25 Years of Thermix
Warm edge for climate protection

Injection moulding plant
Open day

Lightweight construction in aeroplanes
Serial composite components

Energy management
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 should not embark on 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 extrusion of stock shapes and profiles are produced. Thus, there is a constant sharing of information and capacity between the two sites.
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 movement 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 (Ug) and frame (Uf) into the calculation of the UW value of windows. 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 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 insulating 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.
Employees who have joined Ensinger:

**Nufringen**
- Apprenticeship Specialist for Warehouse Logistics
  - David Bork
- Apprenticeship Industrial management assistant
  - Alexander Tursa
- Apprenticeship Mechatronics technician
  - Enrico Cardaci
- Apprenticeship Process mechanics
  - Valentin Feige
- Bachelor programme
  - Industrial Engineering and Management
  - Jörg Stöckert
- Injection Moulding
  - Silvia Bögle
  - Fabienne Pfizenmayer
  - Marco Rutter
  - Markus Stoll
  - Viktor Stroshcherer
  - Louis Wiemer
  - Christopher Wengert
- HR
  - Heiner Hackl
- Tool Making
  - Andreas Schmid
- Machining
  - Fabian Schmittner
  - Edith Schneider
  - Günter Schwank
  - Reinhold Wendt
- Apprenticeship Process mechanics
  - Marcel Fischer
  - Julian Gittlinger
  - 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
- Shapes
  - Elisa Rieke

**Cham**
- Apprenticeship Tooling mechanics
  - Amin Sahli
  - Alexander Sterna
  - Paul Thayerer
- Bachelor programme
  - Mechanical engineering / Plastics technology
  - Kevin Epper
- Insulbar
  - Christian Graf
  - Jaroavd Jesilek
  - Ludwig Michael Klingl
  - Dr. Tobias Rudolph
  - Helmut Strecker
  - Jiri Voracek
  - Fabian Weinhold
- Technical Management
  - Bernhard Schneider
- Machining
  - Andreas Höcherl
  - Maximilian Hruschka
  - Alexander Ley
  - Marius Wache
  - Alexander Zollner

**Ergenzingen**
- Apprenticeship
  - Vanessa Nejedly
- Apprenticeship IT & Tubes
  - Eduard Klein
- Apprenticeship Tooling mechanics
  - Patrick Breu
- Tool Making
  - Andreas Schmid
- Machining
  - Fabian Schmittner
  - Edith Schneider
  - Günter Schwank
  - Reinhold Wendt
- Apprenticeship Process mechanics
  - Marcel Fischer
  - Julian Gittlinger
  - Robin Gruber
  - Uli Kagermeier
  - Nico Meier
  - Andreas Werner
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  - Alexander Zollner
- Shapes
  - Elisa Rieke

**IT**
- Thomas Fischer
- Nadine Hermann

**Shapes**
- Neranz Avdija
- Ethen Corak
- Patricia Dür
- Solomon Chigogiz Ezenze
- Benjamin Hazth
- Josip Kolahovic
- Matija Mandaric
- Artur Rodionov
- Stephan Senger

**Technical Management**
- Lutz-Matthias Paarsch
- Sebastian Seeger

**Apprenticeship IT Specialist**
- Tim Helligsten

**Apprenticeship for Warehouse Logistics**
- David Bork

**Apprenticeship Industrial Management Assistant**
- Alexander Tursa

**Apprenticeship Mechatronics Technician**
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**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 Triq 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.

**Excellent educational and study achievements**

**Wilfried Ensinger Prizes awarded in Cham und Nufringen**

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King for a day
Cycle race around the Attersee – register now for 2019

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!

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.

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, experts 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.

Nearly 40 former Ensinger employees took part in the senior citizens’ outing at the end of September. The first calling point was Schönberg 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 Centerczewsky, 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 1st October. This date also marks the end of the optimisation phase of 18 months so that the optimisations together with their key users, employees who work on a daily basis with the SAP system, “Ensinger ONE Platform”, are now operational.

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

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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 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-oriented 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

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. Kowalczuk 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 (WIAK).

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. Kowalczuk’s Master’s thesis – completed at the Institute of Plastics Technology, University of Stuttgart – deals with dimensional stability in extrusion.

>>> 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 Plásticas Técnicas Ltda.
Rua Christopher Levalley, 3185, Jardim América
91.017-720 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 Fallanden (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 eight times its own weight and has to be able to withstand accelerations that are at least nine times that of gravitational acceleration.

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 was 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 mountings.

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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 mountings.
Making sustainability measurable

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

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; likewise, attention is paid to environmental effects, such as considering 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 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 130,000 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.

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 drive 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, recourses and products as well as our environment and energy-related performance.
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 benefitting 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