DO THERM
ADVANCED INDUSTRIAL INSULATIONS

STAY COOL

PRECISION COMPONENTS MADE FROM FIBRE COMPOSITES AND HIGH-TEMPERATURE MATERIALS

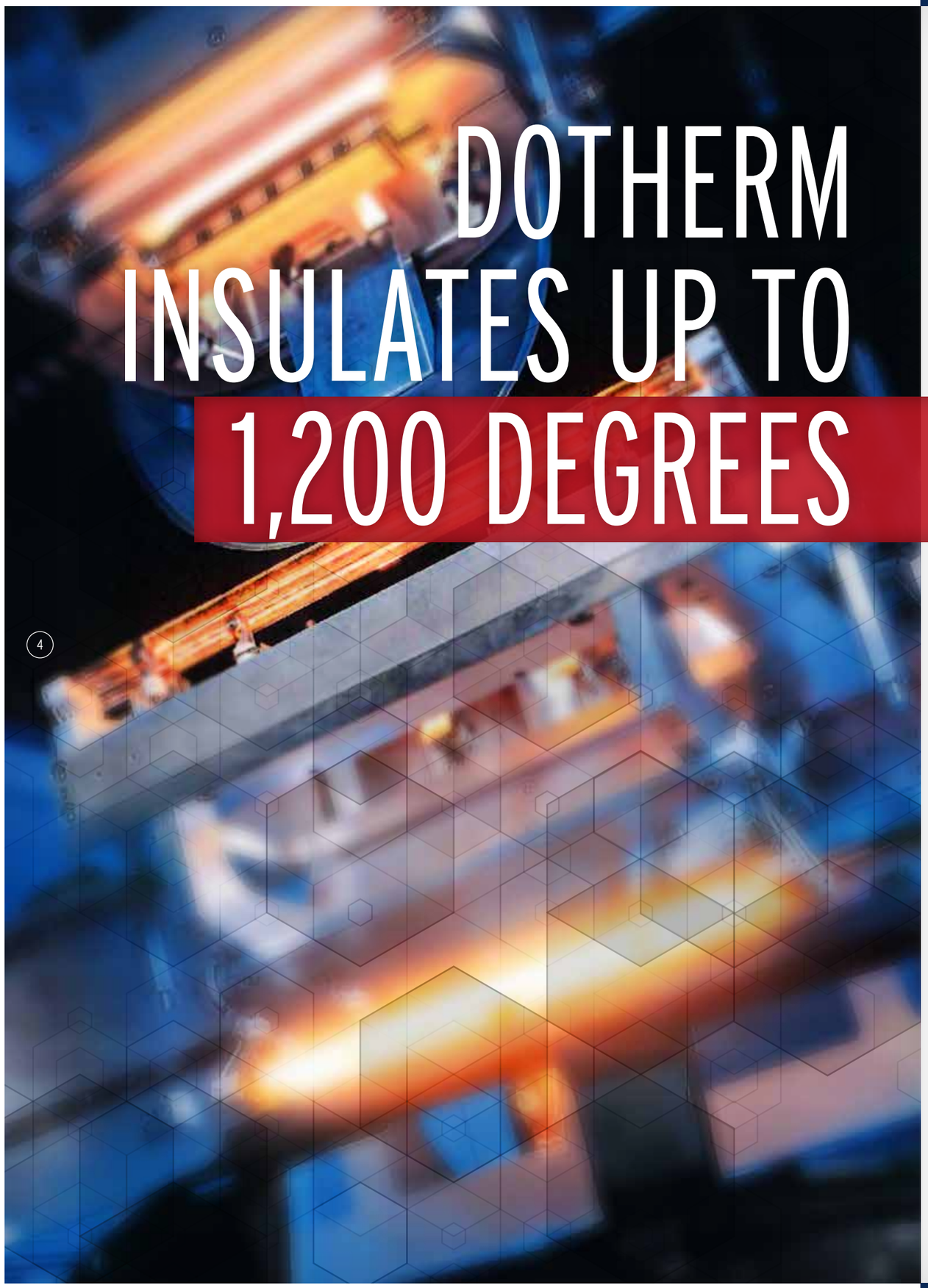
INSULATION TECHNOLOGY FOR PLASTICS MACHINERY

GERMAN ENGINEERING

FAST, STRONG, TENACIOUS...

