

impulse

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Dear readers,



I have used this platform in the past to express my view that the economic ups and downs we are experiencing must be underpinned by a gradual but enduring upward movement, simply due to the fact that an ever increasing number of people are participating in the global economy and an increasing number of markets are opening up. The consequences of a thoughtless fiscal policy are now coming back to haunt us, and the uncertainty surrounding just how the mountains of debt can be reduced is dragging down the financial markets. This may well result in heavy turbulence and a global recession, and perhaps this is even an inevitable outcome. But in the words of the German poet Hölderlin, where danger grows, there grows salvation, and evidence seems to be growing in support of this claim. With increasing success, governments are being obliged by monetary funds and financial authorities to adopt a more disciplined approach to spending. Worldwide pressure to restrict the activities of unregulated international markets is increasingly making itself felt. And finally, driven by the threat of state bankruptcy, communities of nations are demonstrating their capacity for action, albeit somewhat late in the day, with everything still to play for in their dealings with the movers and shakers of the financial markets – which is what also happened during the last crisis.

All things considered, I remain optimistic and expect that we will return to calmer waters, having either avoided or survived any ensuing turbulence. It is gratifying to note how many of our customers are turning their attention to new developments, putting to the test our ability to help solve their problems with our materials. Our joint development activities are forging ahead with greater intensity than ever, and we are pleased to be able to offer you an insight into this lively activity both in terms of new product developments (TECATOR, p. 6; TECACOMP CSM, p. 16) and processes (engineering in the injection moulding factory, p. 7 – 9).

It only remains for us to wish you and your family an enjoyable Christmas break, and to look forward to a new business year free of financial turbulence.

Yours sincerely, Klaus Ensinger

Imprint

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Impressive construction work in Nufringen: Before the side walls of the new logistics building extension are finally erected, by-passers are able to look inside the interior of the building. The high-rack shelving system is both a storage area as well as a load-bearing sub-structure for the roof and façade. Thanks to the compact silo construction, several thousand new storage spaces can be set up in the confined area. [JF]



Construction Progress ...

... and another cornerstone is laid



Construction work is not only going on in Nufringen, the Leszno location is also growing: Ensinger Polska is getting a new warehouse (2,800 m²) and a modern office building (800 m²). In September, construction work started in Leszno with a cornerstone laying ceremony. The Polish General Manager, Cezary Michalczyk (front), and the Division Manager for Semi-finished Products, Dr. Thomas Wilhelm, placed a time capsule in the foundation. The tube, which was made of Ensinger plastics, contained a certificate, a local newspaper and a coin. The Polish affiliate is confident that they will be able to move into the new building complex by summer 2012. [JF]

The next module: Energy management system

by Karolin Bradtke, Environmental protection and occupational safety management

Because energy consumption is one of the decisive environmental aspects for an industrial operation, the sustainable use of electricity, heat, gas, oil, compressed air and the resulting emissions are of major significance. The obligation to abide by the principles of environmental protection is firmly rooted in our corporate mission, and is also reflected in Ensinger's environmental policy. The aim is to reduce the use of resources and to continuously improve the efficiency of processes and products.

To allow these requirements to be fully met in future, the management adopted a resolution to introduce an Energy Management System for Ensinger and strive to achieve its certification by the end of 2012. As an addition to the already existing Quality Management System, the introduction of an Energy Management System represents a further step towards the achievement of an Integrated Management System. To bring us closer to this medium-term goal, at the same time systematic principles of Environmental Management and Occupational Health and Safety Management will also be taken into consideration.

The next step will be to develop an Energy Management Organization by the end of 2011. At the same time, an inventory will begin which will be completed in the spring of 2012 with an Environmental Inspection Report. Following on from this, the next focus of our attention will be on aspect analysis, setting out the targets and programmes.



Definition: An Energy Management System is used to systematically measure energy flows and set out the basis for actions to improve energy efficiency. Taking into account the statutory stipulations and other requirements, a functioning energy management system forms the basis for continuous improvement of the energy performance.



The Proof of the Pudding is in the Eating

Information and Safety Days held in Cham

During the Information and Safety Days of the Building Product Manufacturing Group held at the factory in Cham, fire protection activities and practical fire extinguishing exercises were carried out.

Thanks to the kind support of the Kleebauer company from Falkenstein, the team were able to learn the correct handling of fire extinguishers from scratch. Staff were given the opportunity to try out various types of device themselves, so that the division is now well-prepared to handle a real emergency if the need arises.

