and a vertically operating ALLROUNDER 275 V. Thanks to their free-space system and minimal footprint, ARBURG vertical machines are ideal for this task. In addition to their good accessibility and compact design, they excel thanks to their technical equipment, as Plant Manager Thomas Schulin explains: “With the position-regulated screw option, we achieve extremely high process stability and therefore high product quality. Moreover, simultaneous movement by the ejector and the mould was made possible especially for our machines, in order to shorten cycle times.”

Monitoring by internal pressure sensors, to guarantee constant mould filling, is anoth-
er special feature. As these production lines with ALLROUNDER 275 V machines have proved successful, two have already been installed in the USA, and two more are planned for the Chinese factory.

The operator makes use of the time saved from the optimised injection moulding cycle for electrically testing the finished parts, with insulation tests at high voltage, for example. Rejects, which cannot be entirely avoided due to electrical faults, are separated immediately, so that production takes place with accurate numbers and 100% quality. By linking the individual workstations, the throughput time for encapsulated connectors has been reduced from about three weeks to a single day, or a few hours in some cases. And the one-piece-flow concept means that the first part is produced and ready for shipment in just a few minutes. Because of small batch sizes, only individual components, not the complete production line, are automated.

“Another reason for manual work,” comments Thomas Schulin, is that cables are “alive” and don’t always behave in the same way.” When it comes to inserting cables, people are still more flexible than machines.

“We are continually recognising new potential areas for optimisation, even in the production sequences that we have already reorganised, and we set about implementing them,” says Markus Binder, and explains that “there is no definite end to the implementation of the BVAS. Rather, it is an ongoing process.”

INFOBOX

Founded: In 1960 by Franz Binder
Group: Binder Connector Group and Binder Systems Group
Plants: Germany, Switzerland, France, China, USA, United Kingdom
Employees: Around 1,300, approx. 550 of whom are in Neckarsulm
Turnover: € 120 million overall, € 70 million for the Connector Group
Products: Industrial connectors, plug connectors for automation technology, customised solutions. 10,000 different individual components, 4,300 catalogue items, 3,000 versions and around 40 million connectors annually
Machine fleet: 53 injection moulding machines with clamping forces from 250 to 700 kN, including 48 ALLROUNDERS
Contact: Franz Binder GmbH + Co. elektrische Bauelemente KG, Rötelstrasse 27, 74172 Neckarsulm, Germany, www.binder-connector.de
Selection

The speciality of Deutsche Technoplast GmbH is SMT (Surface Mounted Technology). The company based in Wörth/Donau, Germany has been producing SMT LEDs since 1989, the production volume of which has increased enormously from one million units per year at the beginning to over five billion today.

Thanks to these many years of experience, Deutsche Technoplast will next year celebrate its 20th production anniversary to coincide with the “40 years of the Wörth/Donau location” anniversary. In addition to the preparations for the celebrations and the day-to-day business, extensive building activities are also currently in progress in Wörth. With the completion of the new buildings for the quality assurance and warehouse areas, especially for in-house mould construction, the entire production area has more than doubled with an additional area of about 3,300 square metres.

The company was founded in 1965 by Johann Bauer, the father of the present Managing Directors, Master of Industrial Engineering Birgit Bauer-Groitl and her brother Hans Jürgen Bauer, Industrial Foreman for plastics and metal. A second location, the Deutsche Technoplast (M) Sdn. Bhd, began operation in 1993 in Melaka, Malaya, as important customers who further process Technoplast products are based there.

The production in Asia corresponds one-to-one to that in Germany where, however, the complete systems are put first into operation before they are used in Malaysia. Furthermore, a uniform quality standard is ensured by means of a contin-
uous transfer of know-how between the locations. “A great advantage for us here is that ARBURG is also present with a subsidiary in Malaysia and fast service is thus guaranteed,” says Birgit Bauer-Groitl.

The customers of Deutsche Technoplast GmbH traditionally come from the electrical engineering, audio electronics and optoelectronics sectors. These include large corporations such as Osram, Infineon, Siemens or Deutsche Bahn as well as companies from their region, for which standard moulded parts are produced.

The product range covers optoelectronic housings, lenses and other components, through to micro-components. The high-precision steel moulds required are developed and manufactured almost exclusively at the company’s own mould construction facility.

