



Joint Press Release

BASF and NGK enter into sales partnership agreement for NAS[®] battery

- **BASF New Business GmbH is selling as of now NAS battery (stationary sodium-sulfur-based batteries) from Japanese manufacturer NGK INSULATORS, LTD.**
- **Applications for NAS battery range from integration of renewable energy to grid-scale and micro/off grid power supply**

Nagoya, Japan and Ludwigshafen, Germany, June 11, 2019 – BASF New Business GmbH (BNB), a wholly-owned subsidiary of the German chemical group BASF, and Japanese ceramics manufacturer NGK INSULATORS, LTD. (NGK) today announced the conclusion of a sales partnership agreement (SPA). The agreement gives BNB non-exclusive rights to sell NGK’s NAS battery via BASF’s global channels. Both partners expect a synergistic effect from the broad business activities of the other.

NGK’s NAS battery is world’s first commercialized megawatt-class battery which has the capacity to store large amounts of electricity for hours. The NAS battery system boasts an array of superior features, including larger capacity, higher energy density and longer life compared to other battery technologies. These features are beneficial for stationary applications – in contrast to lithium-ion batteries, for example, which are suited to deliver high power over shorter periods.

The NAS battery system supports the increasing integration of fluctuating renewable energy sources such as wind and solar into the grid. It also enables deferral of transmission upgrade, because the electricity does not have to be transmitted immediately after being produced but can be discharged on demand. Furthermore, NAS batteries are used for the stabilization of electricity supply and emergency power supply for industrial customers and micro/off grids. Through these applications, NAS battery helps to reduce energy costs and environmental load.

“NGK has more than 15 years’ experience in both the manufacture of NAS batteries and their deployment at customers’ site. Based on our technical expertise gained by own developments in recent years, sodium-sulfur technology fits ideally to the requirements of the emerging market for long-duration energy storage systems. The NAS battery from NGK enables BASF to enter the energy market and offer customers a reliable, proven solution,” explained Dr. Frank Prechtel, Director Business Build-Up E-Power-Management of BASF New Business GmbH.

“NGK was the first company worldwide to commercialize the NAS battery system and has delivered NAS battery systems to about 200 locations worldwide with a total output of more than 560 MW and a storage capacity of 4.0 GWh. We are delighted to be able to use BASF’s worldwide distribution network, which will allow us to achieve much higher market penetration. Through further expansion of NAS battery, NGK globally contributes to installation of renewable energy and the reduction of CO₂ emissions.” said Mr. Tatsumi Ichioka, General Manager of NAS battery Division, NGK.

The distribution of NAS batteries by BASF is the first step in the cooperation between NGK and BASF. BASF New Business already participated in electrical energy storage Europe (ees) in Munich from May 15 to 17, 2019.

About NGK

NGK is the world's largest manufacturer of electrical insulators including 1,000-kV ultrahigh-voltage (UHV) transmission and substation insulators, and has a 100-year history. With foundations in exclusive ceramics technology, NGK contributes to environmental conservation, providing a wide range of products and technology in the "Triple E" growth fields: energy, ecology and electronics. NGK is also one of the largest manufacturers of ceramic catalyst carriers (HONEYCERAM) and Diesel Particulate Filters (DPF) for catalytic converters for automobiles. NGK is also the world's leading manufacturer succeeding in commercialization of large capacity energy storage system (NAS battery), which has overturned the conventional wisdom "The power cannot be stored."

To learn more about NGK, visit: www.ngk-insulators.com

About NAS[®] battery: www.ngk.co.jp/nas/

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 promotes technological progress through the development of new products. To evaluate the technology and the market, BNB works closely with BASF's global research platforms and the divisions. In addition, BASF New Business cooperates with research institutes, universities, startups and industrial partners. The subsidiary BASF Venture Capital invests directly in startups that work in strategically relevant technology fields. More information 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. 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.

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