Bem-vindo à Ensinger, Tervetuloa Ensingerille

by Nicole Swoboda

Multilingual internet addresses provide support to global customers

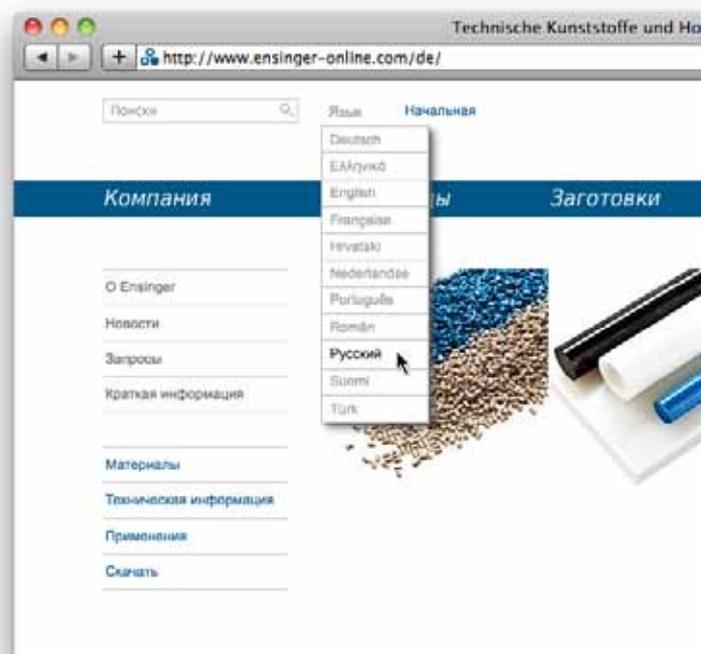
English has a greater geographical significance than all other foreign languages. However, even the most important common language is not always understood in all parts of the world with the same intensity. Despite the global economy, a webpage which is not written in the mother tongue can represent an unconscious language barrier. In order to improve our customer services even more, we have now had the overriding corporate pages and sections of our website – providing divisional information – translated into nine additional foreign languages (www.ensinger-online.com).

The decision for a multilingual website is based primarily on strategic deliberations. “Our homepage is the most important multinational marketing instrument”, said Björn Ühlken, Head of Export Semi-finished Products. “We will be able to reach our contact partners better in the local country language. On the one hand, we will support our local export business and, on the other hand, we will be giving a positive signal to our dealers”. Thus, in this way we have now strengthened the wish to offer the most important websites in Finnish, French, Greek, Croatian, Dutch, Portuguese, Russian, Turkish and Romanian. Under “lämmönkestävien muovien”, “konstrukcijske plastike” or “στάνταρ πλαστικά υλικά”, Ensinger can now be found via the country-specific search machines.

The implementation of this project has not only given us a competitive advantage, but also increased the frequency of contacts to the corporate homepage. Everyday users throughout the world will now find Ensinger in their search for “Produits semi-finis”, “bewerkte onderdelen” or “perfis”.

A special word of thanks goes to all those colleagues who provided valuable support in the last few months by translating, proofreading and giving their advice for the copy needed to complete this project.

Nicole Swoboda has been working for Ensinger in Marketing (Nufringen) since Januar 2011.



TECATOR: Improved sliding and frictional characteristics

Materials for the upper performance range

Ensinger has added to its product spectrum in the range of polyamide-imide semi-finished goods (PAI). In addition to the tried and tested high-temperature plastic TECATOR 5013, an improved material for tribological applications is now also available: The modified type TECATOR 5031 PVX contains graphite and PTFE. The additives give the material excellent abrasion resistance as well as good sliding and friction properties. The lower wear factor can also be maintained in dry running conditions and at extreme sliding speeds.

TECATOR can be used in the cryogenic area and at high temperatures. The continuous working temperature is 250 °C, but this thermoplastic can even be used short-term at 270 °C. The thermal resistance under load is thus even higher than that of PEEK, as is the toughness. The very stiff material TECATOR shows excellent mechanical strength and dimensional stability. High long-term stability, creep resistance and fatigue strength are further advantages of this material.

Thanks to its good chemical resistance, TECATOR is resistant to conventional solvents, lubricants and fuels and can be used in contact with many different acids. In addition, polyamide-imide possesses high resistance against high-energy radiation. The plastic is self-extinguishing according to UL 94 V-0.

Ensinger supplies the yellow-brown natural type TECATOR 5013 and the black slide-modified type TECATOR 5031 PVX in the form of plates and cylindrical rods. Both material types are easy to machine, and, for this reason, they are used preferably in the manufacture of precision

parts, e.g., in automobile construction, aerospace and in electronics / semi-conductor technology. The following branches of industry are further areas of application: mechanical engineering, cryogenics, precision engineering, medical technology and vacuum technology. Switches and plug components, insulating parts, plain bearing bushes and discs, piston rings, valve seats, ball bearings and valve balls or slide rails and rollers can all be fabricated from TECATOR.

