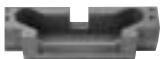




Theme: ENSINGER Compound Division – Move to a new factory site

New polyimide product line TECASINT



The new TECASINT product line encompasses new developments and modifications as well as proven materials which have become established in the marketplace under the brand name SINTIMID. The semi-finished products and stock shapes offer outstanding long-term thermal stability. The different characteristic profiles of the individual materials offer users widely varied technical scope.

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Assembly for computer tomography



Working in cooperation with Siemens Healthcare, ENSINGER has developed an assembly for computer tomography to the volume production stage. The parts which originally had to be machined as semi-finished products, can now be manufactured in the form of injection moulded blanks. The time and effort invested in this development has paid dividends, resulting in substantial cost and material savings for the customer.

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Dear readers,

Perhaps you know the prayer in which God would like to bless you with the energy to do things which you can change, the composure to accept the things which you cannot change, and, finally, the wisdom to be able to distinguish one from the other.

The distinction found is revealing since it offers two more perspectives than is normally the case. Action is currently in demand, particularly in the economy. It is about one's own strengths, the motivation, the reserves. The man of action in us must always do something – particularly now in the current crisis. Many offers target this action impulse. Many complain that too little is done to avert the crisis. It appears to me that all sides of politics, the economy and society are acting resolutely to resolve it. The means used in the process sometimes exceed my imagination. Unfortunately, however, the desired success does not appear as quickly. The danger is increasingly that due to emerging concerns and nervousness, too much is done and things are effectively over-controlled, whilst impotence is compensated for by recrimination, one-sided judgements and aggression. Anyone who can keep cool can be a happy man.

The greatest discipline, actually wisdom, however represents the ability to differentiate between the

feasible and the irrevocable. It sounds easier than it is. Because, who definitely knows whether their personal analysis still applies in a rapidly changing environment and their recipe for what is to be done is still effective. From contact with children it is known that many proven things are not transferable to the next stage of their development. The child suddenly says "no" and we have to find another approach. Why should this truth not apply to contact among adults or to our general situation?

Circumspect behaviour is characterised by combining energy, composure and judgement with one another. Many can do this well, but one can certainly never do it well enough. In this way I wish you and us all the best in our efforts.

Enjoy reading the latest edition of our "impulse" in a calm and relaxing frame of mind...



K. Ensinger

Yours, Klaus Ensinger

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Dr. Roland Reber

Editorial staff Jörg Franke
Doris Hämmerling
Petra Richter
Jochen Weyershäuser

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Technical highlights

Compounds division moves into new factory



[Hä] The establishment of the ENSINGER Compounds division, and growing amount of grey goods, made the expansion of production, administration and storage necessary at Nufringen. The construction work was concluded several weeks ago. In the meantime the employees in compounding have moved into their premises in the architecturally impressive new building.

Section manager Frank Richter is satisfied with the result: "Every department is now under one roof, we have integrated the five previous locations into a single central unit. This means direct routes, better communication, in a word: A new community spirit motivates the entire sector."

Higher productivity

The improved manufacturing processes facilitate a considerably more efficient operation and a significant increase in production. The machines are arranged in such a way that employees can oversee the entire production landscape and can react quickly if required. As a result, labour intensive pro-

cesses can be accelerated, for example reducing tooling times on the machines.

A technical highlight is the new clean room planned for the production of medical engineering materials. The assemblies and device components made from these materials are subject to the highest hygiene and purity requirements.

Health, environmental protection and safety

The planners paid specific attention to the aspects of health, environmental protection and safety: the exhaust-air conditioning system removes dust and odours through the so-called "wet scrubber concept". Water vapour at the suction point prevents harmful particles from reaching the outside.

Furthermore, manufacturing has a closed water circulation in which no industrial effluent accumulates. Evaporated water is supplied via a rainwater cistern. A swimming-pool sized water tank in the cellar supplies the entire installation and premises through an extensive sprinkler system and, in an emergency, with water for fire-fighting.