...THESE ARE THE EXCEPTIONAL ATTRIBUTES OF A POLAR BEAR. IT IS THE LARGEST TERRESTRIAL MAMMAL IN THE ARCTIC AND THE SECOND LARGEST LAND CARNIVORE OF ALL AFTER THE KODIAK BEAR. THE MALES ARE UP TO THREE METRES TALL AND WEIGH BETWEEN 300 AND 600 KILOGRAMS. THEY ARE FAST, STRONG AND TENACIOUS.

All of these attributes also apply to our products and services. DOTHERM insulation technology is efficient like the fur of a polar bear and strong and tenacious when in use. Just the way you want it. For protecting technology and people, for optimising quality in industrial manufacturing and for the processing of plastics. **Your machines stay cool with DOTHERM**. And you can too!



DOTHERM INSULATES UP TO 1,200 DEGREES

DO THERM
ADVANCED INDUSTRIAL INSULATIONS

Insulation technology for plastics machinery - this is one of the three core business areas of DOTHERM GmbH + Co. KG from Dortmund.

Here we develop, manufacture and deliver thermally and electrically insulating components for technical systems in the plastics manufacturing and processing industry. Our products are used in moulds, tools and equipment that requires process heat and therefore must be insulated.

Whether 120 or 1,200 degrees, whether hard paper or high-tech material: we deliver the solutions. Fast, precise and exactly according to the customer's requirements.

INSULATION TECHNOLOGY FOR PLASTICS MACHINERY: **WE MAKE IT**

Nobody can seriously imagine a world without plastics. As materials of the modern era, they have filtered into all areas and make life easier, more convenient and nicer as well. Many everyday items can be produced quickly and cost-effectively from plastic.

What does this now have to do with DOTHERM? Now you have just read that we have been working with materials for tool and machine insulation for more than 25 years. Insulation is used to control the heat balance in machines and systems for plastics manufacturing and processing. It protects people and system components from excessive heat, reduces cycle and heat-up times and ensures an efficient use of energy. In other words: it is somewhat inconspicuous but essential for component quality and process reliability.

DOTHERM offers pressure-resistant insulation and external insulation for

- Tool and mould making
- Injection moulding machines
- Extrusion systems
- Laminating presses
- Blown film systems
- Foam systems
- Forming and embossing tools
- and others

APPLICATION DEFINED, REQUIREMENT FULFILLED

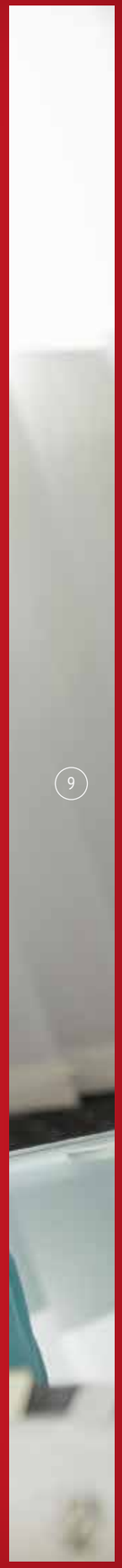
Why did we ever come up with the idea of manufacturing insulation technology at DOTHERM? It is probably not a particularly interesting topic for outsiders. This changes drastically once process heat is generated during a machine's processing sequence.

The generated heat should at best remain within the tool so that only the material to be processed is heated up. If this heat is released into the environment instead, this not only has a negative effect on the energy balance but also makes it unbearable to work on the machine. DOTHERM materials now come into play here.

Since the company was founded more than 25 years ago, we have been working on the properties of materials that are considered for these types of products. It is not only about the technical values of the base materials, but also about the experiences associated with using them. We can draw on a rich pool of knowledge here, whether it's classic heat protection plates or complex components made from high-performance plastics.

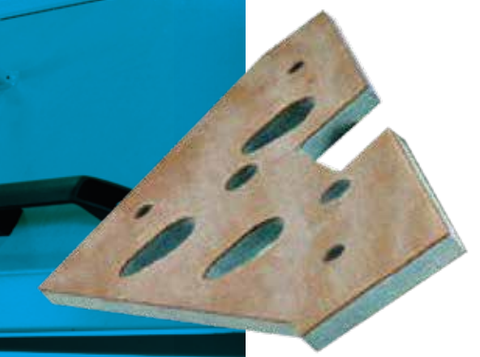
We provide advice on the selection of materials and the optimum design of the desired product in dialogue with the customer. Our know-how extends to the injection moulding, extrusion, blow moulding, thermoforming and plastics joining sectors.

