

impulse

Issue 2/2018

Employee and business partner magazine
ensingerplastics.com



25 Years of Thermix

Warm edge for climate protection

Injection moulding plant 9
Open day

**Lightweight construction
in aeroplanes** 12
Serial composite components

Energy management 14
The route to long-term savings



Could we have a bit less?

You've probably ordered a coffee at Starbucks at some point. Very possibly you didn't use all of the options: skimmed or whole milk? Lactose-free? Extra hot? Double or triple espresso? Topped with whipped cream? Initially, the choices will put a smile on your face. But soon you become overwhelmed, and enjoying a cup of coffee turns into a stressful activity. It's the same at the Indian restaurant, where they celebrate freedom of choice by having 25 different curries on the menu. Or in the pub: should we have a "stout", a "porter", or maybe a "pale ale" after all? Hmm, actually we just wanted a glass of beer.

Why are we sometimes under more pressure from freedom than from constraints? In my view it is down to human nature, which is lagging behind the "more and more, faster and faster" mentality of our time. Just because something is technically possible doesn't mean it makes sense to do it.

At Ensinger, as part of a management seminar last summer, we looked at the range of projects underway. The consensus was that we were too ambitious and not disciplined enough in implementing things. Projects take too long, or even get forgotten about completely. Day-to-day business is not dealt with, because projects take up too much of the time of those involved. Naturally, this causes harm elsewhere. What can we do? Is applying more pressure, driving people to achieve more, a strategy for success?

We don't think so. Firstly, we assume that our employees want to perform well. They

know that we can only be successful together. Secondly, requirements are increasing in some areas. Anyone dealing with all the regulations which a company like Ensinger has to implement will agree with me.

However, I also think that lots of things can be done better. We may not have an innate ability to deal with "more and more, faster and faster", but we can learn some principles. We should not embark on everything straight away. Only well-prepared projects have a chance of achieving their goal successfully. We should not do everything simultaneously. Multitasking is not suitable for solving complex problems. And ultimately, even during stressful periods, we should always remain honest and address the subject of delays. Reliability counts. If you weigh up your priorities properly, work towards your goals in a focused manner and also have the courage to concentrate on the essentials and to say no, you will be successful with the project.

For the New Year, I am wishing you less stress, fewer appointments, and less screen time. Instead, may you get lots of pleasure from things – in their natural simplicity – which we used to enjoy in the past

Yours,

Roland Reber

In the 2018 finale

Success in the industry competition "Tool shop of the year"

For fifteen years now, the machine tool laboratory (WZL) of the RWTH Aachen and the Fraunhofer Institute for Production Technology (IPT) has been nominating the best tool and mould making companies. This year, Ensinger – represented by the tool shop in Cham – has made it to the top 3 for the first time. The team, led by Christian Lehner, reached the final in the category "In-house toolmaker with under 50 employees" with Harting Applied Technologies emerging victorious.

This year more than 300 companies took part in the "Toolmaker of the year" competition, 14 of them were audited by a team of experts from the two institutes. The judging panel assessed both technological performance and organisational aspects, such as order processing.

The main activity of the tool shop in the Cham branch factory is the manufacture of serial and prototype tools for extruded insulating profiles. The team also produces equipment and injection-moulding tools. Their particular core competencies are wire cutting and the manufacture of complex melt flow systems.

Reduced processing times

Thanks to full data consistency, the award-winning tool shop has succeeded in reducing processing times year after year. Nowadays, throughput of the tools through the department is like a production line. Semi-automated CAM programming and milling simulations were some of the standard methods. Further success factors are the state-of-the-art machinery and continuous process improvements.

The department is closely connected to the tool shop in Nufringen, where tools for the



The tool shop team at the Cham site.



Award ceremony in the coronation room of the Aachen town hall: Hermann Krämer (left, Head of the Tool shop Service Centre) and Christian Lehner (3rd from left, Head of the Cham Tool shop) receive the certificate on behalf of Ensinger.

extrusion of stock shapes and profiles are produced. Thus, there is a constant sharing of information and capacity between the two sites.

Questions, suggestions, different opinions? Write to us at impulse@ensingerplastics.com

Imprint

Employee and business partner magazine of Ensinger GmbH

Ensinger GmbH
Rudolf-Diesel-Straße 8
71154 Nufringen
Tel. +49 7032 819 0
Fax +49 7032 819 100
ensingerplastics.com

Publisher:
Klaus Ensinger
Dr. Roland Reber

Editor:
Jörg Franke
Layout / Production:
Corinna Kohler

Cover photo:
Christian Schlüter, Essen
Printing:
Druckerei Maier,
Rottenburg

A spacer makes history

In 1993, the world's first co-extruded spacer profile for the Warm Edge of insulating glazing was launched

■ A material mix of plastic co-extruded with metal gave the new thermally optimised insulating glass spacer its name: Thermix. The company of the same name was founded by Georg Greubel, a resourceful glass expert from Altshausen near Ravensburg, in 1993. And as early as 1994, series production was commenced by its development partner Ensinger, which ultimately acquired full control of Thermix in 1997.