The following dimensions will be available from Januar 2012:

TECATOR 5013

Plates: 1 – 40 mm, cylindrical rods: 5 – 100 mm diameter

TECATOR 5031 PVX

Plates: 1 – 40 mm, cylindrical rods: 5 – 60 mm diameter

Technical advice

Markus Edelbauer (m.edelbauer@de.ensinger-online.com)

Markus Porn (m.porn@de.ensinger-online.com)



Insulation part for connectors
TECATOR 5013, suited to
applications with extreme thermal
and mechanical loadings in
electronic high performance units.

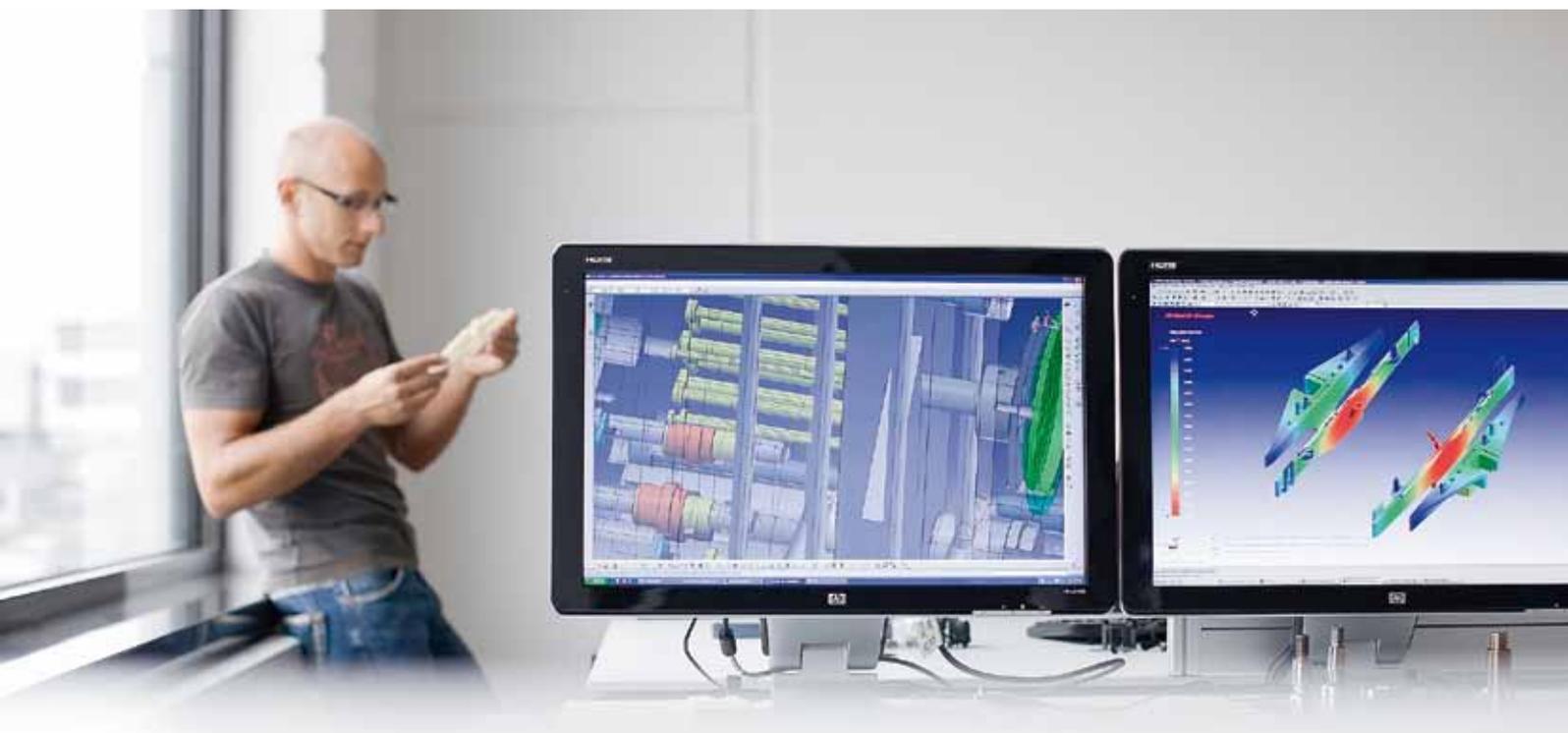


Wilfried Ensinger Prize

Scientists awarded distinctions

The Scientific Research Group for Polymer Technology (WAK), a consortium of 30 university professors, distinguished excellent research papers in the field of polymer technology in November by awarding two Wilfried Ensinger Prizes to Dr.-Ing. Ilja Koch and Dipl.-Ing. Rico Zeiler in Chemnitz. Koch received his doctorate from the Institute

for Lightweight Construction and Plastics at the TU Dresden with the dissertation "Modelling Fatigue Characteristics of Textile-reinforced Plastics". Zeiler wrote his diploma thesis entitled "Formation of Electrical Percolation Networks in Polymer / Carbon nanotube (CNT) Composites" at the University of Bayreuth. [JF]



Precision in 3D

Design and development in the injection moulding factory

Nowadays, the process of developing an injection moulded component begins at the PC, with three-dimensional computer models forming the link to prototype and volume production. In Ensinger's Rottenburg-Ergenzingen location, a nine-strong team under the capable direction of Hermann Krämer is responsible for design and development. The tasks performed by this team of engineers and technicians range from component, material and tool development through to the integration of required operating equipment. Working closely with the tooling department, the specialists work to create a precise, economical solution to address every requirement.