In the new
Compounding Division
production area



Low energy requirements

Up-to-date and responsible handling of the resources available were a basic element of the energy concept in the new building program. In this way, the company saves 3,600 cubic metres of drinking water annually thanks to the rainwater cistern. The heat recovery of both the compressed air and the waste water reduced CO₂ emissions by up to 180 tonnes annually. The heat generated is transferred into the water circulation to warm the washroom and sanitary water and underfloor heating. The offices are aligned to the north to save excessive air-conditioning systems. Movement sensors ensure the lights are illuminated just as long as is actually required.

Spacious and open offices

The offices on the upper floor are designed in line with a spacious and open concept and are furnished with large expanses of glass creating a pleasant atmosphere and bright working environment. Two meeting rooms equipped with state-of-the-art equipment hold up to 30 people. Customer training

and also large company-wide projects can be organized here without space problems. Attached to the kitchen area is another room with meeting tables and a library where the company's specialist literature will be administered centrally in the future.



The most recent ENSINGER division supplies its internal and external customers with high-performance plastics and compounds tailored to specific applications with the aid of fillers and additives. The division specialists select materials suitable to meet the customer's specific needs and develop individual formulations. Examples include products with improved sliding friction characteristics or defined electrical properties, as well as compounds designed to comply with the stringent demands of the medical technology sector.

New polyimide materials

ENSINGER presents its TECASINT product line

[JF]ENSINGER has extended its range of amorphous, non-melting high-temperature polyimides. The new TECASINT product line encompasses new developments and modifications as well as proven materials which have become established in the marketplace under the brand name SINTIMID. The new line is being launched initially with semi-finished parts and stock shapes made of the new TECASINT 2000 material, whose benefits include improved toughness, to be followed by the gradual expansion of the polyimide portfolio as the year progresses. Semi-finished products and stock shapes made of TECASINT offer outstanding long-term thermal stability, and the material benefits from a broad temperature application range extending from minus 270 to 300°C. Many TECASINT materials are actually able to withstand a short-term temperature up to 350° without melting or softening. Strength, dimensional stability and creep resistance remain high under mechanical loads, even in continuous use.

New technical scope

The sintering material TECASINT 1000 has been established in the marketplace for the past twenty years under the name SINTIMID. The new product developments to emerge from ENSINGER also include the series TECASINT 2000 high-temperature polyimides. These rigid, hard materials are characterized by a high E modulus value, and by a marked improvement to thermal resistance and sliding friction properties compared to TECASINT 1000. Another benefit offered by the new development is its marked reduction in moisture absorption, which in turn permits narrow component tolerances. The material also lends itself to high-precision machining.

Semi-finished parts and stock shapes

TECASINT 2000 is ideally suited for direct forming processes, permitting low-cost high-volume manufacture of parts – for instance for automotive and mechanical engineering applications.

TECASINT 5000 (previously known as: SINTIMID PAI) is a non-thermoplastic processable high-temperature polyamide. The sintering material is particularly suitable for applications in semiconduc-



Insulator from
TECASINT 2000

tor manufacturing. The material is available in pure form, with glass fibre reinforcement or in a range of electrostatic dissipating variations.

Products in the TECASINT 8000 range (SINTIMID 8000) are proven materials for sliding friction applications. The base material PTFE is reinforced by PI powder. This abrasion-resistant material is already successfully in use in the manufacture of lip seals, sliding strips for textile and packaging machinery as well as bearings and sliding elements.

Plates, rods and short tubes

Semi-finished materials of the TECASINT 1000, 2000, 5000 and 8000 ranges are available in plate and rod form. ENSINGER also offers short tubes in the materials TECASINT 1000, 2000 and 8000.

Technical Consultancy:

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

Discontinued VESPEL® sales

The ENSINGER Group launched the sale of semi-finished products and stock shapes made of the polyimide VESPEL® in Germany and the UK back in the year 2000. The manufacturer DuPont de Nemours Engineering Polymers and ENSINGER have since taken different marketing strategy directions in the field of high-temperature plastics and consequently the two companies agreed to terminate their VESPEL® sales partnership with effect from March 31, 2009.