With unit volumes in the billions, the main focus of production today clearly lies in that of SMT micro-components. The first steps towards this specialisation had already been taken by Technoplast in the early 1990s. At that time, in cooperation with the customer Siemens Semiconductors, new types of SMT LEDs for surface-mounted technology were developed out of the production of casting moulds (cavities) for LEDs mounted by means of through-hole technology.

The great challenge here was to integrate the casting mould and the insulation and reflection functions into a single component and, in addition, to create a sealed connection between organic plastic and inorganic base material. Whereas the casting moulds (which are still part of the Deutsche Technoplast product range today) have diameters between 3 and 5 mm, the dimensions of certain SMT LEDs are as small as 0.6 mm.

With the entry into SMT production, Deutsche Technoplast has continuously expanded its know-how in the field of automation technology for the operation of the ARBURG injection moulding machines used in its plant: For example, the material feed of carrier strips for the so-called reel-to-reel process was an in-house development. Here, the metal strips are fed from a reel into the injection moulding machine (partly split into several strips), the plastic component is moulded on and the strip is then reeled up again.

And this is not the only clear demonstration of the company investing a great deal of its own know-how in the automation of the entire feed technology. This is now also being used in additional processes, for example, in automatic image recognition during quality control monitoring or in the printing of the carrier strips using the direct offset printing process.

Because it was not clear whether carrier strip feed to the mould would be performed horizontally or vertically at the outset, ALLROUNDERS with pivoting clamping units were first used, with which both variants were possible. Today, the feed is exclusively vertical. The first contact with ARBURG took place in 1981, with the purchase of an injection unit which was used on an Eckert&Ziegler injection moulding machine. Even then, the modularity of the ARBURG injection units, with which changes between different materials can be easily achieved, was decisive. This argument is still valid today, as a wide variety of technical plastics are processed, including special types such as PPA, PMP or thermoplastic elastomers.

In 1989, the first ALLROUNDER was purchased and in 1991 the first machine with a position-regulated screw. “Thanks to the hydraulic ALLROUNDERS which, even then were very dynamic high-precision, we had a decisive advantage over our competitors,” recalls Managing Director Birgit Bauer-Groitl. Today, the Technoplast machine fleet in Germany and Malaysia comprises a total of 50 ALLROUNDERS
with clamping forces ranging from 250 to 2,000 kN. The three newest machines are electric ALLROUNDER As. “Originally, we were rather sceptical about electric machines,” says the plastics technology expert, “as we had doubts regarding the dynamics and we were also able to fully meet our customers’ high demands for precision with our hydraulic machines featuring a position-regulated screw. However, tests have taught us otherwise and we now fully appreciate the advantages of the electric machines.” A high plasticising capacity could be easily achieved, while maintaining good dynamics. This is necessary, considering that the number of cavities per mould has increased dramatically from 18 initially, to several hundred today. As an additional advantage, the Managing Director emphasises the low noise emission levels of the electric machines, which becomes clear in the vicinity of the ALLROUNDER A machines, during a tour of the Technoplast production hall. In order to be able to use the machines in the reel-to-reel process, they were specially adapted to the Technoplast requirements.

The fact that, in addition to the micro-components produced in the reel-to-reel process, lenses are also injection moulded, whose production with regard to cycle time, temperature and material represents the direct opposite of the above-mentioned process, is proof of the company’s high level of expertise in applications technology. The success of the company is reflected in the high utilisation of production, in which three shifts are worked on weekdays and two shifts at weekends. Further indications are the extensive building activities at the German location and the continuing growth of the workforce. At present, the company has more than 100 employees in Germany and a further 50 in Malaysia. “We place great importance on committed employees who are prepared to take on responsibility,” explains Birgit Bauer-Groitl. Only with such a team and together with continuous process monitoring and 100-per-cent visual inspection, can it be ensured that only absolutely flawless products leave the factory.

The customer orientation also substantiates the fact that the company is not satisfied with just certification according to DIN 9002:1994 and DIN EN ISO 9001:2000. Additional certification according to ISO TS 16949:2002 is planned for February 2009, for example. The automotive industry is not a direct customer. However, Deutsche Technoplast wishes to understand the requirements that its customers must fulfil as automotive suppliers, in order to be able to continue to provide 100-per-cent satisfaction in the future.

