



## **BASF and Linde successfully complete pilot project at National Carbon Capture Center in Wilsonville, Alabama**

- **Improved capture of carbon dioxide from flue gas at coal fired power plant**
- **Pilot plant captures up to 30 tons of CO<sub>2</sub> per day at more than 90 percent capture rate and at a CO<sub>2</sub> purity of more than 99.9 percent**

FLORHAM PARK, NJ, and BRIDGEWATER, NJ – July 19, 2016 – BASF, the world's leading chemical company, and The Linde Group, a technology company, successfully completed a joint pilot project to improve capture of carbon dioxide (CO<sub>2</sub>) from flue gas at a coal fired power plant at the National Carbon Capture Center (NCCC). The NCCC is a U.S. Department of Energy (DOE) research facility managed and operated by Southern Company, in Wilsonville, AL. Since January 2015, the project operated a pilot plant under a cooperative agreement with DOE's National Energy Technology Laboratory (NETL). Based on the successful completion, BASF and Linde will begin larger-scale testing and explore commercial opportunities.

The technology used during the pilot project integrates BASF's advanced aqueous amine-based solvent and process technology, marketed by BASF under the OASE<sup>®</sup> blue brand, with novel CO<sub>2</sub>-capture process and engineering innovations developed by Linde. Parametric and long-duration testing confirm the main performance targets set for the facility. Specifically, it captured more than 90 percent CO<sub>2</sub> from the flue gas while the purity of the CO<sub>2</sub> was more than 99.9 percent. The design capacity of the operation was up to 1.5 Megawatt-electric (MWe) and required less than 2.8 gigajoules of regeneration steam per metric ton of CO<sub>2</sub>. The NCCC includes a post-combustion carbon capture facility that allows testing and integration of advanced technologies using actual coal-derived flue gas from an 880-MW pulverized coal unit at Alabama Power's Plant in Gaston. The pilot plant has operated at the facility for more than 1,200 hours at a higher regeneration pressure of 3.4 bar absolute, thereby demonstrating a cost advantage over other amine-based technologies.

“The amine-based OASE blue technology offers significant benefits for CO<sub>2</sub> capture as it aims to

reduce the regeneration energy requirements using novel solvents,” said Dr. Andreas Northemann, Vice President of BASF’s OASE Gas Treating Excellence. “Long-term pilot testing demonstrated the solvents’ performance and stability. BASF’s almost 50 years of experience in industrial gas treating, combined with the expertise of Linde in large-scale engineering, procurement and construction, will lead us to the commercial scale-up of OASE blue technology.”

The pilot plant at the National Carbon Capture Center leveraged the earlier experience that Linde and BASF jointly gained in a similar project in Germany. Together with BASF and Germany’s power plant operator RWE, Linde also installed a pilot plant for carbon capture in Niederaussem, Germany in 2009. As part of this cooperation, BASF developed its highly energy efficient technology to capture CO<sub>2</sub> from flue gas.

“Linde is pleased to partner with BASF on the Wilsonville project,” said Dr. Christian Bruch, Member of the Executive Board of The Linde Group. “It allows us to combine our experience in the Niederaussem project with our decades of large plant engineering experience and process integration capabilities to reduce the capital cost when built at scale. The result should prove that CO<sub>2</sub> capture is economically feasible, substantially reducing emissions and their negative impact on climate.”

### **OASE – Gas Treating Excellence by BASF**

With almost 50 years of experience, BASF offers its customers efficient solutions for the treatment of various gases such as natural gas, synthesis gas, and biogas. Worldwide, these solutions have been proven and demonstrated in over 400 reference plants. BASF markets its range of technologies, gas treatment agents and complete technical services under the brand OASE – Gas Treating Excellence by BASF.

### **About Linde**

In the 2015 financial year, The Linde Group generated revenue of USD 19.7 bn ( EUR 17.944 bn ) , making it one of the leading gases and engineering companies in the world, with approximately 65,000 employees working in more than 100 countries worldwide. The strategy of The Linde Group is geared towards long-term profitable growth and focuses on the expansion of its international business with forward-looking products and services. Linde acts responsibly towards its shareholders, business partners, employees, society and the environment in every one of its business areas, regions and locations across the globe. The company is committed to technologies and products that unite the goals of customer value and sustainable development. For more information, see The Linde Group online at [www.linde.com](http://www.linde.com).

## **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](http://www.basf.com).

## **Forward-looking statements**

This release contains forward-looking statements. These statements are based on current estimates and projections of BASF management and currently available information. They are not guarantees of future performance, involve certain risks and uncertainties that are difficult to predict, and are based upon assumptions as to future events that may not be accurate. Many factors could cause the actual results, performance or achievements of BASF to be materially different from those that may be expressed or implied by such statements. BASF does not assume any obligation to update the forward-looking statements contained in this release.

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