“Switching as easy as possible”

“We have designed the product to make switching to it as easy as possible for insulating glass manufacturers”, explains

Heinz Raunest, who in his capacity as an application engineer at Ensinger has been involved with Thermix since the very first metre was produced. “The profile rod was capable of being processed on existing lines without major investment or training of the employees.”

But Thermix was somewhat ahead of its time. In the 1990s, the standardised energy assessment of windows and façades did not even take account of the thermal bridge in the transition zone from glass to frame. Consequently, it was difficult to convey to many customers the added value offered by a Warm Edge. However, the architects from the growing passive house move-

ment quickly recognised the benefits of Thermix.

Development milestones

In November 2000, DIN EN ISO 10077 entered into force. The Psi value as a linear thermal transmission coefficient for the thermal bridge at the glass edge was now incorporated alongside the area-weighted values of glazing (U_g) and frame (U_f) into the calculation of the U value of windows (U_w). Thermally improved spacers got a significant boost as a result, and this was further reinforced as legislation imposed ever greater requirements on heat insulation.

In parallel to developing the market, Ensinger has also continued to develop Thermix over the years, expanding the product range in line with the growing requirements.

No end in sight

Today, the market offers a number of versions of spacers. Two thirds of all windows produced in Germany today have thermally optimised spacers. Regardless of whether a room is being heated or cooled, there is barely a component that pays off more quickly. This goes for the wallet, living comfort and the environment.”

Read the entire history, with additional facts about the development of the edge bond of insulating glass, on our homepage: <https://www.thermixspacer.com>

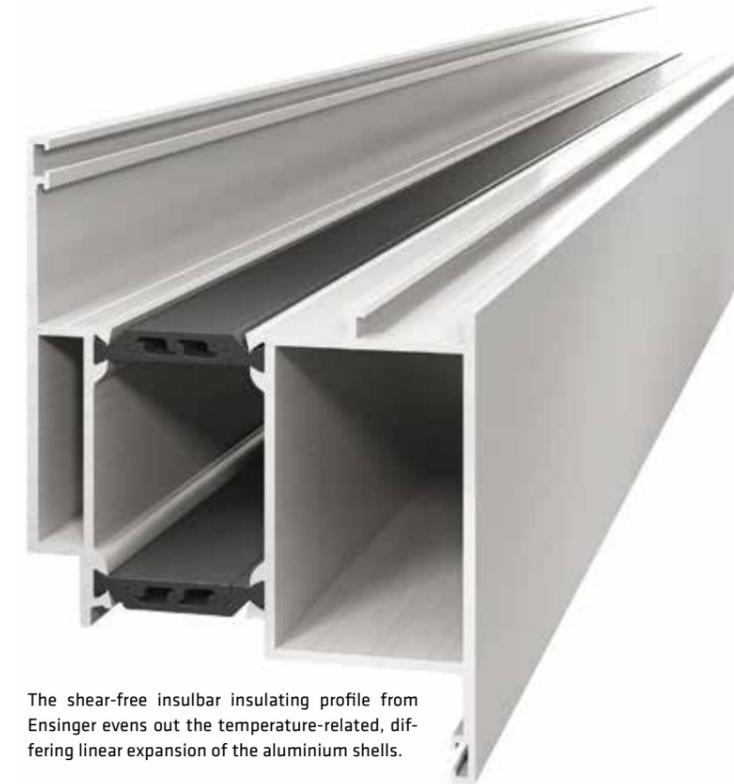
Shear-free insulating profiles for metal doors

■ Usually it's the weather's fault when a metal door sticks. If the sun shines, its outer side expands. If it's cold outside, however, the door bulges inwards. A shear-free insulbar insulating profile from Ensinger (patent pending) minimises this deformation.

Ensinger has developed a solution for reducing the impact of the bi-temperature: The new insulating profile consists of two intermeshing parts which, in the event of differing linear expansion between the aluminium shells, move against each other.

“Our new bar has allowed us to create an adaptable insulation zone between the outer and inner shell of a metal door”, explains Matthias Rink, Sales Director for insulbar. “The intermeshing profile sections even out the temperature-related linear expansion. At the same time, the design provides high transverse tensile strength.” The shear-free insulbar profile can be rolled up and laminated like a conventional insulating bar.

