

News Release



Pilot plant for manufacture of high-temperature superconductors goes on stream

- **Process allows economical production of superconducting wire**
- **Important step on the way to market launch**

Today, Deutsche Nanoschicht GmbH, a wholly owned subsidiary of BASF New Business GmbH, is opening its new pilot plant for the manufacture of high temperature superconductors. The facility located in Rheinbach is based on an in-house developed chemical manufacturing process and has a fifty times higher capacity than the company laboratory plant used to date. The pilot plant is an important step on the way to market launch of the superconductors. BASF New Business provides customers with samples of the wire manufactured in the new plant to produce prototypes for innovative, high-efficiency applications in power grids. Primary examples are current limiters and cables for direct and alternating current.

New applications through high-current carrying capacity

Compared to conventional cables, superconducting cables can transmit electric current with negligible loss and therefore much more efficiently, and can transport a much greater amount of energy in relation to the conductor cross-section. High-temperature superconductors already conduct current at the temperature of liquid nitrogen (77 Kelvin / minus 196 degrees Celsius) without resistance. This temperature can be achieved reliably and cost-effectively and maintained during operation by commercial refrigerating machines. The ten to one hundred times higher current-carrying capacity

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compared to copper allows very compact new cable applications and more lightweight systems for generators and motors. Current limiters compensate current peaks in public or industrial distribution grids and can thereby prevent power failures caused by short circuits.

Dedicated process offers cost advantage

To produce wires for high-temperature superconductors, Deutsche Nanoschicht uses a dedicated coating process based on chemical solution deposition. In a continuous process, very thin films of a superconducting material and several buffer layers are applied to a metal strip. In contrast to other, physical methods, the chemical process requires neither a vacuum nor a clean room environment. This presents a decisive advantage for the manufacturing costs of the superconducting wires.

"Our unique coating technology will enable us in future to produce superconductors with the price-performance ratio necessary for wide-scale launch in the energy sector and further consolidate our position in the energy and resources growth market," says Dr. Guido Voit, Managing Director of BASF New Business. "With the new pilot plant, we can offer our customers superconducting wire in good and reliable quality." With immediate effect, the team is not only providing customers with samples but also conducting production technology trials. "Our manufacturing process is highly scalable. We are planning to put a large-scale plant into operation in the medium term."

"E-Power Management" at BASF

BASF's E-Power Management growth field comprises technology developments, materials and solutions for the entire electricity value chain. It focuses on resource-conserving and efficient electricity generation, transmission, storage and the efficient use of electrical energy.

About BASF New Business

BASF New Business GmbH (BNB) searches out long-term trends and innovative topics in industry and society as well as future markets, analyzes their growth potential and checks whether potential new business areas are suitable for BASF. The activities are focused on the client sectors transportation, building and construction, consumer goods, health & nutrition, electronics, agriculture and energy & resources where new business opportunities outside of the existing businesses of BASF are identified.

The most promising topics are built up as new business areas for BASF by the subsidiary. BASF New Business concentrates on new chemical-based materials, technologies and system solutions. BNB also pushes technological progress through the development of new products. To evaluate the technology and the market, BNB works closely with the global research platforms and the divisions of BASF. In addition, BASF New Business cooperates with research institutes, universities, start-ups and industrial partners. Direct investments in start-ups, working in strategically relevant technology fields are undertaken by the subsidiary BASF Venture Capital.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 112,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of more than €70 billion in 2015. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information at www.basf.com.