INFOBOX

**Locations:** Germany and Malaysia

**Employees:** Over 100 in Germany, about 50 in Malaysia

**Products:** Optoelectronic housings, lenses and other components made from high-grade technical plastics through to micro-components, SMT carrier strip processing and printing as specialty

**Machine fleet:** 50 ALLROUNDERs with clamping forces from 250 to 2,000 kN

**Contact:** Deutsche Technoplast GmbH, Reitfeld 2, 93086 Wörth a. d. Donau, Germany

www.technoplast-group.com
The cooperation between Delphi Connection Systems in Shanghai and ARBURG may have begun just over four years ago, but several successful large-scale projects have already been jointly completed. Thanks to their modular design, the 71 ALLROUNDERs and the ARBURG host computer system (ALS) supplied to date were configured and equipped to meet the detailed Delphi specifications. The requirements with regard to the complete integration of peripherals were also comprehensively met through the central SELOGICA machine control system.

Delphi Corporation is a leading global supplier of mobile electronics and transportation systems. It is headquartered in Troy, Michigan, USA. Delphi has some 159,000 employees worldwide and operates 153 wholly-owned manufacturing sites in 34 countries, with sales of 22.3 billion US dollars in 2007.

One of its operations is a Delphi Connection Systems plant in Shanghai, which was founded in 2002 and has enjoyed prosperous growth since it opened. Site employment has increased dramatically from 25 at the outset to 834 today. The plant manufactures electrical and electronic components for the automotive industry in Shanghai. The business is divided into three main product business units: electrical/electronic distribution systems, connection systems and electrical centres.

The injection moulding production is part of the Connection Systems unit, where some 550 different products are manufactured on a total of 113 injection moulding machines. There are 71 electric and hydraulic ALLROUNDERs with a clamping force range from 500 to 5,000 kN. Delphi’s relationship with ARBURG began in 2004 with the order of the first ten machines, with an additional 61 being delivered in 2007. The two company’s collaborative working relationship was demonstrated at the Chinaplas 2008 in Shanghai, where an ALLROUNDER was exhibited with a Delphi mould.

During his visit to the ARBURG stand, Simon Yang, Asia Pacific managing director for Delphi Connection Systems, outlined the strategy of the young and successful business, “Because synchronisation is very important for us, we work with one central supplier in each area.” Asked why he has invested exclusively in ALLROUNDERs since 2005 and why he works with ARBURG as a main contractor, he answers concisely with the words, “Reliability and costs.” According to Yang, the first aspect applies both to the company itself and its ALLROUNDERs. This already became evident when the first ten machines were delivered. They were configured to the Delphi requirements within the shortest of delays and were delivered quickly and on time.

With regard to costs, Simon Yang takes a long-term view. For him, it is not only the purchase price, but much rather the overall economy of the machines that is decisive. For this reason, the company aims to invest more intensively in electric ALLROUNDER A machines, of which nine are already in operation. He succinctly explains the reasons for this view, “Because
we are an independent company, we can only invest the money we have earned ourselves.” Consequently, in addition to high product quality, the company’s major focus is on cost control and reduction in order to maintain their current strong position in China.

Other important aspects of economical production are integration and optimisation. As a result, Delphi relies not only on central suppliers, but also on system suppliers like ARBURG, who provides concepts for complete production systems and also implements them. In this case all peripherals – including robotic systems, temperature control units, material dryers, mixers, conveyors and in some cases container changers for the finished parts – are integrated in the central SELOGICA control system. For the managing director, this requirement further speaks in favour of ARBURG as well as their comprehensive engineering service.

In order to monitor and control the production processes and therefore product quality at all times, use of the ARBURG host computer system (ALS) completes the consistent strategy pursued by Delphi. Like the 71 ALLROUNDERS connected to it, the ALS was tailored to Delphi specifications and connected to the company’s existing SAP network. An important ALS feature in terms of production monitoring is production release for each product version. This takes place according to the following procedure: When a new job order is received, the corresponding data record is loaded on the machine by the ALS. However, before production can begin, the machine operator has to scan in the barcodes for the machine, mould and material (original stock, regranualte, colour). If the combination matches that in the pending order, production is released. This scanning procedure must also be repeated following any interruptions in production.

In this area, Delphi receives support from the Control Technology Department, in the case of production cells, this is provided by the Project Department at the ARBURG headquarters in Lossburg. The local contact responsible for ensuring a prompt service in Shanghai is the city’s ARBURG subsidiary. “All the ARBURG departments work hand-in-hand to provide us with first-class allround support,” says Simon Yang. As a result, a new project is already under way, further extending the successful co-operation between Delphi and ARBURG.