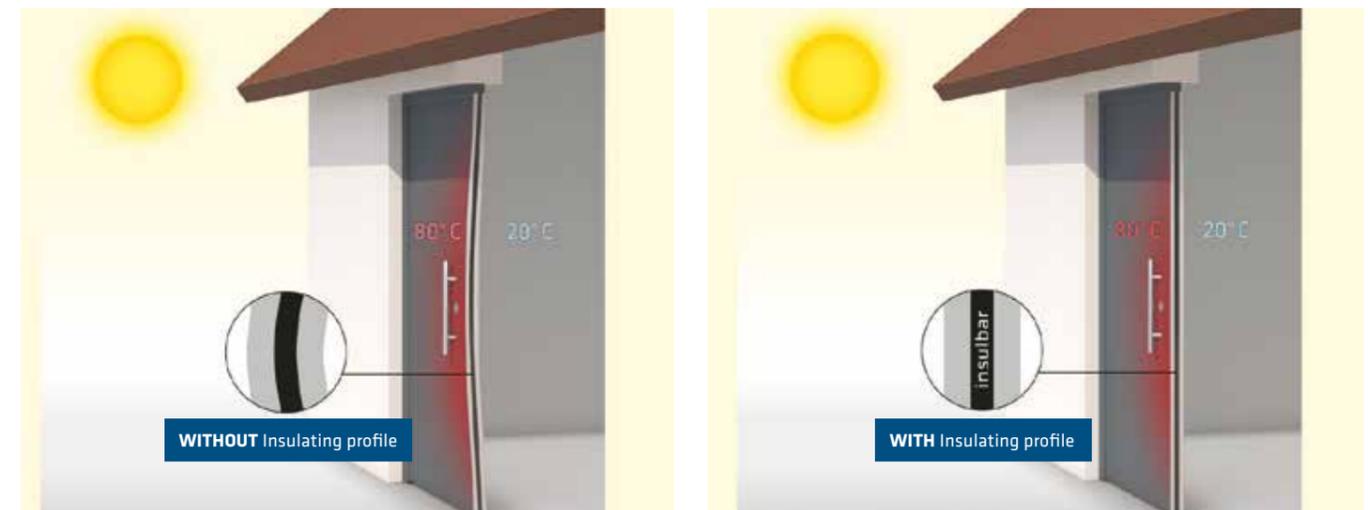
For more information: insulbar.en



The shear-free insulbar insulating profile from Ensinger evens out the temperature-related, differing linear expansion of the aluminium shells.



From 1993 to the present day: milestones in Thermix product development.



Large temperature differences at an aluminium assembly with normal insulating profile cause the door to become deformed. With shear-free insulbar insulating profile the flexible insulation zone evens out the differing linear expansion between the inner and outer shells effectively.

A warm welcome ...

Employees who have joined Ensinger:

Nufringen

Compounds

Tim Neuberg
Johannes Wörner

Finance & Controlling

Fabian Brechbühl
Thorsten Schill

HR

Vanessa Nejedly

Industrial Profiles & Tubes

Eduard Klein

IT

Thomas Fischer
Nadine Hermann

Shapes

Nerzad Avdija
Ethem Corak
Patricia Dürr
Solomon Chigozie Ezenne
Benjamin Hauth
Josip Kolobaric
Matija Mandaric
Artur Rodionov
Stephan Senger

Technical Management

Lutz-Matthias Paarsch
Sebastian Seeger

Apprenticeship

IT Specialist

Tim Hellstern

Apprenticeship Specialist for Warehouse Logistics

David Bork

Apprenticeship Industrial management assistant

Alexandru Tarus

Apprenticeship Mechatronics technician

Enrico Cardaci
Felix Lichtl

Apprenticeship Process mechanics

Valentin Feige
Vadim Helmelt
Benjamin Preuß
Philipp Unger
Sebastian Wizemann

Apprenticeship Tooling mechanics

Almir Salihi
Alexander Sterns
Paul Theurer

Bachelor programme Mechanical engineering / Plastics technology:

Kevin Eipper

Bachelor of Science Business Informatics / Application Management

Jan-Patrick Strecker

Bachelor programme Industrial Engineering and Management

Joy Stockert

Ergenzingen

Injection Moulding

Silvia Bögle
Fabienne Pfizenmayer
Marco Rotter
Markus Stoll
Viktor Stroscherer
Louis Weimer
Christopher Wengert

Cham

HR

Heiner Hackl

insulbar

Christian Graf
Jaroslav Jeslinek
Ludwig Michael Klingl
Dr. Tobias Rudolph
Helmut Streck
Jiri Voracek
Fabian Weinhold

Technical Management

Bernhard Schneider

Thermix

Adrianna Buczynski
Jasmin Wolf

Tool Making

Andreas Schmid

Machining

Fabian Schmittner
Edith Schneider
Günter Schwank
Reinhold Wendl

Apprenticeship Process mechanics

Marcel Fischer
Julian Göttlinger
Robin Gruber
Uli Kagermeier
Nico Meier
Andreas Werner

Apprenticeship Tooling mechanics

Patrick Breu

Apprenticeship Machining mechanics

Andreas Höcherl
Maximilian Hruschka
Alexander Ley
Marius Wache
Alexander Zollner

Anröchte

Shapes

Elisa Rieke

Apprentice School in the UK

Machined Parts Division educates specialists - by Elin Jones, Senior Marketing Executive

The engineering sector in the UK is in urgent need of skilled engineers. Major companies have seen a large talent gap across key sectors, which has been caused by a continuing decline in government incentives for apprenticeship schemes.