You will find sample applications for insulation technology in the plastics industry on the following pages. Let us know if we can do something for you.



SAMPLE SOLUTIONS

EXTRUSION AND SMELTING



A wide range of materials are available from the DOTHERM product range depending on the customer's requirements in terms of temperature and other stresses. Components and material combinations are tailor-made for special problems. The two following applications are examples of this.

Impact-resistant external insulation: the targeted use of material combinations here provides an optimum insulating effect with an industry-standard outer skin at the same time.

DOTEC 350 SF

DOTEC 350 SF is a composite material made from a temperature-resistant binder and fillers with low thermal conductivity. The application temperature is 350 °C and temporarily 400 °C. The thermal conductivity is 0.12 W/mK.

Wide-slot nozzle insulation: an insulating component with integrated high-temperature power magnets for tool-free assembly and disassembly while carrying out frequent modifications and adjustment work.

DOTHERM 1100

DOTHERM 1100 is an inorganic high-temperature material. The temperature resistance extends up to 1,100 °C and the thermal conductivity is 0.1 W/mK.

TOOL AND MOULD MAKING

DOTHERM
Pressure-resistant heat protection plates

Frathernit AN, Frathernit DN
for standard components and drawing parts

- Standard uniform thickness is 0.05 mm, optionally available with a Superschliff coating with a uniform thickness of 0.02 mm
- Temperature-resistant up to 200 °C
- Pressure-resistant up to 600 MPa
- Available at short notice

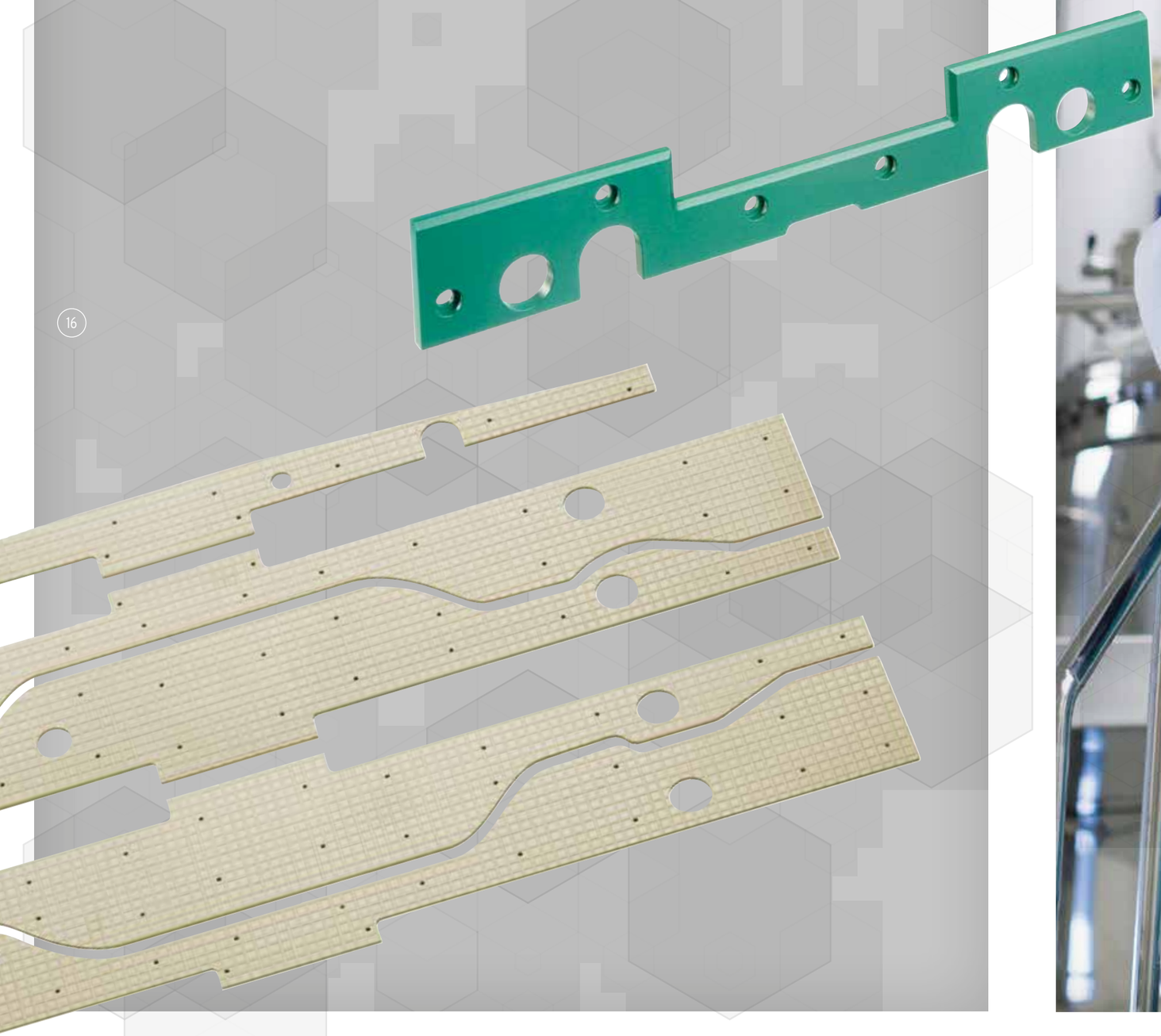
Other FRATHERNIT materials are available for higher demands.