**INFOBOX**

**Locations:** Shanghai

**Employees:** 834 (as at April 2008)

**Products:** electrical/electronic components for the automotive industry

**Machine fleet:** 113 injection moulding machines, of which 71 are ALLROUNDERS (as at April 2008)

**Contact:** Delphi Connection Systems, 200 Yuanguo Road, Anting, Jiading Shanghai 201814, P.R. China simon.yang@delphi.com, www.delphi.com
For many decades now, Rudolf Michael GmbH has produced a wide variety of coil shells and has a high level of expertise in this sector. This expertise is appreciated not only by customers from Germany and Europe, but also from Asia and the USA. In addition to the standard products, of which there are some 15,000 different versions, their range also includes customer-specific coil shells. Insulation products and technical moulded parts complete their product portfolio.

Owing to the product range, a large proportion of Michael customers are from the electrical and electronics industries. After all, the coil shells are used in many different sectors. “Our coil shells can be found wherever electrical current flows, from small transformers right up to transformers for the shipping sector,” says Technical Director Wolfgang Michael.

He demonstrates the breadth of the company’s range of products by comparing an extremely thin-walled component with a thickness of approx. 0.3 millimetres to a coil shell weighing more than 800 grams for transformers.

Around 60 per cent of the products are supplied to German customers, the remaining 40 per cent are destined for export markets. “The European countries are the most strongly represented in terms of exports. However, we also supply to China and the USA,” explains Commercial Director Dr. Uwe Schikora proudly. This testifies to their high product quality, which stems not least from the family business’s many decades of experience. Its success story began in 1912 in Thuringia, where coil shells and insulation components were manufactured using the compression moulding process. The foundations for the current factory in the centre of Eppingen were laid by Rudolf Michael in 1949.

The progressive move into modern injection moulding began with the purchase of the first ARBURG machines in the mid 1950s. In the early days, the injection moulded machines were even personally collected by van from Lossburg. This relationship of trust between the two companies endures to this day and is demonstrated by the fact that Michael personnel regularly attend ARBURG training courses in Lossburg in order to further expand their expertise.

This strategy is also reflected in the injection moulding machines: In order to keep their production facilities up-to-date, ongoing investments are made in technically and economically more advanced ALLROUNDERs. The company’s extensive machine line up includes injection moulding machines with clamping forces from 350 to 2,100 kN, nearly all of which have been supplied by ARBURG.

The ALLROUNDERs are adapted in line with the company’s requirements. For the production of coil shells with encapsulated pins, for example, the machines feature four core pulls. The wire, which is provided on reels, is fed automatically and cut in the mould itself to form the pins. Because the wire feed is horizontal, injection is performed into the parting line via vertically arranged injection units. Extremely precise positioning of the metal pins must be guar-
anteed, because the moulded parts are usually further processed by customers fully automatically. For this product segment, the company uses a production cell built around an ALLROUNDER 370 C with a MULTILIFT H robotic system, which has been designed in co-operation with the ARBURG project department.

Owing to the broad range of parts, the machines require frequent conversion. Unproductive machine conversion time is kept to a minimum by means of optimum production planning. The moulds are largely produced at the in-house mould-making shop, which is also responsible for repairs and regular maintenance of the moulds. In view of the extensive quality requirements, this department plays a key role, not least because glass-fibre reinforced plastics with highly abrasive properties are processed.

A look behind the scenes at Rudolf Michael GmbH, which has an overall floorspace of around 6,500 square metres, reveals a clearly structured and well co-ordinated workflow. This ends in an extensive warehouse stocking system which allows just-in-time delivery. A further benefit of this warehouse storage system is that production can be flexibly and rapidly converted to cater for special customer requests without incurring the risk of bottlenecks. The standard coil shell range is supplied from stock and can also be requested or ordered via the Internet.

The current two-shift production can be extended to three shifts at any time in order to meet delivery deadlines during peak order periods. The Eppingen-based company is consequently well-equipped for the future.

“We see ourselves as a thoroughly conservative, yet innovative company, which can succeed on the market by virtue of low personnel turnover, little know-how drain and high quality specialist products,” says Technical Director Wolfgang Michael, summarising the corporate concept.