Ensinger has responded to this issue head on by investing £150,000 in an internal apprentice school. Ensinger are developing state of the art machining schools at Ensinger Precision Engineering and Trig Engineering; their two machining facilities in the UK.

The school prepares and develops young engineers for work in the engineering sector. In conjunction with Newport and District Training Association and Bridgwater and Taunton College, apprentices are able to acquire work based training, whilst securing the qualifications they need to progress in the industry. The program is split into modules for each year group. The first year focuses on introducing apprentices to the foundations of machining and developing their manual engineering skills in milling and turning.

The second year introduces the apprentices to modern machining, studying automated CNC methods and working on a range of multi axis CNC machinery.



Gino Abramo (Apprentice Trainer, in the centre of the picture), ensures the apprentices get the best out of their training at the new machining school.

Excellent educational and study achievements

Wilfried Ensinger Prizes awarded in Cham und Nufringen



Photo: Melanie Schmid, Chammer Zeitung

At the Cham branch, Process mechanics Jaqueline Brandl (2nd from left), Josef Höcherl (3rd from right) and Matthias Weinfurter (4th from left) and Machining mechanic Stefan Bauer (left) have successfully completed their apprenticeships. In recognition of their excellent grades, Josef Höcherl and Matthias Weinfurter were awarded the Wilfried Ensinger Prize. The certificates handed over by Andreas Alsasser (3rd from left, Head of Technical Management), Michael Jokisch (4th from right, former head of the Apprenticeship workshop), Werner Bachl (2nd from right, Chairman of the Works Council) and Jessica Braun (HR, Trainer).



In Nufringen, Fabienne Pfizenmayer (2nd from left, B.Eng Industrial Engineering), Johannes Wörner (3rd from left, B.Eng Mechanical Engineering), Tim Neuberg (middle, B.Eng Industrial Engineering) and Nils Böckle (3rd from right, Process mechanic) were awarded the Wilfried Ensinger Prize for their academic and apprenticeship achievements. Klaus Ensinger (left, Managing Director) as well as Theresa Wetzel (2nd from right) and Edith Holzberger (right) from the Wilfried and Martha Foundation Board share their happiness with the winners.

King for a day

Cycle race around the Attersee – register now for 2019

■ Ride your racing bike around the Attersee – on a road closed to motor vehicles. This opportunity only arises once a year, at the individual and team time trial “King of the lake”. Just like with the big running marathons, you meet all sorts here, from the purely hobby cyclist to the professional.

The race is organised by the cycling club Atterbiker, of which Michael Weinzinger is also an active member. He works for Ensinger in the Sales department, at the nearby site of Seewalchen. This year was the first time that two employees from Ensinger Germany registered for the race – in the form of Stefan Bur and Benjamin van Rijssen. In the spring, the two cycling enthusiasts stepped up their training in order to conquer the 47.2 km-long, picturesque route in a 4-man team time trial. As the hunt among colleagues for team partners number 3 and 4 proved increasingly difficult, the two sales employees from the Compounds division decided to accept the challenge as individual starters. During the practice run after a sales meeting in Seewalchen, they covered the distance in just under one and a half hours. On 15th September, the day had come, at least for Stefan Bur. He reached the finish line in 1 hour and 13 minutes. There, he found a disappointed colleague: owing to a technical defect, Benjamin van Rijssen was not able to start. The rechargeable battery for the gears had inexplicably drained overnight and neither a bicycle shop nor a professional team were able to provide a replacement battery. Though, he is certain that he will be taking part in 2019!



Benjamin van Rijssen (left) and Stefan Bur (right) by the Attersee.

Anyone who would like to join in, whether in a team or as an individual rider, should ideally email Stefan Bur or Benjamin van Rijssen by the end of February.

Register now for 2019

The “King of the lake” 2019 is taking place on 21st September. Registration is open from March. Please note: Based on experience the 1,200 starting places are very popular and are allocated rapidly. For more information, go to: www.kotl.at

Open day at the injection moulding plant

■ The Ergenzingen industrial exhibition at the end of September was a good opportunity for the injection moulding plant to introduce itself to a wide public. On the last Sunday in late summer, several members of the public from the region flocked to the industrial park on the north-eastern edge of the district – part of Rottenburg – in order to visit the production and logistics companies based there. At Ensinger, ex-

perts explained the injection-moulding tools, the manufacturing process, the handling facilities and the manufactured precision parts. To make the technical background information come to life, a cross-site organisational team had prepared several posters, showcases, models and practical demonstrations. The Human Resources service centre from Nufringen was also on the spot

in Rottenburg-Ergenzingen to explain the training opportunities and Bachelor programmes on offer and to generate interest in Ensinger among career entrants or career changers. Just like the HR team, the technicians and engineers also had to answer lots of questions – a total of just under 2,000 visitors were recorded by Ensinger.