Oliver Marten, Holger Meier and Sven Pflumm concentrate their energies on component development. Starting from the basis of a product brief, they generate three-dimensional models with the aid of the CAD program CATIA V5. The three specialists not only keep a close eye on the form and function of the parts, but also ensure that the design meets the specific material requirements. Individual elements of the design have to be adjusted to the material properties, for example by preventing uneven wall thicknesses which could lead to warping and dimensional stability problems.

When it comes to the selection of materials, the designers benefit from the advice and support of Jürgen Walz, who is in close contact with the Compounding Division in Nufringen. Customers of the Injection Moulding Division are offered a widely varied range of high-temperature and engineering plastics, including highly filled compounds. The selection of materials is determined primarily by the application conditions. Criteria include for instance thermal, mechanical or chemical stress on the component.

Shrinkage and warping

On the basis of the 3D models, the development team is able to calculate the strength properties in accordance with the finite element method (FEM). Another tool which accelerates the process of component and tool design is computer-aided flow simulation. The design of injection moulding tools is the specialist area of Konrad Wiederer and Steffen Lutz. They pay particular attention right from the initial stages of the design process to ensure production-friendly, easy-maintenance configuration of the injection moulding tool in order to minimize set-up times. As a master technician, Lutz brings with him many years of experience in the production of prototype tools, volume production tools and precision fixtures.

Interfaces

Sales, project management, development, quality and production are all closely interlinked in the product engineering process (PEP). In order not to lose sight of quality objectives, the budget and the development schedule, special importance is attached to the early prevention of defects. From receipt of order through customer release to in-house volume handover, the project manager takes responsibility for every aspect of a project. Using project plans and status reports, the PM is in a position to review and proactively prevent any scheduling impact caused by internal non-conformance or problems with suppliers and customers.

The tool itself comprises a number of individual parts, most of which are made of steel. The cavity determines the shape and surface structure of the injection moulded part. After molten plastic is injected into the cavity, its volume reduces as it cools. Shrinkage and warping are frequently not uniform but direction-dependent processes, for instance in the case of fibre-reinforced materials. Today, computer simulations permit shrinkage behaviour to be very accurately calculated in advance.

The injection moulding tools are also manufactured predominantly in Nufringen and Cham. On certain projects, the Development and Design Department also works with external partners. Emil Seckler is in charge of internal or external procurement and the selection of suppliers.

The Design and Development Division Team in Ergenzingen (left to right): Emil Seckler, Simon Prochazka, Holger Meier, Hermann Krämer, Dieter Ohngemach, Steffen Lutz, Oliver Marten and Sven Pflumm. Not on the picture: Jürgen Walz and Konrad Wiederer.



Automation

Rounding off the team are operating equipment designers Dieter Ohngemach and Simon Prochazka. One of their jobs is the further development of handling systems used in the location. Ensuring fully automated production and linking different processes not only help to drive down piece costs, they also reduce the defect quota and the amount of reworking required. Grippers are used in conjunction with linear handling and articulated arm robots for inserting individual parts or for removing components from the injection moulding tool. Other important operating equipment includes cameras for image processing, automatic punches as well as marking and printing systems.

Outlook

While at one time, the design of injection moulded parts was usually carried out on the basis of a drawing, nowadays customers tend increasingly to place orders entailing greater development scope. This involves the team at Ensinger working on component optimization on the basis of a product brief. “Design details can not only impact on quality, but also help to save material and costs”, explains Hermann Krämer. “As we are talking about volume products here, even minor improvements can bring about a considerable leverage effect.” [JF]

Not soloists but a whole orchestra

Interview with Hermann Krämer

Mr Krämer, what distinguishes Ensinger from other injection moulding firms?

Just as it has done in the other divisions, in its injection moulding production Ensinger concentrated right from the start on the processing of engineering and high-performance plastics. Working with our customers from the automotive sector, we have succeeded in gathering specific expertise from across the fields of steering, brake and power train technology. Examples include injection moulded thrust plates for gears and clutches, or low-wear spherical cups used in axle and steering systems. Because we operate our own Compounding Division, we enjoy the benefit of a high vertical depth of production. Instead of being forced to use standard materials from other suppliers, we are able to develop customized solutions working together with the material experts in Nufringen. This allows us to create something totally new and move into applications where plastics have never yet been used.