INFOBOX

**Founded:** 1949 by Rudolf Michael in Eppingen, (originally founded by Kurt Michael in Steinach/Thuringia in 1912)

**Employees:** currently 80, of which four trainees on average

**Products:** Coil shells of all types and sizes, customer-specific moulded parts, encapsulating caps, lateral insulators, soldering connections, various accessory parts

**Customers:** Transformer production, electrical and domestic appliances, electronics, medical technology and machine construction sectors

**Machine fleet:** ALLROUNDER injection moulding machines from 250 to 1,600 kN

**Contact:** Rudolf Michael GmbH, Bahnhofstr. 30, 75031 Eppingen, Germany, www.michael-spulen.de
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.

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
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
Not only are the products of PKT Präzisions-Kunststoffteile GmbH small, the company also had rather small beginnings back in 1969. Walter Spielmann, company founder and one of two Managing Directors, produced the company's first precision plastic parts in a garage. Between Pforzheim and Stuttgart and only 35 kilometres from Stuttgart Airport lies Tiefenbronn, where this producer of small parts now has its headquarters. The company’s proximity to the airport is particularly important, as PKT is dedicated to doing business in Germany and thus produces there exclusively, yet it has a worldwide clientele hailing from precision engineering, IT, electronics, automotive and medical technology industries. These intricate, highly-precise microparts from Swabia are also appreciated in Asia. PKT has long since grown beyond its humble origins, and nowadays one sees a successful company with 80 employees that has been through five facility expansions, thus proving that not only in terms of floor space, the days of operating from a garage are long gone.

In addition to the quality of its injected parts, the company’s mould production expertise plays a crucial role in its success. At PKT, all moulds are produced in-house. This guarantees not only consistent production quality, but also a key technological advantage over the competition. Managing Director Rainer Gille sees leading technology as the main selling point for moulds and parts, and not low price.
Small parts in grand style

The high-precision moulded parts weigh between 0.002 and approximately 30 grams and fall under the categories of free-falling plastic parts, two-component parts and continuously encapsulated lead frames (reel to reel). For this purpose, all technical plastics are processed at PKT, such as PC, PET, POM, PPS, TPU and LCP.

At tolerances of 0.01 millimetres, quality assurance plays a critical role. The DIN ISO TS 16949 certification, as well as the DIN ISO 9001 quality management system certification which was refined to meet the added requirements of the automotive industry, guarantee superior quality and absolute maintenance of deadlines at PKT. Low downtimes and consistent process quality of the altogether 60 injection moulding machines with clamping forces ranging from 150 to 1000 kN are the core criteria for success for a producer of micro-injection parts.

Since 1970, ARBURG and its ALLROUNDERs have been a reliable partner for PKT. Managing Director Rainer Gille likes to stress the high technical expertise, excellent service and high value for the money offered by ARBURG.

Here, 30 ALLROUNDERs produce micro precision parts such as cogwheels and rotors in an almost fully-automatic three-shift system. In light of this, Gille finds it crucial that ARBURG offers “consistent process quality through precision, reproducibility, dependability and uncomplicated maintenance”.

At a company which relies on technical expertise to maintain its competitive edge, it is no surprise to see the latest generation of machines and control technologies. As the smallest member of the new ALLROUNDER U series, the 170 U is outstandingly equipped for micro-injection moulding. And the modern SELOGICA direct control alternative impresses yet again with its 15-inch flat touchscreen display.

At PKT, convenience is not only a feature of its machine controls. The company also offers its employees convenient flexible working hours to help them best adapt their work life to their personal schedules. Grand style for a micro part producer.

INFOBOX

Founded: 1969  
Employees: 80  
Products: Precision micro parts  
Machine fleet: A total of 60 injection moulding machines, 30 of which are ALLROUNDERs  
Customers: Worldwide customers from the precision engineering, IT, electronics, automotive and medical technology industries  
Contact: PKT Präsitions-Kunststoffteile GmbH, Daimlerstraße 5-7, 75233 Tiefenbronn, Germany  
www.pkt-gmbh.de
When end customers in the infocom sector hear the name “Suyin” they usually have little idea what it means. But that doesn’t matter - they don’t need to know. All they need to be aware of is that without the connectors from Taiwan most mobile phones wouldn’t work, digital cameras wouldn’t record and LCD TVs wouldn’t produce a picture. However Suyin has been a well-known name for a long time among those who know the industry. And 169 ALLROUNDERs have played an important part in ensuring the high quality of the products.