Annual outing of retired Ensinger staff



■ Nearly 40 former Ensinger employees took part in the senior citizens’ outing at the end of September. The first calling point was Schömberg in the Zollernalb district. At the Schlichem reservoir, the group were able to visit the oldest dam in Baden-Württemberg and a model village.

The next destination was the “Welt der Kristalle” in Dietingen near Rottweil. Alongside numerous giant crystals weighing up to 3 tonnes and minerals and fossils, visitors here can marvel at the world’s biggest amethyst geode, a volcanic cavity which is over 4 m in height and 100 million years old. As well as petrified dinosaur skeletons, in the museum which opened just a few years ago it is also possible to see fossils which in some cases were found in the local area around Dietingen.



The promotional gifts in the Ensinger colours – blue plastic shovels and yellow frisbees – went down well chiefly with the young visitors.

SAP: Summary and outlook

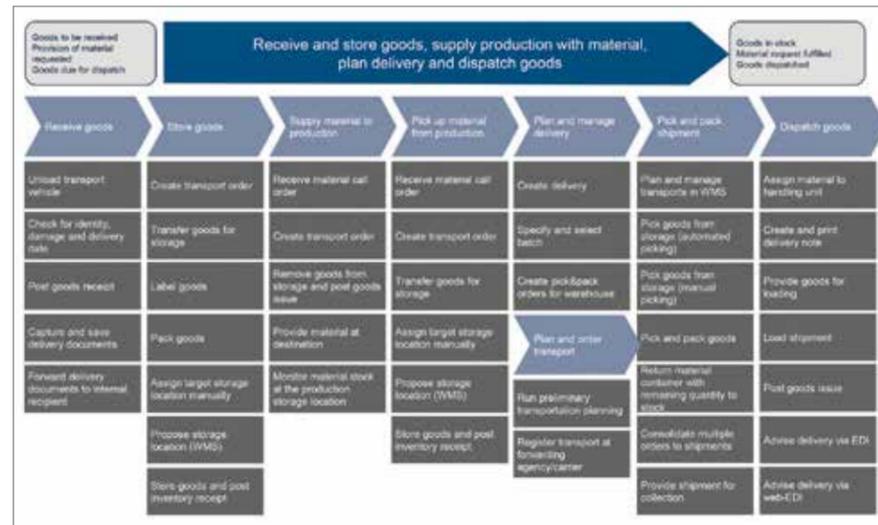
Project TECAspeed completed – by Jochen Genterczewsky, ERP Project Manager

Three and a half years have passed since the official kick-off of the SAP launch project TECAspeed. Ensinger has taken the big step towards a standardised ERP system and mastered it successfully. Through the SAP system, “Ensinger ONE Platform”, the foundations were laid for the internationalisation of the IT landscape and the digitalisation of production.

There was a huge input by all those involved in the project, primarily the key users, external advisers and IT staff. Thanks to the professional leadership of the project and the very dedicated work by all divisions, service centres and by former Divisional Director Dr. Erwin Schuster, it was possible to launch the project “in time” on 1 April 2017.

Equally important is the contribution of all employees who work on a daily basis with the ERP software at Ensinger and implement the optimisations together with their key users. Ensinger purposely chose a long optimisation phase of 18 months so that the processes, master data and functions could be incorporated as efficiently as possible.

This optimisation phase was completed on 31st October. This date also marks the end of the TECAspeed project and a weight off the project team’s shoulders.



SAP process modules using logistics as an example. Standard processes create transparency and increase added value

What is the next step?

Though, of course, the end of the project does not mean that there aren't going to be further adjustments. Quite the opposite. The key users and the IT team are still anxious to support the internal workflows, as well as the increasing customer requirements with the aid of optimum IT systems and permanent process improvements. Looking at the optimisations over the next few months, we envisage the introduction of a cross-division quality management module in SAP and EDI connection for important customers. These are just two

examples that contribute to error reduction and customer retention – resulting in company success.

The whole project team would like to thank all colleagues for the constructive cooperation, which was not always straightforward. IT, as well as the key user team are looking forward to the next few years. We want to continue to develop process-orientated IT solutions so that Ensinger remains an innovative and reliable partner for our customers and suppliers.

New website and brochure

The homepage of the Wilfried and Martha Ensinger Foundation has been completely overhauled and has a new address: ensinger-stiftung.de. Visitors are now taken directly from the old domain (wilfried-ensinger-stiftung.de) via automatic redirection to the new foundation website. Alongside the basic information about the foundation, those interested can find numerous short reports and images on the websites regarding the social, scientific-technical and cultural projects.

The Wilfried and Martha Ensinger Foundation brochure has also been reissued this year, also in English for the first time. In the download area it is possible to download versions in both languages.