Frathernit 2000B, Frathernit 4000 for external tool insulation

External insulation is used to save energy by preventing heat dissipation from heated tools. It lowers the energy consumption and also stabilises the manufacturing process. Last but not least, it protects people from touching hot machine parts.

Coating systems

Components with a variety of coatings are characterised by their longer service life and improved chemical resistance.
The coating protects the component from aggressive media or keeps the clean room dust and particle-free.



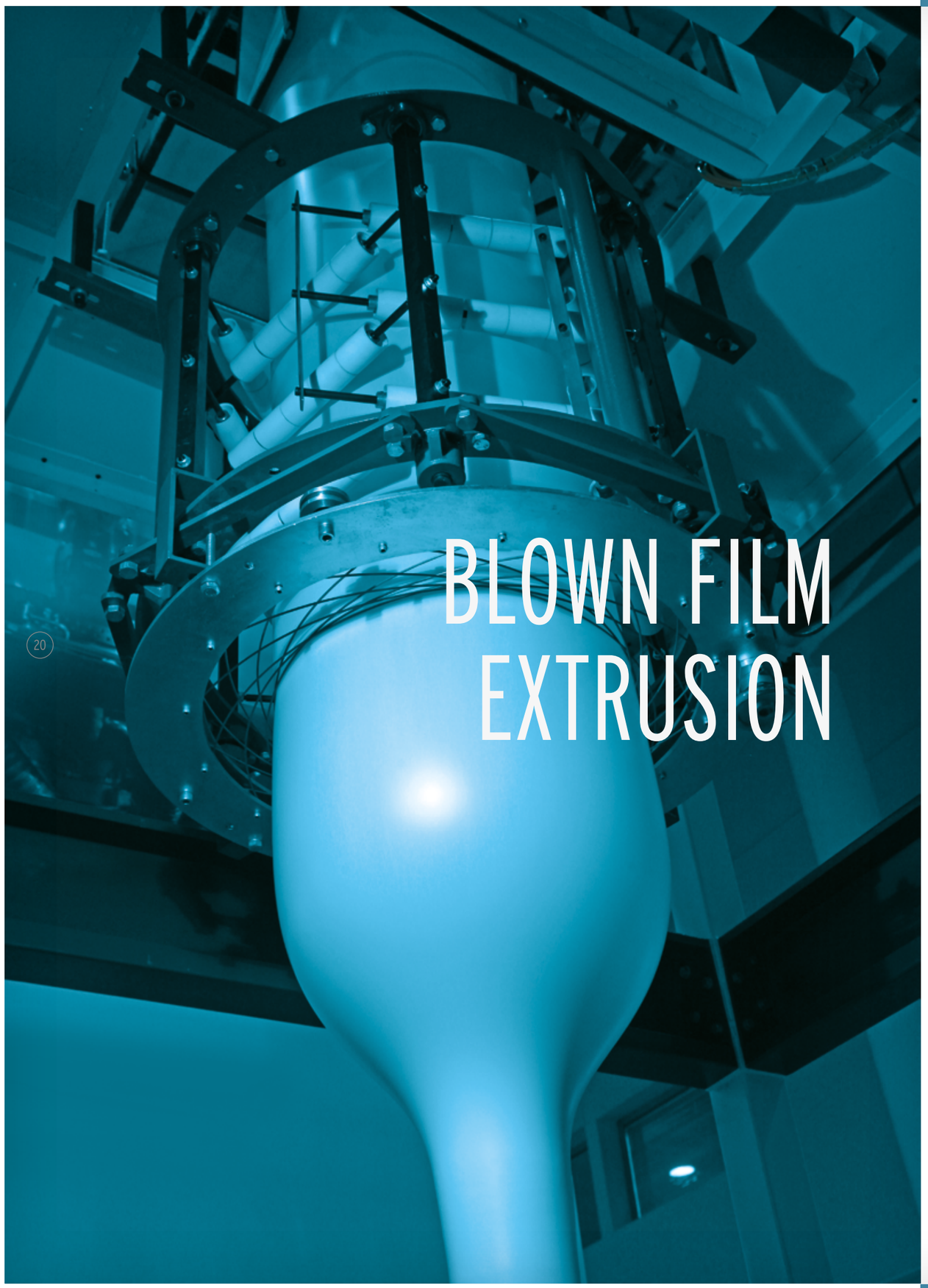
HOT RUNNER TECHNOLOGY

DOTHERM 600M
for hot runner insulation

DOTHERM 600M is pressure-resistant up to 410 MPa, temperature-resistant up to 600 °C and has good insulating properties at a low thermal coefficient of 0.26 W/mk.

ELTIMID CP
for colour change caps

ELTIMID CP is an isotropic high-performance plastic. It is resistant up to a constant temperature of 280 °C, has high mechanical stability over the entire temperature profile and is particularly suitable for colour change caps. They reduce the time for changing the injection material due to the fact that the pre-chamber area is not filled with plastic. This minimises the risk of colour mixing and bubble formation.