Gary Lee, President of the Suyin Corporation, summed up the benefits of the cooperation between his company and ARBURG. “In the 1980s, Suyin chose ARBURG injection moulding machines when production was set up in Taiwan and then for the extension of production in China because they complied with the extremely stringent Suyin requirements on technology and safety.” In other words, you can rely on ARBURG ALLROUNDERs. They are easy and safe to operate and the cooperation between the two companies is also very harmonious.

The Suyin Corporation is characterised by its highly-dynamic development, which is not untypical for Asia over the past 20 or 30 years. The company’s two owners, H.J. Wang and the Lee family established the enterprise with five employees in the early eighties, at the time for the assembly of D-Sub connectors and the production of computer leads. After only two years, the company set up their own injection moulding facilities in order to produce a wide variety of computer connectors in-house.

In addition to their own production facilities, the company pressed ahead with research, development and mould construction in order to be able to integrate the entire value-added chain within the company. In the 1990s Suyin became a global player” with its own subsidiaries in Asia, Europe and the USA. It has been QA-certified by the German Technical Inspection Agency “TÜV”.

After the turn of the century, the company concentrated on setting up new factories in the technology centres on mainland China, on expanding development and order processing capacities and precision mould construction, on production automation and on the certification of further corporate segments.

However Suyin has always remained true to its core area of expertise - the production of connectors and connecting cables for the computer world, mobile telephones, the automotive industry and consumer electronics.

Customer-specific solutions are Suyin’s speciality and its forte. With the aid of the design engineers in Taiwan, China, the USA and Germany as well as the strong research/development and mould construc-
From Taiwan into the rest of the world - at state-of-the-art production facilities at the headquarters and in China (photo, left) ALLROUNDERs are used for the series production of connectors and connecting cables for the mobile telephone, automotive, computer and consumer electronics sectors (photo, right). 

tion departments, Suyin is able to provide high quality solutions within an extremely short time.

Cooperation with ARBURG dates back to the year 1989. Most of the ALLROUNDERs are M and C machines with clamping forces between 350 and 1,000 kN. All of the machines operate on a multi-shift basis and are integrated into a production-wide quality control system which continually monitors the production quality.

A wide variety of plastic parts for connectors, including the latest-generation “DDR2 connector” and the “PCI Express connector” for notebooks are produced in Taiwan using ALLROUNDERs. According to Suyin, this saves production time and high numbers of top-quality parts can be produced – which is of vital importance in this particular sector.

Those responsible at Suyin value ARBURG’s service support very highly. The close relationship between the service specialists and the production sites in China can best be demonstrated using the factory in Dongguang as an example. At times, the service technicians stay for several days at the factory, and therefore in the town of Dongguang, to inspect the ALLROUNDERs based on the Suyin maintenance guidelines, in order to be able to solve any arising problems as quickly as possible. Being able to respond immediately when individual solutions are needed is not only valued by Suyin’s customers, Suyin also values this characteristic in ARBURG.

INFOBOX

- **Founded:** 1981
- **Employees:** More than 7,500 worldwide
- **Production area:** 132,000 m²
- **Products:** Connectors and cables for the infocom, consumer goods and automotive sectors
- **Major sales markets:** Europe, USA and Asia
- **Subsidiaries:** Headquarters in Taipei/Taiwan, production sites as well as sales and customer service centres in China, subsidiaries/sales offices in the USA, Germany (European headquarters), Israel, Korea, Japan, Hong Kong and Singapore

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Visitors are automatically reminded of ARBURG as soon as they enter the Production Department at ruwido in Neumarkt am Wallersee near Salzburg in Austria. Everything is high-tech, uncluttered, clearly laid-out and above all: clean. This approach to work is also evident in ruwido’s products, which are high-end infrared remote controls for which the company is well-known both in Europe and throughout the world.

In 1975, ruwido developed the world’s first infrared remote controls for televisions. Even then, the aim was to develop innovative product concepts and to offer customers perfect service. In 2003, the long-serving managing director, Ferdinand Maier, took over the business in a management buyout. The new business model is profitable, as is proven by continuous two-digit growth rates in terms of volume and turnover. “Bigger doesn’t mean better, only better means better!” says Maier, describing his company’s philosophy.

“ARBURG has always been ruwido’s first choice in the production of small parts because these machines combine precise injection and clamping performance with excellent controllability,” says Johann Rinnerthaler, Production Manager at ruwido, explaining the company’s use of ALLROUNDER technology. “Added to this is the excellent after-sales service: if, for example, we need replacement parts, we know they will be delivered quickly.”