Christmas campaign



Merry Christmas ❄️ Frohe Weihnachten



As in the previous two years, in 2018 Ensinger is once again supporting a project by the Wilfried and Martha Ensinger Foundation. The interdenominational Nuestra Señora del Pilar school in Jerusalem sponsored by the Foundation is attended by girls from poor families. The donations will be used to finance the upkeep of buildings and purchase teaching materials. You can find further information on the project at: ensinger-stiftung.de/en/international-aid-projects

Outstanding polymer research

Wilfried Ensinger prizes for dissertation and Master's thesis

Dr. Muhammad Tahir and Martina A. Kowalczyk were honoured with the Wilfried Ensinger Prize in Bayreuth for outstanding academic work. The award ceremony took place as part of a Symposium of the Scientific Alliance of University Professors of Plastics Technology (WAK).

Tahir completed his doctorate at the Leibniz Institute for Polymer Research Dresden e.V. and at the TU Dresden. The dissertation introduces an efficient route to high-performance elastomer / PU blends for various industrial applications. Martina A. Kowalczyk's Master's thesis – completed at the Institute of Plastics Technology, University of Stuttgart – deals with dimensional stability in extrusion.



At the award ceremony (from left to right): Prof. Gert Heinrich (PhD supervisor) Dr. Muhammad Tahir, Klaus Ensinger, Martina A. Kowalczyk and Prof. Christian Bonten (Director of the Institute of Plastics Technology at the University of Stuttgart).

>>> Brazil: New postal address

The address of our site in Brazil has changed. The São Leopoldo site has not moved, the change is postal system-related. Here is the new address:

Ensinger Indústria de Plásticos Técnicos Ltda.
Rua Christopher Levalley, 3185, Jardim América
93.037-730 São Leopoldo-RS
Brazil

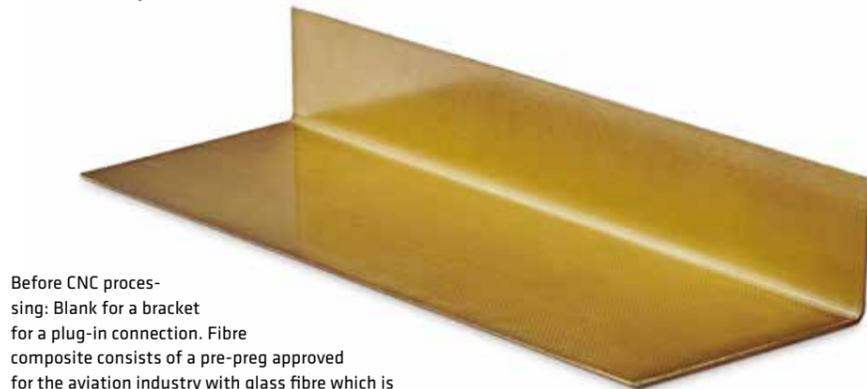
Lightweight construction in aeroplane interiors

Bucher and Ensinger develop composite-based components

Lightweight and high-strength materials have become indispensable for the aviation industry. Thermoplastic composites, in particular, offer companies kitting out aeroplanes significant weight reduction without requiring them to make compromises in terms of mechanical properties. A project by Ensinger and Bucher Leichtbau shows that making the switch to fibre-reinforced composites can provide additional technical advantages.

Bucher Leichtbau AG, headquartered in Fällanden (Switzerland), is a specialist for aircraft interiors and automotive equipment. Among other things, the aviation division of the corporate group develops and produces galleys and cabinets for passenger aircraft. A full module of this type can accommodate a load corresponding to eight times its own weight and has to be able to withstand accelerations that are at least nine times that of gravitational acceleration.

The connector mounting (centre of image) is the first joint project between Bucher Leichtbau and Ensinger. The series-produced part manufactured from glass fibre reinforced PEI in a variety of dimensions replaces an aluminium bracket previously used – which had to be earthed. The thermoplastic composite material is not electrically conductive, as a result of which the material and installation costs for the earthing cable previously needed can be eliminated.



Before CNC processing: Blank for a bracket for a plug-in connection. Fibre composite consists of a pre-preg approved for the aviation industry with glass fibre which is embedded in a PEI matrix.

Initial situation: Material and installation costs

For safety reasons, all metal mountings for electrical plug-in connections in commercial aviation must be earthed. With electrically conductive, supporting structures in the Bucher aluminium galleys, an existing fastening screw equipped with the necessary corrosion protection measures is often sufficient. If, however, the metal connector mountings are positioned on non-conductive structures in the galleys, an additional

cable is required for the electrical earthing. This earthing cable must be secured at regular intervals which drives a requirement for additional fastening threads, spacer bolts, cable clamps and screws.

In addition to the material input for the cable routing, high costs arise for planning and installation: The design work includes making an entry in the schematic circuit diagram; what is more, a resistance measurement must be defined in the test plan for every earthing cable. During production,

the contact resistance must be recorded and a corrosion protection coating be applied with every earth connection.