BLOWN FILM EXTRUSION

AIR FLOW PIPES

A significant improvement can be achieved in the flow rate and film quality in blown film extrusion by optimising the cooling air flow. The use of insulating pipes made from DOTHERM 600M and DOGLAS 220M plays an essential role. They are used to dissipate the warm air, on the one hand, and cool the film on the other.

DOTHERM 600M and DOGLAS 220M

DOTHERM 600M is a coating material made from muscovite mica and temperature-resistant resin. The temperature resistance is 600 °C and the thermal conductivity is 0.26 W/mK.

DOGLAS 220M is a composite material made from resin-bonded glass fibres. The temperature resistance is 220 °C and the thermal conductivity is 0.22 W/mK.

RING NOZZLE INSULATION

The transition of the film material from a molten plastic into a hot film takes place in an annular gap in modern extrusion systems. The cooling comes from outside as air is blown onto the hose. The hot surface of the ring nozzle must be protected with appropriate insulation.

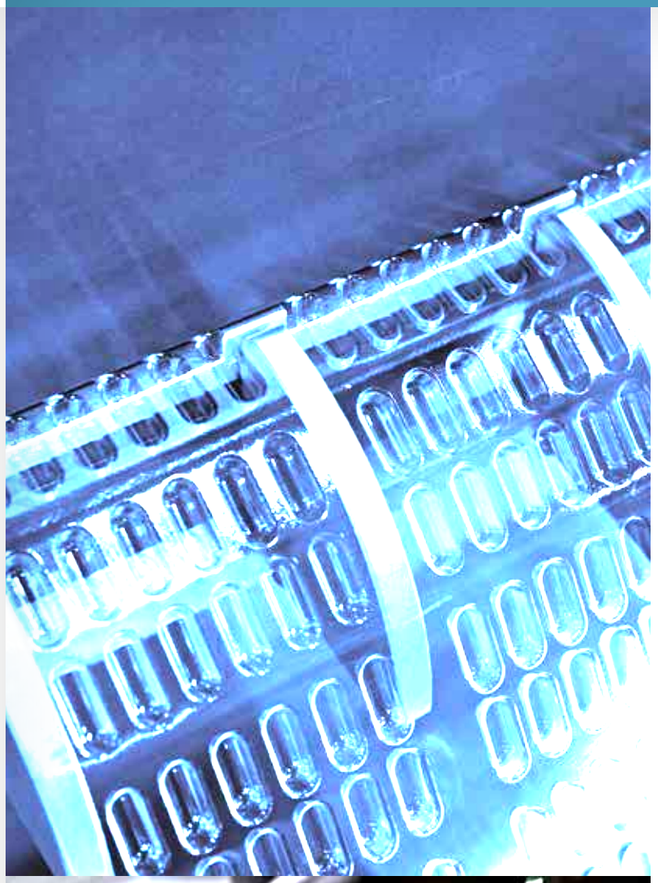
DOGLAS 230

DOGLAS 230 is a coating material made from resin-bonded glass fabric. The temperature resistance is 230 °C and the thermal conductivity is 0.23 W/mK.