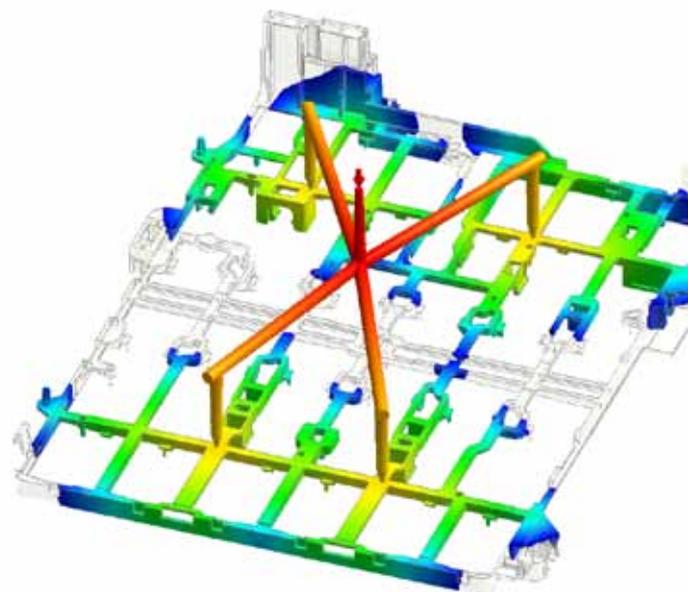
Which markets offer the greatest growth opportunities for the future?

We have now started production of complete assemblies in Ergenzingen. By developing systems which integrate additional functions, we are able to add more value. Examples include stamped bent parts or other hybrid components comprising a plastic component and a metal insert. The increasing trend for electromobility is also likely to increase demand for lightweight gears.

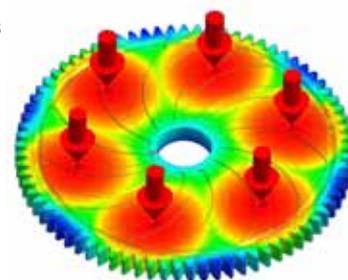
The Development Department employees provide an impressive fund of experience which benefits the whole team.

What other factors would you say are behind the success of your department?

As soon as any one of us working towards solving a technical problem begins to investigate the possibility of a new or untried approach, he puts his idea to the rest of the team. By pooling our efforts in approaching potential new solutions, we are able to boost our overall performance. I generally believe that our personal strengths are only really brought fully to bear by taking this type of joint approach. Although individual excellence is very much encouraged and it is wonderful to have so many highly competent soloists, any great orchestra thrives from its common ambition to deliver an outstanding overall performance by listening to each other. [JF]



Simulation of the injection moulding process permits efficient component and operating equipment design. Finite element calculations demonstrate tensions and their distribution.



Persistence pays off

Hermann Krämer has been Head of Design & Development in the Injection Moulding Division for three and a half years. Having trained as a car mechanic, he entered the plastics industry after going back into higher education. Working initially as a CNC milling and drilling machine operator, he then went on to train in mechanical engineering and studied plastics and rubber technology. Born in the Franken region of Germany, before joining Ensinger Hermann Krämer had held various posts in industry as a production planner and specialist in product and process development.

“Successful personal development depends on not giving up too soon”, says Krämer, now a proud father of two young daughters (2 and 4). He firmly believes that there is a vast untapped potential among the workforce. “No company can afford to leave its best talent undiscovered somewhere way down the ranks.” [JF]



No time for any other business!

Works council meeting held behind closed doors

Working as a temp and working to a more mature age were just two of the controversial subjects during this year's annual meeting of the workers representatives held at an external retreat. The agenda was full to the brim – besides internal discussions there were meetings with the personnel department and the General Management. Here is the works council's report:

In October, the members of the works council met in Gunzenhausen, a small sleepy village on Lake Altmühl, about 40 kilometres from Ansbach. There is not much more to report about Gunzenhausen, as due to the tight time-schedule and a multitude of topics, there was no opportunity to look at the surroundings.

At the start of the retreat meeting, the personnel department took part in the first round of the works council meeting. The discussion and revision of several works agreements were on the agenda. In addition, several new drafts had been set out.

Up to knock-out!

After a long day of meetings, we had thought up something special for the evening. Instead of the traditional bowling, “power struggles” could be fought out on the Wii video game console. General Manager Klaus Ensinger and Dr. Roland Reber, who had joined the group in the meantime, did not pass up the opportunity to “deal a blow” to the works council and to box until there was a knock-out. The first day ended after numerous further rounds, other games, and victories and defeats.

Day two was packed with numbers, data and facts. The report from the General Management concerning the results of the company group, the views of the individual divisions and the explanations of the business goals left all our heads spinning. After a short break, the entrée in the discussion round with the two general managers was somewhat easier.