Metal substitute removes the need for earthing

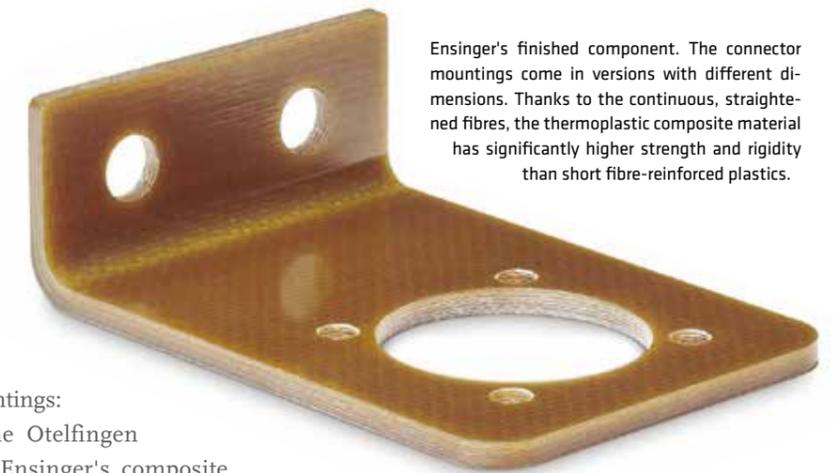
The work and costs involved in an earth connection can be completely eliminated if the connector mountings previously made from metal are replaced by a non-conductive variant. Because of the operating temperature and fire safety requirements, however, it is not possible to use a low-cost, standard plastic.

For Bucher, the sought-after technical alternative needed to be capable of replacing a large number of existing sheet aluminium parts one-to-one so as to minimise the work and costs involved in switching when they were introduced. For this demand to be met, a rigid, high-strength material is required.

Owing to the relatively small quantities of the different connector mountings, a solution with high tool costs was not an option. Initial trials with locally remodelled parts made from fibre-reinforced, thermoplastic sheet material did not show satisfactory results in the remodelled zones.

Thermoplastic composite components

The breakthrough was achieved during their first cooperative venture with Ensinger. On the basis of Bucher's requirement specifications, the Otelfingen (Switzerland)-based Composites division developed a solution on the basis of thermoplastic fibre-reinforced composite. A pre-preg approved for the aviation industry with glass fibre and a PEI matrix (polyetherimide) was chosen for the material. After a brief optimisation phase, it was possible to manufacture the first series-produced parts. Because of the specialist processing techniques, two of Ensinger's sites are involved in the production of the connector



Ensinger's finished component. The connector mountings come in versions with different dimensions. Thanks to the continuous, straightened fibres, the thermoplastic composite material has significantly higher strength and rigidity than short fibre-reinforced plastics.

mountings:

At the Otelfingen site, Ensinger's composite experts produce semi-finished parts in an angular shape from the PEI pre-pregs. Unlike comparable components, these blanks are not cut to size from a thick laminate and thermoformed but, using individual pre-preg layers, pressed in a tool into the defined form. Among other things, this process offers the advantage of reducing the springback effect.

The CNC processing of the fibre composite parts takes place at Trig Engineering Ltd in Bridgwater, Somerset (UK), a member of Ensinger's international machining group. From the angular blanks produced in Otelfingen, Trig Engineering precision machine the connector mountings to final product specification.

Simpler, more cost-effective, and lighter

The manufacturing costs for the new plastic mountings are significantly higher than the previous version in aluminium. However, the savings in terms of engineering and production of the cabinets means that the new solution is still considerably more cost-effective in total.

More information:
bucher-group.com
ensingerplastics.com

Thanks to Ensinger's preform technology, differences in wall thicknesses are also possible when producing angles. Thus the corner section that is under high strain can be reinforced, while in the sections which are not under as high (e.g. on the arms, see picture below), material can be conserved. With the aid of this near net shape technology a significant weight reduction is possible – whilst maintaining comparable strength and rigidity.



Photo: Bucher Leichtbau AG

Making sustainability measurable

by Markus Schroth, Quality Management, Head of Health, Safety & Environment



State-of-the-art compressed air system at the Nufringen site.

Ensinger has been concerned with the issue of sustainability for several years now. It has been, and continues to be important to design improvements with a lasting value. This also relates to energy consumption, which is why back in 2012 Ensinger introduced an energy management system in line with ISO 50001 at the sites of Nufringen, Cham and Ergenzingen. In the last few years Ensinger has consistently developed this further and in September 2018 re-certified it. The core aim of energy management is to keep improving the energy-related performance. This happens in diverse ways – but the focus is always on dialogue with the specialist disciplines and reconciliation of this with the divisions' strategic aims. By doing this, it has been possible, over the past few years, for lots of improvements to be planned, implemented and where possi-

ble and sensible to do so, transferred to other areas.