SEMI-MOLTEN FORMING IN THE PACKAGING SECTOR

Ever increasing demands on thermal insulating components can be observed, in particular in the packaging sector, because the processes are “fine-tuned”. As the heat must be transferred into the plastic in an increasingly short period of time, it is not uncommon for the heating temperatures to increase from 250 °C, for example, to well over 300 °C.

Standard cotton fabrics (HGW) can no longer be used today in areas where they have done their job for decades because of the high temperatures. DOTHERM has responded to these requirements with new solutions and has developed, for example, the DOGLAS 200LC or DOTEC 350 materials. They are characterised by higher precision, higher temperature resistance and even lower thermal conductivity. Just like is needed in today's modern manufacturing processes.



Example of blister packaging: a uniform seal pattern on blister packaging requires high precision in insulating components with respect to plane parallelism. This is compounded by even larger tool dimensions with higher numbers of cavities.

DOGLAS 200 LC

DOGLAS 200 LC is a composite material made from resin-bonded glass fibres with particularly low thermal conductivity. The application temperature is 200 °C and its thermal conductivity is 0.13 W/mK.

Example of PET stretch blow moulding: the focus here and the biggest challenge is creating an optimum insulating effect in confined space.

DOTEC 350

DOTEC 350 is a composite material made from a temperature-resistant binder and fillers with low thermal conductivity. The application temperature is 350 °C and temporarily 400 °C. Its thermal conductivity is 0.12 W/mK.

PLASTIC WELDING TECHNOLOGY AND SUBSEQUENT TREATMENTS

Figure: Ahlbrandt System GmbH

Corona surface treatment of plastic films

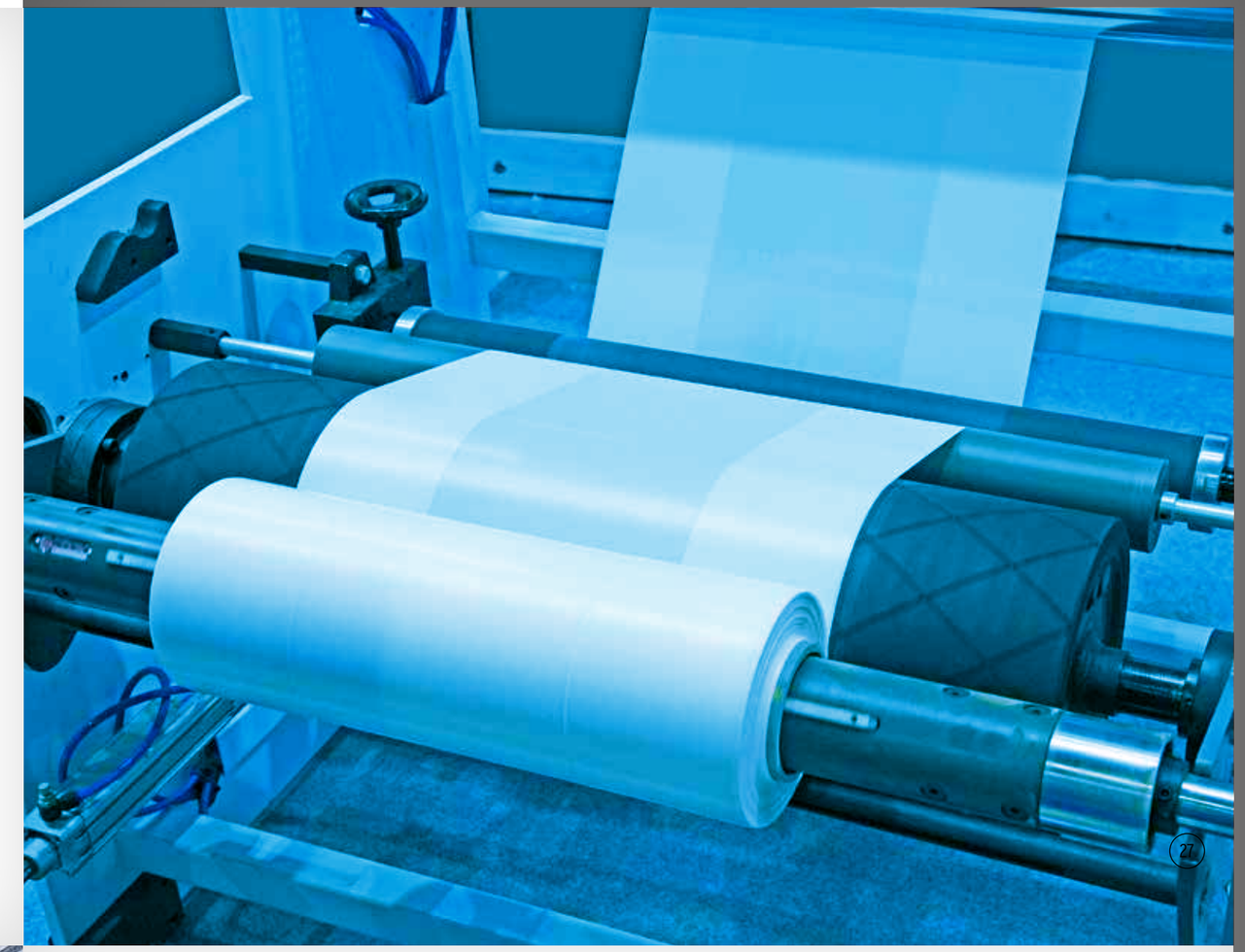
Most plastics have a non-polar, good electrical insulating and water-repellent surface that makes any subsequent processing with lamination or printing more difficult. This is helped by the Corona treatment where the film web is exposed to a high electric voltage. Systems for applying a Corona treatment always include electrically insulated parts, such as electrodes or rollers.

