

News Release

BASF supports energy efficient, low-cost superconducting cable system developed by NEDO and SWCC

- **BASF hosts the world's first demonstration test of three-phase coaxial superconducting cables at a commercial production site**
- **Effects on energy conservation to be measured at BASF site in Totsuka by using existing cold energy**
- **BASF's high-temperature superconducting wires help reduce energy consumption and costs**

Tokyo, Japan – June 12, 2019 – BASF is supporting the groundbreaking demonstration test of a low-cost superconducting cable system developed by New Energy and Industrial Technology Development Organization (NEDO), a governmental organization which promotes the development of new energy technologies, and SWCC SHOWA CABLE SYSTEMS CO., LTD (SWCC), a leading Japanese cable system manufacturer. This is the world's first demonstration test of a three-phase coaxial superconducting cable system* at a working commercial production site, the BASF site in Totsuka.

This system aims to save energy by using the existing cold energy in the plant while reducing transmission loss. This demonstration test will use the BASF area of the premises of the Totsuka chemical production site in Yokohama, Kanagawa Prefecture. BASF will also supply high-temperature superconducting wires to further improve the energy efficiency of cables. Construction will begin this year, and operation is scheduled to commence in February 2020.

Metal (copper or aluminum) is commonly used as a conductor in the wires. However, it often results in transmission loss due to the heat generated by resistance. One of the measures to prevent power loss is using the

superconductor with "zero resistance". To maintain the superconductivity, the conductor requires constant cooling with liquid nitrogen, and thus high energy costs. To address this, NEDO and SWCC have developed a low-cost superconducting cable system. Many steel and chemical plants, such as BASF, use nitrogen gas and liquid nitrogen in their plants. This test will be conducted at the BASF site in Totsuka, Japan, to measure the effects on energy saving. In addition, a 250-meter superconducting cable will be installed in part of the system, and the laying method of the cables and operation management in the plant will be also assessed.

"BASF is committed to creating chemistry for a sustainable future. This project meets our corporate goals of reducing carbon emissions and energy consumptions," said Hiroki Ishida, Representative Director and President of BASF Japan Ltd. "BASF Japan will celebrate its 70th anniversary this October. We are pleased to be part of this project that contributes to sustainability with our Japanese partners in this special year."

The superconducting cables which will be used in this test contains high-temperature superconducting wires (Oprium[®]) produced by Deutsche Nanoschicht GmbH, a 100% subsidiary of BASF. Compared to conventional cables, superconducting cables can effectively transmit electric current with minimal loss and transport a greater amount of energy in relation to the conductor's cross-section.

Through this verification test, BASF, together with NEDO and SWCC, will assess the energy efficiency and effectiveness of superconducting cables in upgrading plant infrastructure, increasing energy efficiency, and reducing power loss from new energy sources, with the aim of early commercialization.

*It has a compact structure in which 3 phases (U-phase, V-phase, W-phase) necessary for transmitting high AC power are stacked on one axis.

About BASF in Japan

BASF has been a committed partner to Japan since 1888. BASF operates 23 production sites in Japan, including 16 admixture plants of the construction chemicals division. In addition, BASF maintains a strong research and development presence in Japan, with facilities in Amagasaki, Yokohama, Chigasaki, and Naruto. As of the end of 2018, BASF employed 1,138 employees in Japan, and recorded sales of about €1.8 billion to customers in the country. Further information is available on the Internet at www.basf.com/jp.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 122,000 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 six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of around €63 billion in 2018. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at www.basf.com