Controversial issues

This turned out to be nothing like a cosy round of “cuddling” with one another.... Some topics led to heated discussions, above all the question: What is the stand of the general management and the personnel department concerning the employment of temps? Should there be a works agreement for this case? What should it include? What would new provisions mean for the divisions, who employ temporary workers at the moment?

Apprentice Meeting 2011

by Lukas Kagermeier and Christoph Karl

After last year's excursion, which was to the International K-Trade Fair in Dusseldorf, all trainees met this time in Cham. The training workshop met the guests from Nufringen at the company site and made them feel very welcome.

Norbert Wegerer, Director of Quality Assurance in the Machining Division, gave a presentation of the works history after lunch. Then the Training Director of the hosts, Heinz Lehmann, presented a brazier, which had been made by the training workshop in Nufringen, and is part of the Christmas fundraiser this year.

Afterwards, a visit to the departments and divisions at the site was on the agenda: Technical machining, profile production, assembly, technical centre, polyamide casting, training workshop and logistics. Divided into groups, the Cham trainees introduced the respective areas to their colleagues from Nufringen. The day finished for the trainees in the Cham pub and restaurant „d'Wasserwirtschaft“ with a cosy get-together and enjoyable delicacies, such as roast pork and Bavarian cream.

The next morning a visit was made to the company Zollner AG Zandt, one of the 15 largest EMS (Electronic Manufacturing Services) providers worldwide. A brief look at the history of the company was given to start with and a presentation of the different departments, before the Zandt site was explored in greater detail. After a final lunch at the Cham factory, the group from Nufringen said goodbye and drove back home.

Lukas Kagermeier is in the 3rd year of his training as a process mechanic, Christoph Karl is a prospective machinist. Both work at the Cham site.

← **The works council at Ensinger GmbH (from left to right):** Margret Fuchs, Thomas Gruber, Markus Menacher, Jürgen Fischer, Jasmin Arndt, Steffen Mai, Thomas Schindler, Werner Bachl (Deputy Chairman), Erwin Schmidhuber, Christian Denk, Franz Schönberger and Ioannis Argiriadis (Chairman). Ramona Jamnizky and Xaver Wagner could not take part in the retreat meeting. Franz Schönberger, who represented employees at Ensinger in the works council for many years (where he was also deputy works council chairman for many years), retired at the end of November.

Likewise, the discussion about the introduction of a health management scheme led to an intense dispute. The possibilities of a workplace which is age appropriate, for example, and the organisation of working times as well as rulings about part-time work for older employees and retirement were discussed. At the end of the day, all were in agreement that the committee was able to collect a lot of ideas and suggestions which will contribute to the further development of the company.

The organisation of the third and last day belonged to the works council alone. The participants reviewed the previous sessions again and included the new topics and information into the agenda.

Furthermore, we used the retreat meeting to define the objectives for the works council in the coming year. Further training sessions would help contribute to even better and more effective activities in the future.

The works council would like to thank the General Management and the Personnel Department again for the time they took, as well as for the stimulating and constructive collaboration.

From Shift Manager to Team Leader

New management organisation for the Cham profile extrusion plant

Continuously increasing manning levels and additional responsibilities have necessitated a reorganisation of the profile extrusion plant in Cham. The most significant improvement consists of a third management level. After a very thorough information and assessment process was carried out, future team leaders and technical advisers were prepared for their new jobs. As managers with personnel responsibility, they will now lead the shift groups in the insulbar® und Thermix® product sectors.

To ensure there were no clashes with former colleagues, each candidate was asked to select a new shift group. This not only sparked off little enthusiasm, but also a number of questions and concerns. Helpful colleagues from the central personnel area, amongst others, Claudia Müller from Nufringen, provided valuable assistance with their advice in this process.

The managers were trained from February to May by the external coach, Thomas Siemon. The main emphasis of the two-day modules covered the core subjects of personnel management:

- Management and communications
- Steering groups and teams
- Conducting staff appraisals
- Dealing with difficult situations

Participants together with their coach Thomas Siemon (front right) seen handing out certificates.

The initial scepticism gave way to a lively “learning by trial and error” atmosphere, in which practical solutions for difficult challenges were seriously found in a true Upper Palatinate manner – but also with a lot of humour! The ease of “learning by doing” was a lot of fun for all participants. There were many suggestions to be tried out – and even some family members were used as guinea pigs!

The practical test took place in April. The new team leaders took up their responsibilities with their groups, shift plans were adapted, and a new shift system was introduced in the control centre.

All involved participated with much commitment and success. The qualification activities for the team leaders and the technical advisers were completed on 11th July at a cosy evening session with a meal, during which certificates were handed out to all participants.