INJECTION
MOULDING



MACHINING

Precision engineering: The heart of a computer tomograph

Klaus Pascher (left),
Finished Parts
Sales Manager, and
Peter Thaler (right),
Injection Moulding
Project Manage-
ment, demonstrate
the assembly



[JF] Whether for the early detection of cardiovascular disease or the examination of accident victims – computer tomography (CT) has revolutionized the field of medical diagnostics. Using the latest generation of scanners, even the smallest blood vessels in a beating heart can be depicted in high resolution. In Siemens Healthcare CT systems, two “Straton” X-ray tubes rotate at high speed around the patient. These key components are mechanically fixed in bearings made of TECAPEEK components manufactured by ENSINGER. The assembly weighs several kilos and comprises a fixed guide body and a rotating guide body enclosing the anode and cathode of the “Straton” tubes. As centrifugal forces occur which can be up to thirty times that of gravity, the materials and workmanship have to stand up to extreme levels of strain.

PEEK offers long-term stability even when exposed to X rays, as well as a long-term service temperature of 260°C. Insulating oil flows around the surfaces of the plastic, whose properties exert a fundamental influence on the cooling of the X-ray tubes. Efficient heat dissipation permits a faster

examination process without the need for pauses to allow the equipment to cool. This factor can be lifesaving when diagnosing trauma patients.

Shrinkage cavities in the material would cause high-voltage discharge and bring about failure of the overall system. This is why testing at Siemens in Erlangen starts as early as the blank stage. The blanks are scanned using non-destructive methods. A medical CT scanner is actually a highly suitable method of testing for cavities, as it is capable of detecting pores from as small as just half a millimetre. Initial orders placed entailed machining the guide bodies and rotating guide bodies from rods at the Cham location. To save material when producing the blanks, ENSINGER began the changeover to using the injection moulding method some years ago. Only the joining and internal surfaces now need to be machined to guarantee compliance with the extreme precision requirements. The production team at Cham are also responsible for the surface finishing and assembly processes.

Due to the solid wall thicknesses involved, manufacturing large PEEK injection mouldings represents something of a technical challenge. For the blanks manufactured on the 500 ton injection moulding machine to reach the volume stage took a development period of two years – but the investment has paid dividends: Material consumption has been reduced by half, and costs lowered by some 40%.

“Supplier of the year”

In recognition of its cooperative role in the development process and its continuously high quality standard, ENSINGER was awarded the distinction of “Supplier of the Year” last July by Siemens Healthcare.

MT brochure revised

ENSINGER has extended its “Engineering Excellence in Medical Technology, Pharmaceuticals and Food Technology” publication, with the addition of extensive information on quality management and an overview of colour

variations. The materials are now categorized according to fields of application (such as diagnostics and therapy). A dedicated page is now also given over to specialities. The brochure is available from info@ensinger-online.com



BUILDING
PRODUCTS

Successful start to the year: BAU and MADE

[Wey] According to the trade fair organizers, BAU 2009 broke all previous records with an amazing 211,000 visitors, heralding a major boost for the building industry.

There was a tangibly upbeat mood in the air among exhibitors and punters alike. As well as Germany, most visitors to the two fairs were from Austria, Switzerland, Italy, Slovenia, the Czech Republic, Russia, Poland, Iran, France and Turkey. Overseas countries such as China and Japan also provided a disproportionately high number of fair-goers. On the fourth and fifth days of the fair, the crowds were such that the aisles were clogged with visitors. The team at the ENSINGER Building stand also had its work cut out. This was partly due to the featured theme of energy-efficient and sustainable building, which had formed a core aspect of the organizer's advance advertising. The Building Profiles Division offers a range of products which fit perfectly into this theme, such as its insulbar® insulating profiles for windows, doors and facades, as well as Thermix® Warm Edge spacers for insulation glass.



Although MADE, held at the beginning of February, took place close on the heels of the BAU, this fair too proved a resounding success with over 200,000 visitors through the turnstiles over the four days. The event was staged for the second time in Milan, consolidating the importance of the fair for the Southern European region. Once again, energy saving and sustainability in the construction industry featured heavily at MADE. The team from ENSINGER Italia and ENSINGER Building Profiles registered a gratifying number of promising discussions with visitors.



