

→ Cooperation

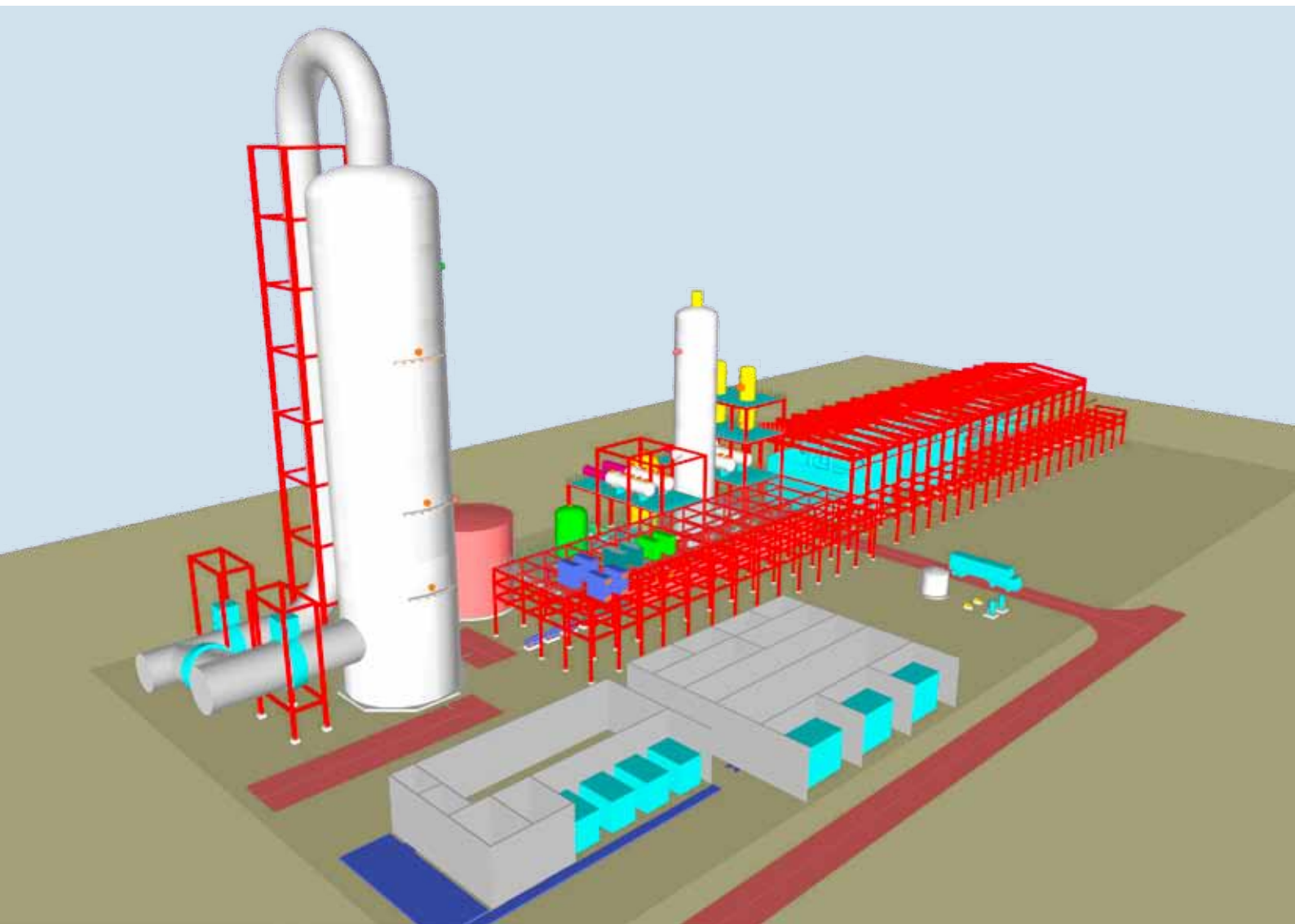
 **BASF**
The Chemical Company

THE LINDE GROUP

Linde

Flue Gas Carbon Capture Plants.

By Linde and BASF.



Taking on the Challenge of Carbon Capture.

Capturing carbon dioxide from low pressure flue gas streams in power or chemical plants has become an important global environmental topic. Linde and BASF have joined forces to take on the challenges associated with carbon capture and are jointly marketing new, advanced technology. Linde is offering turn-key capture plants while BASF is the leading technical supplier for gas treatment world wide.

The captured carbon dioxide can be used commercially for example for EOR (enhanced oil recovery) or as a building block for the production of urea. Alternatively it can be stored underground as a carbon abatement measure.

Based on the pilot plant experiences in Wilsonville, USA, and Niederaussem, Germany, Linde and BASF are constantly developing solutions for full scale power plants. The PCC (Post-Combustion Capture) technology is now commercially available for lignite and hard coal fired power plant as well as for gas turbine applications.

Your benefits

The alliance between Linde, a world-leading gases and engineering company and BASF, The Chemical Company, offers great benefits to our customers:

- Complete capture plants including CO₂-compression/drying from one source – Linde with BASF technology
- Backflow of many operators experiences from numerous gas treatment reference plants
- Integrated technical solutions
- Proven and tested processes including guarantees
- Synergies between process, engineering, construction and operation
- Optimised total and operational costs for the owner



OASE®

GAS TREATING EXCELLENCE BY BASF



Reference projects.

Post-Combustion Capture pilot plant in Wilsonville, USA

The U.S. Department of Energy has selected technology group The Linde Group for the improvement of CO₂ capture technologies. In this field Linde was strongly supported by BASF, the leading technology supplier for acid gas removal from gaseous streams. Linde's pilot plant, to be built in Wilsonville, AL, is due to be operational by early 2014.

Based on BASF's design of the process set-up for state-of-the-art solvents for CO₂ scrubbing the facility will test novel CO₂ scrubbing solutions to reduce the energy consumption and costs of advanced carbon capture and separation systems for coal-fired power plants.

The pilot plant is designed to limit the increase of levelized cost of electricity to no more than 35 percent compared to about 80 percent added cost for existing technologies. The new plant is built on the extensive experience Linde and BASF jointly gained in Niederaussem.

Post-Combustion Capture at lignite-fired power plant in Niederaussem, Germany

Linde has successfully installed a PCC pilot plant, which is connected to the world's most modern lignite-fired power plant in Niederaussem, Germany. The innovative project is the result of cooperation between Linde, the power plant operator RWE and BASF, which has developed a new CO₂ capture technology. The new solution is the most effective way to capture the CO₂. Linde delivered detailed engineering, equipment procurement and construction of the pilot plant. The installation was completed and tested in 2009.

As part of the cooperation with RWE and Linde, BASF started the development of highly energy efficient technology to capture CO₂ from flue gases. Novel technology including new solvents is being tested at this facility in Niederaussem.

BASF has extensive experience in removing CO₂ from gas streams, marketing its amine scrubbing technology for the removal of acid gases such as CO₂ under the brand name OASE®. The BASF process is used successfully in more than 300 plants worldwide to scrub natural, synthesis and other industrial gases.

Profiles and contacts.



Technologies of BASF

- Capture of CO₂ from flue gases PCC (Post-Combustion Capture)
- Capture of CO₂ from ammonia and oxo-synthesis gas and iron ore gas
- Capture of acid gas from natural gas

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Technologies of Linde

- PCC (Post-Combustion Capture)
- IGCC (Integrated Gasification Combined Cycle)
- Oxy-fuel combustion (air separation unit, CO₂ handling)
- CO₂ compression, purification, liquefaction, utilisation and storage (above ground)
- Food grade CO₂

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