We create chemistry

News Release

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NAS® battery system starts up at BASF's Antwerp Verbund site

- **Stationary storage capacity optimizes electricity use and helps stabilize electricity supply**
- **Battery system with power converter to be presented at trade fair ees Europe in Munich**

Antwerp, Belgium, and Ludwigshafen, Germany – BASF New Business GmbH (BNB) has successfully started up a system comprising four NAS® battery containers, which have been integrated into the electricity grid at BASF's Verbund site in Antwerp, Belgium. With this long-term project in Antwerp, the BASF team wants to test various operating scenarios and further explore the potential of NAS® batteries. NAS® batteries are sodium-sulfur batteries with high energy content that are designed for stationary electricity storage. Since 2019, BNB has been cooperating in this segment with the Japanese ceramics manufacturer NGK Insulators Ltd. to market and further develop NAS® batteries.

"By having our own battery system, we gain direct experience in long-term operations of energy storage systems and we can vary and test the associated infrastructure. We can also examine various use cases and business models. This enables us to advise our customers even more comprehensively in the planning and implementation of their projects and to collect important data for further development," said Frank Prechtl, Director of E-Power Management at BNB.

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The battery system in Antwerp has an energy storage capacity of 5.8 megawatt hours (MWh) and a total output of 950 kilowatts (kW). Power electronics, including a power conversion system (PCS), are needed in order to use the electrical energy stored in the battery. The Swiss company Indrivetec AG has developed a power conversion system for NAS® batteries that has been installed in Antwerp and will be showcased at the ees (Electrical Energy Storage) Europe trade fair in Munich from October 6-8, 2021. At booth B6.140, trade fair visitors can discuss the interaction of the PCS with the battery as well as the possible applications of the NAS® battery system with experts from BNB and Indrivetec.

NAS® batteries help reduce energy costs and environmental impact

Electricity suppliers, grid operators and energy consumers can benefit from the use of NAS® batteries. NAS® battery systems support the increasing integration of fluctuating renewable energy sources, such as wind and solar, into the grid. NAS® batteries can be charged when excess electricity is generated and then provide electricity at a time when demand is higher. They can supply large volumes of electrical energy over a period of four to eight hours and thus decouple electricity generation and demand. Furthermore, NAS® batteries are used for the stabilization of electricity supply for industrial customers, grid upgrade deferral, and micro/off grids. Used in these applications, NAS® batteries are an essential building block for implementing the energy transition.

BASF and NGK collaborating to further develop NAS® batteries

For years, BASF has been intensely working on improving sodium-sulfur battery technology. NGK's NAS® battery was the world's first commercialized megawatt-class battery with the capacity to store more than 1 MWh of electricity for hours. In 2019, BNB and NGK entered into sales partnership agreement for NAS® batteries and a joint development agreement for next-generation sodium-sulfur batteries. To expand the application spectrum of NAS® batteries and tap new markets, the two partners have been combining BASF's outstanding chemistry know-how with NGK's expertise in battery design and production. Via its global sales network, BNB markets tailor-made NAS® battery systems and provides technical support for installation, startup, maintenance and ongoing operations.

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About BASF New Business

At BASF, we create chemistry for a sustainable future. Also contributing to this corporate purpose is BASF New Business GmbH (BNB), a subsidiary of BASF. The task of BNB is to support the growth targets of BASF by identifying and generating new businesses which are beyond the core business of BASF group but within target portfolio of BASF. BNB is primarily active in arising markets with higher-than-average growth rates. In addition to its head office in Ludwigshafen, Germany, BNB has offices in Hong Kong, Korea, Japan, Taiwan and the United States. Founded in 2001, BNB utilizes startup-like structures and methods as well as an extensive internal and external collaboration network. It works closely with future customers to build-up and expand new businesses.

BNB includes the unit Foresight & Scouting as well as Chemovator GmbH, a wholly owned BNB subsidiary based in Mannheim, Germany, which serves as BASF's internal incubator, offering a protected space for all employees to accelerate speed-to-market for innovative business ideas. In addition, BNB currently has three Business Build-Up units: 3D printing (in the form of wholly owned BNB subsidiary BASF 3D Printing Solutions GmbH), E-Power Management and Functional Feed Additives.

The activities of BNB are complemented by BASF Venture Capital GmbH (BVC). BVC's goal is to generate new growth potential for current and future business areas of BASF by investing in young companies and funds.

More information about BASF New Business GmbH can be found at: www.basf-new-business.com.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 110,000 employees in the BASF Group contribute 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 €59 billion in 2020. 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.