SEMI-FINISHED
PRODUCTS

High loading capacity: TECARIM products



[JF] TECARIM is a polyamide 6 block copolymer with an elastomer component which is manufactured using a reactive moulding process known as RIM (Reaction Injection Moulding). The temperature application range of this tough, impact-proof material is between -60 and +120 °C. The abrasion resistance characteristic of polyamides offers a major benefit particularly in the low temperature range.

Machining permits the manufacture of durable, low-abrasion products and – for applications under extreme conditions – parts without brittle fracture properties. The characteristic properties of these semi-finished products place them between polyamides and polyurethane.

Typical applications for TECARIM include functional parts for machine and plant engineering applications with capability to withstand high static and dynamic loads. Other fields of application for this material include the petroleum and gas industry, special purpose vehicle construction and winter-specific technologies.

Sales

The reactive TECARIM moulding process permits the manufacture of stock shapes with extreme jumps in wall thickness and also the integration of inlay components or reinforcement materials.

This type of moulded product is sold through ENSINGER TecaRIM in Linz, while semi-finished products fall under the responsibility of the division based in Nufringen.

THE ENSINGER GROUP IN THE USA

Transatlantic co-operation

by Donna Mantia

The first ENSINGER branch in the USA was founded in 1985 by just a handful of employees. In those early days, it was possible to store the semi-finished products imported from Nufringen in a small warehouse. Today, ENSINGER operates a dynamic group of manufacturing facilities in North America, employing hundreds of workers.

The US headquarters and the biggest extrusion factory are located in Washington, Pennsylvania, close to the industrial city of Pittsburgh. In Grenloch, New Jersey, the company also produces semi-finished products as well as the insulbar® product line and plastic stock shapes.

Chris Ranallo heads up the American Semi-Finished Products Division, while the Building Profiles Division is under the direction of George Nash. As Head of Finance, Bob Racchini is also a member of the senior management team, as is Larry Resavage, who is responsible for Business Development.

In Greenwood, Delaware, ENSINGER/Penn Fibre produces extruded sheets and punched parts under the management of John Cowperthwait. Putnam Precision Molding, the injection moulding factory in Connecticut under the management of Jeanne Zesut, completes the group of east-coast locations. In addition to these now long-established production plants, ENSINGER only recently moved into a new building in Houston, Texas: Production of special polymers in the form of pressed and sintered semi-finished parts and stock shapes takes place under the direction of Tony Scanlin.

New markets

The philosophy represented by the American ENSINGER workforce reflects that of their European

WILFRIED-ENSINGER PRIZE

Up-and-coming engineers

[JF] For the seventh time, the Scientific Alliance of Polymer Technology (WAK) has paid tribute to outstanding contributions to science, on this occasion awarding the Wilfried-Ensinger Prize to Silke Allert and Dr. Jinglei Yang. Engineer in training Silke



● ENSINGER manufacturing locations in the United States

colleagues: The common aim is to supply the best products and the best possible service. At the same time, the corporate agenda also includes continuous expansion of the market for high-performance plastics. This entails for instance a search by the experts for ways in which metal components can be replaced by plastic ones.

US colleagues work in close cooperation with their counterparts in Germany and in other locations in a bid to offer customers the same technological excellence around the world. Co-operation with extrusion experts such as Ralf Dietrich and the opening up of new markets in co-operation with product specialists from other branches and from the company headquarters opens up scope for the US employees to improve production capacity and improve the portfolio, and so gain a place among their customers' top suppliers.

The teams from the Business Development and Sales Divisions are casting their eye over a widespread portfolio of business fields: From medical and food technology through the aerospace and automotive industry to electronic and electrical engineering. The X-ray permeable series for medical applications and the recently launched TECAFORM AH ID as an extended product line for applications in the food industry are only two of the new materials at the focus of activity to develop new markets.

Donna Mantia is Marketing Coordinator at ENSINGER Inc.

Allert received the distinction for her diploma thesis: "Analysis of flow and solidification behaviour of highly-filled metal/thermoplastic compounds" completed at the RWTH University of Applied Sciences in Aachen. The thesis deals with an electrically conductive plastic compound. Dr. Jinglei Yang's dissertation, completed at the Kaiserslautern University of Applied Sciences, deals with long-term behaviour of polymer nanocomposites.