Exchange of Experts

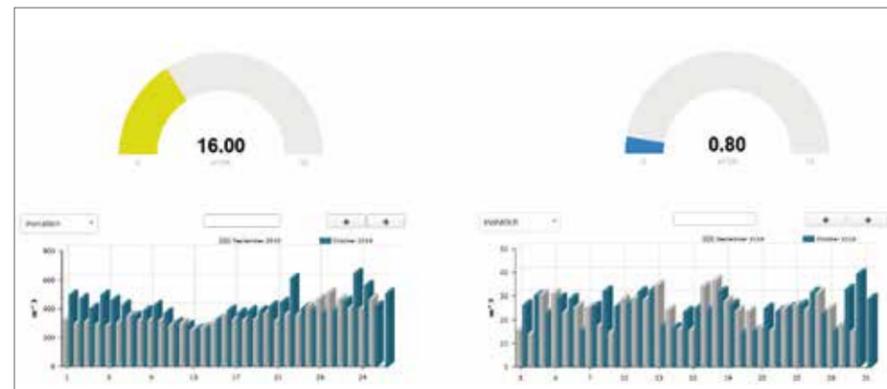
CIP workshops focus on the reduction of waste and the optimisation of energy-related performance; likewise attention is paid to environmental effects, such as con-

sidering paper consumption or the analysis of noise emissions. At each of the three production sites, interdisciplinary teams work together and exchange experiences and ideas. Coordinated by the energy management representative, the specialists develop new standards for workflows and define technical requirements relating to the production methods as well as process and buildings engineering.

Energy efficiency

For example, the latest frequency-controlled motors are finding their way into ventilation systems, and inefficient bulbs are being replaced by LED technology. Air compressors are monitored and regulated using a higher-level control system so that the machines work within an optimum operating range.

In Production, cooling sections are being equipped with new insulation systems. The reduction of rejects is a further lever for improving the energy-related performance. In factory logistics, electric forklifts are replacing diesel forklifts, and electric



Visual representation of the gas and water consumption at the Cham site.



Heat recovery from process water at the Rottenburg-Ergenzingen site.

vehicles are making their way into the vehicle fleet. In new buildings, the building envelope is insulated and a photovoltaic system installed. State-of-the-art ventilation technology with heat exchangers ensures that energy present in the exhaust air can be used for heating or cooling purposes. The waste heat from the compressed air machines is also used – by means of heat exchangers – for heating the building.

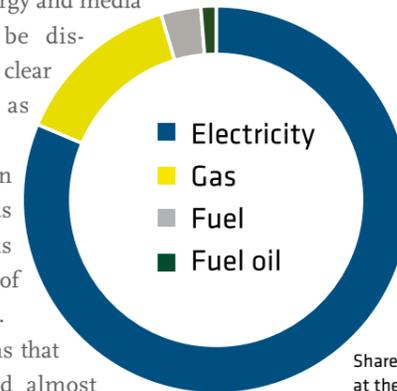
Preventive maintenance

A further sustainable factor is planned servicing and maintenance. Preventative measures ensure that the equipment and facilities always do their job under clean, optimum conditions. A search for and elimination of potential compressed air leaks rounds off the maintenance activities and, here too, reduces the waste of resources.

“The language of the energy team is kW and €”

One important aspect in the development of the energy management system is the measurement and evaluation of improvements. To meet this requirement, in the last ten months the energy and media flows have been illustrated visually step by step, so that the energy and media requirement can be displayed effectively on clear diagrams, known as Sankey diagrams. Reporting limits can be set for peak loads or sensitive systems evaluated in respect of differential currents. All in all, this means that Ensinger has saved almost

one gigawatt per hour in the course of a year – and this can be measured. This decrease in the quantity of electricity corresponds to a reduction of over 330,000 kg of CO₂. Therefore, it was not only possible to lower energy costs but also reduce the burden on our environment – and on a lasting basis.



Shares of energy sources at the Cham site.

Environment and Energy

Values

Our responsibility for the environment motivates us to produce sustainably. We check the ecological impacts of our work in advance.

Employees

Environmental protection depends on everyone's behaviour. That's why every employee contributes to environmental protection. To achieve our goals, we provide our employees with the necessary resources and keep them regularly informed about progress.

Resources

We continuously reduce the use of natural resources. We try to replace hazardous substances wherever possible. We avoid or reduce waste and emissions.

Improvement

We permanently optimize our processes, resources and products as well as our environment and energy-related performance.



New bike with the help of Ensinger

Pedelecs take employees to work quickly and protect the environment. This autumn, Florian Neumann, Christiane Beck-Schmidt and Jochen Zabel (FLTR) acquired bicycles on a 'leasing' basis. A total of 25 employees are already benefiting from the framework agreement which Ensinger has concluded with JobRad, a provider of leased bicycles.

Anyone interested in acquiring a classic bicycle or pedelec (with up to 250 watts of electric power for a maximum speed of 25 km/h) can sign a use agreement. Ensinger then retains a small amount of the employee's gross salary and uses this for the lease payments. Because the bicycle is treated favourable in tax terms, it is cheaper than buying one directly. You can find detailed information including a 'benefit calculator' on the information portal and the JobRad website. Contact: Corinna Gauß, Nufringen