

Air Products' Technologies in Oxyfuel CO₂ Capture and Purification



Air separation unit (ASU) in Nanjing, China

Air Products is active in developing solutions to address key technical hurdles in CO₂ capture for coal-fired power plants. Our solutions range from supply of oxygen for oxyfuel combustion to developing technologies in CO₂ purification and compression.

The Value of Oxyfuel Combustion

Oxyfuel combustion for pulverized coal power plants creates a high concentration of CO₂ in the flue gas, offering the potential for a more cost-effective solution to separate the CO₂ for sequestration.

Oxyfuel technology can be applicable to new-build supercritical power plants as well as providing a potential alternative for retrofitting the existing installed base of coal-fired and oil-fired power plants, potentially offering a CO₂ capture solution to a significant portion of the existing and future power fleet.

The Air Products Advantage

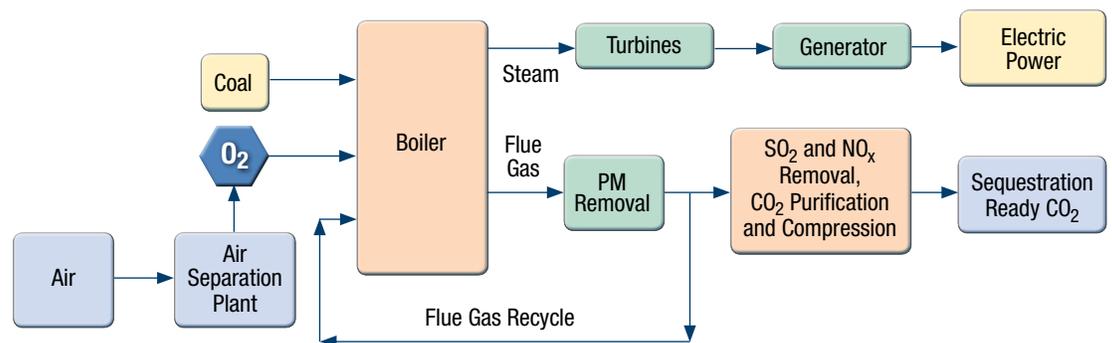
Large-scale air separation units are required for oxyfuel CO₂ capture projects, and Air Products has global experience in world-scale oxygen supply and is a world leader in the development of next-generation oxygen supply. In addition, the challenge of capturing carbon emissions goes beyond supply of oxygen.

Air Products' proprietary technology in development targets impurities present in the flue gas: acid gases, oxygen, nitrogen, argon, and water vapor. These acidic and inert impurities should be removed from the CO₂ stream before the pipeline in order to prevent corrosion and comply with likely specifications for sequestration. Air Products is developing the novel, patented CO₂ compression and purification process, illustrated below, in order to address this technology gap.

Air Products' Oxyfuel CO₂ Capture Projects:

- 2007: Economic studies for retrofit and new build oxyfuel facilities, with Doosan Power Systems and the DTI Emerging Energy Technologies Programme
- 2008: Demonstration of oxyfuel sour compression technology at Doosan Power Systems' facility in Renfrew, Scotland, as part of the Oxycoal-UK Project
- 2009/2010: Pilot of CO₂ purification system at a boiler simulation facility in Windsor, CT, in cooperation with DOE
- 2010/2011: Pilot facility for fully integrated CO₂ capture and purification process, at Vattenfall's Schwarze Pumpe oxyfuel pilot plant

Air Products' CO₂ Compression and Purification Process Integrated into a Coal-Fired Power Plant



For More Information

With the unique combination of world-class cryogenic air separation, novel purification and compression technology development, and next-generation oxygen technology development, Air Products is well suited to meet the needs of the power industry in a carbon-constrained market.

For additional information or to discuss our latest advancement in oxyfuel CO₂ capture technology, please see an Air Products representative or visit our website at www.airproducts.com/CO2_capture.

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