Opinions on the workshop

“Consistently positive opinions – it is possible to work openly together with the team leaders. The squad now seems to be bonded together very well. It only remains for us to now deepen the valuable insights from the workshops and to get the “guys” really involved in this.”

Stefan Griesbeck and Christian Schmeidl



Two countries, two divisions, one team

by Richard Šulko and Petr Sobas

Four years after the “Velvet Revolution” brought about a complete transformation of the political system, two new independent states – the Czech Republic and Slovakia – were born. During this period of change, Ensinger took the decision to extend its sales of stock shapes and machined parts made from engineering plastics to Central and Eastern Europe.

Because this type of high-quality material had not been previously manufactured in the former Czechoslovakia, the company Ensinger s.r.o. formed in 1993 turned its attention right from the start to applications developed in co-operation with designers and technicians.

From Pilsen to Dobřany

The starting point for the company's first steps into the Czech market was the economic and cultural centre of Pilsen. Using rented premises, a small warehouse was set up for stock shapes. The start-up equipment could be described as spartan: Machining was performed using a milling machine, a standard lathe and a cam-controlled lathe. The young company flourished and in the mid nineties was able to move into a new 1,500 sq.m. hall in Dobřany, some eight kilometres from Pilsen. Now equipped with suitable storage facilities and enough space for additional machining centres, the company's growth took off in earnest. Today, the total workforce employed by the Stock Shapes and Machined Parts divisions numbers a total of 47. Production, corporate planning and sales are supported by modern information systems (ERP, MRP and CRM software). Day to day business at E.s.r.o. is characterized by personal communication with customers which includes not just an in-depth advisory service but much more besides.



Sales branch in Trnava

Boosted by rising order volumes in both its business divisions, Ensinger took the decision in 2010 to set up a sales branch in Slovakia. Its location in Trnava is some 55 km distant from the capital Bratislava. With a warehouse of around 200 square metres and an attached office complex, Ensinger is able to offer its Slovakian customers a broad range of stock articles alongside additional services such as stock shape cutting.

As the depth of its experience continues to expand and market demand increases, the complexity of the plastic parts produced by the machining specialists in Dobřany is growing all the time. The division, which is headed up by Fred Nass from the company's Cham location, invests regularly in machining centres and measuring devices for the Quality Department.

Enginger's main customers are classical mechanical and plant engineering firms, alongside small and medium-sized companies from fields such as medical technology, the food industry, the chemical and pharmaceutical industry and textile machine engineering.

While the service sector now accounts for the lion's share of the gross domestic product also in the Czech Republic and in Slovakia, industry still continues to form the backbone of the export-oriented economy. Just how heavily the Central European states depend on demand from Germany became evident in the August of 2008 when sales plummeted before the economic crisis reached Western Europe. A very large number of Czech and Slovakian companies are foreign owned and function as an extended workbench. The economic downturn saw many production orders returning to home soil.

The team weathered this critical phase with distinction. By making the type of personal sacrifices so often seen in family firms, the management and workforce pulled together to ensure that Ensinger s.r.o. actually ended the recession year 2009 in the black. There was plenty of team spirit in evidence too when the team made up of production and sales staff from both divisions won this year's "Enginger Cup".

Richard Šulko is authorized signatory at Ensinger s.r.o. and heads up the Stock Shapes Sales Department. Petr Sobas is a member of the Finished Parts Division in-house sales team.

Complete revamp of the Thermix® website

Fresh, informative, clearly arranged – this was the remit underlying the revised website for Thermix® TX.N® spacers and Thermix® muntin bars.

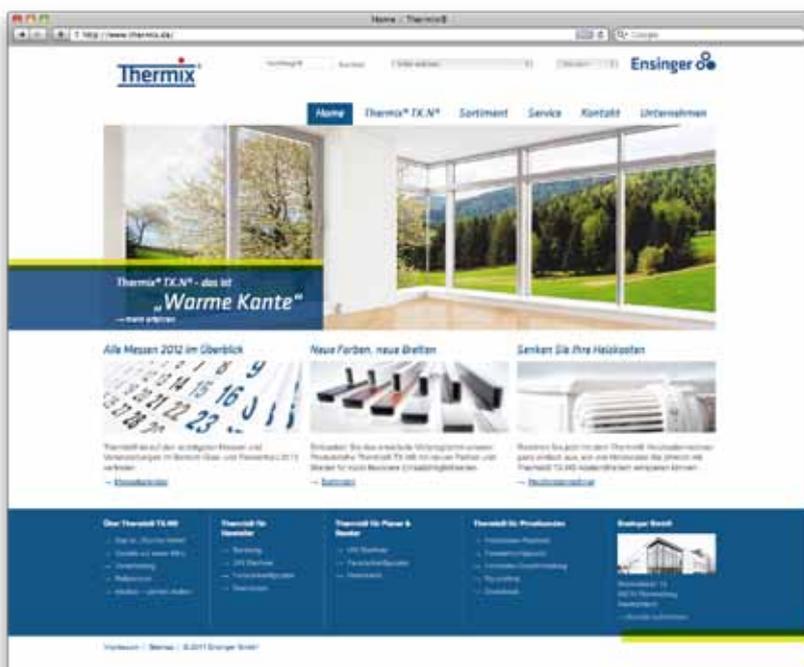
What has emerged is a site which not only packs a highly effective visual punch, but whose content above all does justice to the increasingly widespread popularity of the “warm edge” spacers. Alongside specific information on processing the Thermix® profiles and the technology behind them, the website also focuses heavily on portraying customer benefits. The site is designed to appeal equally to insulating glass manufacturers, planners, architects and private customers.