Training is also a priority at ruwido. Rinnerthaler explains: “Machine operators who are highly trained and who know their machines intimately also work with greater motivation. That’s why we provide our machine operators with such intensive training. We bring in an ARBURG instructor and provide our personnel with advanced practical training on site. This cuts...”
There are currently 15 ALLROUNDER injection moulding machines in operation at the company’s production facility in Neumarkt, including three fully electric ALLROUNDER A models. The particular advantage of this series for ruwido lies in their flexibility, energy efficiency and low emissions. “Unlike hydraulic machines, the ALLDRIVE machines do not require any power during setup processes. With this way of working, longer energy-efficient cycles are possible as well as quick conversion of the moulds, which is absolutely vital for us. The low cooling requirements of the ALLROUNDER A models means that production can be expanded without the need for a cooling line. Temperature and noise emissions are also gratifyingly low, which is good news for our employees,” says Rinnerthaler.

The company re-invests a large proportion of its profits into research and development activities. Marketing assistant Martina Kick explains the reasoning behind this decision: “What our customers like about their partnership with ruwido is the excellent support they get, from product design, to market introduction and beyond. As an innovation partner, our aim is to promote awareness for new means of audiovisual communication. This is why we continuously collaborate with university research institutes in looking for new operating concepts for services in home entertainment. Our solutions are characterised by design and material innovations, haptically adapted to the needs of users, and consistent, user-oriented, intuitive user guidance systems that make even complex processes easy to understand. Our range is targeted at premium customers in premium markets. This requires us to assume a pioneering role.”

ruwido’s list of reference customers indicates that it has chosen the right path in offering added value for the customer throughout the value-added chain. Customers include high-end manufacturers such as Loewe and Metz, as well as many cable and satellite TV providers worldwide. ruwido is the European market leader in input devices in the IPTV sector (Internet TV) and was named supplier of the year by Loewe in 2008. The company has also proven its competence in the automotive sector. As a longstanding cooperation partner, ruwido’s supplies to MAGNA International include 80,000 specially developed components for wing mirror controls each week. Research, design, mechanical and electronic development, plastics production and mould construction are among the company’s central service offerings. It also provides complete surface finishing and assembly, extensive quality testing, packaging and logistics.

These processes finally produce a fully packaged product ready for delivery. Production is organised so flexibly that it can be broken down into the proverbial ‘one-
piece-flow’. “All our central services are housed under a single roof, allowing us to offer our customers a high degree of, often critical, flexibility,” says Martina Kick.

In production, this philosophy is reflected in the high level of rational and cost-effective automation. A large number of freely programmable robotic systems are used at ruwido, enabling around-the-clock production, seven days per week. Johann Rinnerthaler describes the underlying philosophy as follows: “Behind our cost-efficient automation, you will always find human faces working directly at the machines in the assembly hall. These are the people responsible for quality and flexibility in production. Things will remain this way here for the foreseeable future.”

In addition to the consistent development of innovations in the product area, ruwido also believes that the motivation of all employees is an important element in promoting its image. Thus, for example, all employees who come in contact with injection moulding technology also have a say when it comes to the purchase of new production machinery. There has been little fluctuation in the 196 employees in the past six years, while the level of automation has risen continuously. The employees can produce up to 37,000 remote controls in up to 1,700 versions each day.

The name ruwido is synonymous with one hundred percent customer orientation, maximum flexibility and cost-efficient automation that takes account of the employees and their central role in the organization of production and in the company’s structure. There are many parallels between ruwido and ARBURG, starting from the high proportion of in-house production, consistent customer support and innovative spirit, through to the cleanliness that characterizes the company. This is a longstanding, open partnership that will continue to develop dynamically over the coming years.

ruwido uses a high level of automation to achieve a flexibility that allows even single-unit batches to be produced cost-efficiently. The injection moulding shop uses ARBURG machines, to the complete satisfaction of managing director Ferdinand Maier.

INFOBOX

Founded: 1969
Products: around seven million remote controls and keypads each year for cable, satellite TV and IPTV companies, the pay-TV and hotel sector; plastic components for the automotive industry
Production: around 70 percent of in-house production, processing of some 540 different plastics (elastomers, thermosets and thermoplastics), combined with other materials, such as metal or even glass