DOGLAS 250M

DOGLAS 250M is a composite material made from resin-bonded glass fibres. It is resistant up to a constant temperature of 250 °C and has thermal conductivity of 0.23 W/mK. In addition, it has very good electrical insulating properties. The creepage current resistance is CTI 600.

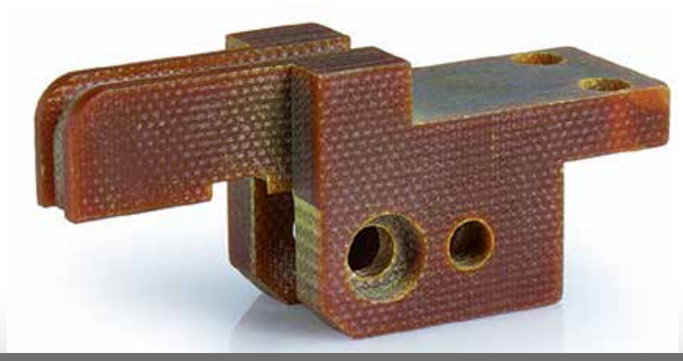
DOTHERM 1100 HD
High-temperature materials for medium-wave infrared plastic welding

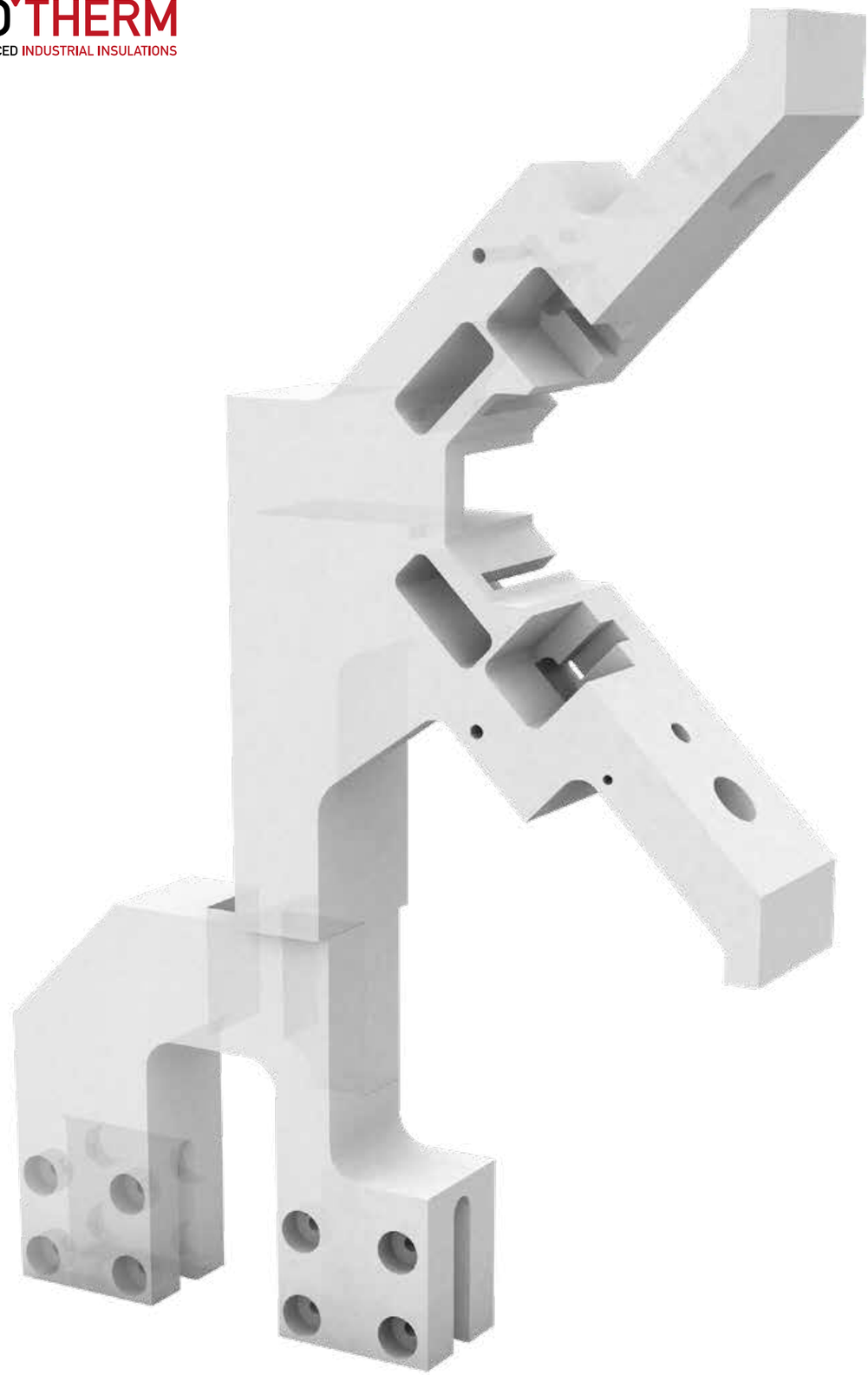
This DOTHERM material group is based on silicates or silicone resin and mica, chemically bonded ceramics, mineral and carbon fibres as the carrier material. They are characterised by high temperature stability and low thermal conductivity and – with mica materials – by a very good electrical insulating effect.



DOGLAS for welding bar insulation

DOGLAS materials are glass fibre-reinforced, thermoset composite plastics with high mechanical strength and very good dimensional stability. The temperature stability extends up to 300 °C. Other properties include low thermal conductivity, good electrical insulating qualities, chemical resistance and low water absorption.





OUR TECHNOLOGY FOR YOUR QUALITY

Good quality is always in the detail, whether large or small. The execution of a process, for example, when extruding, plastic welding or injection moulding, can certainly depend on the quality of an individual small component. We are aware of this and therefore use the best possible technologies in the manufacture of our insulation products – so that we can achieve good results "in series" and also deliver quickly and reliably.

Our quality ultimately helps to ensure that our customers themselves can deliver the best possible quality, namely through their processes and technologies – be it in the quality features or through efficiency. Our technology is designed to help users to produce a good end product.

EVERYTHING IN STOCK, FASTER CUSTOMER DELIVERIES, TIME IS MONEY

The modernisation of industry today requires ever more individualised products, smaller quantities and shorter delivery times. This naturally also applies to our materials, semi-finished products and drawing parts. In order to cater for as many requirements and react as fast as possible, we therefore stock commonly used and special materials and substances in our extensive warehouse. This means that it usually takes only a few days from order to delivery, even for individual drawing parts. For standard components from our catalogue, goods are often sent to our despatch department even after just a few hours.

DELIVERY DATE? IMMEDIATELY!

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OUR TEAM FOR YOUR NEEDS

So now we have reached the end. Have you enjoyed allowing us to guide you through our small brochure? You probably still have one or two questions but we hope that you have gained a good overview of our product range for insulation technology for plastics machinery.

Please do not hesitate to contact us for further information.
Together we will find a solution.

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