The technical highlights of the new site include a heating cost calculator with which users can estimate their annual savings with Thermix® TX.N® spacers compared to aluminium spacers in new windows. Another planning tool is the window configurator which can be used to visualize the combination of different window colours with Thermix® TX.N® spacers and Thermix® muntin bars. The website will be available in a number of languages right from its launch. Others will be added at a later date. [Wey]

www.thermix.de

Lively trade fair autumn season

Ensinger was busy in October and November with presentations of its insulbar® and Thermix® product lines at no fewer than four trade fairs. At the MADE in Milan, probably Italy’s most important construction, architecture and design fair, the latest solutions for aluminium windows with insulbar® insulating profiles were showcased. At the stand, run jointly with Ensinger Italia, Ensinger also ventured to offer visitors a glance of the kind of window they might expect to encounter in 2020, under the banner “Futuro presente”. Almost concurrently, the “Greenbuild” expo and conference was being held in Toronto. The Greenbuild sets out approaches and solutions from wide-ranging different segments to the issue of energy saving, renewable energy sources and energy-efficient construction. Our subsidiary Ensinger Inc. was present at the show with versatile insulbar® solutions for the North American market. The full range of Thermix® TX.N® spacers and Thermix® muntin bars was on show at the “Vitrum” glass trade fair in Milan and also at the renowned construction trade fair “BATIMAT” in Paris. [Wey]



Almost like metal: TECACOMP CSM

Manufacture of electrical conductor tracks now possible by injection moulding

Plastics that are required to be electrically conductive are usually treated with a soot or carbon fibre filler. Although the electrical conductivity of this type of hybrid material is limited, it is sufficient for the selective dissipation of current, for example during the production of semi-conductors. Recently, Ensinger introduced a thermoplastic compound material to its programme which is capable of taking electrical conduction to a whole new dimension by combining copper fibres and a metal with a low melting point. The new material is superior to conventional conductive plastic compounds with steel or carbon fibres by a factor of 100 – 1,000.

During compounding, the short copper fibres and the metal alloy are worked into a thermoplastic polymer such as PA6. The alloy acts like a solder to improve the contact points between the copper fibres, so forming a metal network in what is otherwise an insulating polymer matrix. As a result, the electrical characteristics are substantially improved in comparison to pure fibre-filled compounds. As the conductivity is raised to levels as high as that of steel, Ensinger has designated the material TECACOMP® CSM (Conductivity similar to metal).

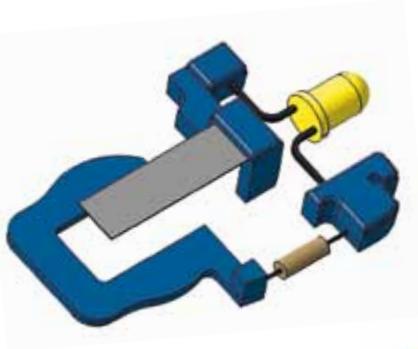
Electronic components integrated

Due to its high level of thermal stability, the material is suitable for the direct manufacture of electrical conductor tracks using the economical injection moulding process. Alongside complex conductor structures, other electronic components such as sensors can also be integrated. The integration of electromagnetic shielding is also conceivable, and this hybrid material could also be used to help develop new solutions for selective heat dissipation in electronic devices.

Application potential highlighted by a pocket torch

An LED pocket torch produced by Ensinger offers a simple way to demonstrate the technology and the application potential of the new highly conductive material. The upper and lower shell of the “demonstrator” torch were made of transparent TECANAT (in the Ensinger colours of yellow and blue). The lower shell contains a battery and the conductor track. For its manufacture, an LED and an electrical resistor were moulded in place using conductive TECACOMP CSM – in a single work step.

The demonstration torch is the culmination of a project spanning across different locations and company divisions. The material is developed and manufactured by the Compounds / Raw Materials Division, while development of the assembly, production using the injection moulding technique and project management are based in Ergenzingen. [JF]



The inner life of the LED torch:
The injection moulded conductor track is made of the hybrid material TECACOMP CSM.

