The Petra Nova Carbon Capture Project

Project Overview

The world's largest post combustion CO2 capture system will be located in Thompson, Texas, in the U.S.A. It is currently under construction and is expected to be operational in the fourth quarter of 2016. The project has been developed by Petra Nova, a 50/50 joint venture between NRG Energy and JX Nippon Oil & Gas Exploration. The project uses MHI CO2 capture technology to separate the CO2 from flue gas for the purpose of enhanced oil recovery (EOR).

The capture system removes the carbon dioxide (CO2) from a slipstream of flue gas from an existing coal-fired power generation plant. It has a CO2 capture capacity of 4,776 metric tons per day (mtpd). The system consists of a flue-gas cooler, absorber and regenerator, CO2 compression unit, and associated utility facilities. Capture efficiency of the process is 90%.

This project involves the separation and capture of CO2 from a slipstream of flue gas otherwise emitted from NRG's WA Parish generation station, a coal-fired power generation plant, located approximately 60 kilometers southwest of Houston, Texas. The captured CO2 will be compressed and transported for injection into the West Ranch oil field to boost oil production. Through EOR, it is expected that oil production will be increased from around 500 barrels per day to approximately 15,000 barrels per day.

EOR projects, including this project, are advanced solutions, which concurrently address issues in both the environment and energy fields. MHI is the technology provider that will supply the CO2 capture system supporting greenhouse gas reduction. Going forward, MHI intends to continue its support of sustainable environment preservation and economic development through its aggressive involvement in this field.

Note: CO2 capture efficiency indicates the ratio (percentage) of CO2 recovered from the flue gas by the process against total amount of CO2 contained in the flue gas.
The MHI flue gas CO₂ capture technology, so called "KM CDR Process®" (Kansai Mitsubishi Carbon Dioxide Recovery) can be applied to either existing or new power plants. This technology has been co-developed by MHI and the Kansai Electric Power Co., Inc. since 1990.

The process is built on proven, advanced flue gas CO₂ capture technologies with specific application for fossil fuel power generation facilities. It utilizes the proprietary KS-1™ high-performance solvent that has improved absorption and regeneration properties while also lowering corrosiveness and degradation features, compared with normal amine applications. These aspects contribute to lower energy requirements, solvent consumption and emissions of waste products.

MHI is a world-leading flue gas CO₂ capture technology supplier and is strategically positioned to provide the most technically proven, environmentally friendly and economically robust CO₂ capture process.

**KM CDR Process®**

- World’s most energy efficient process with KS-1 trademark solvent – leading to reduced CAPEX & OPEX
- World’s most advanced and comprehensive industrial R&D programs for more than 20 years – Deployment of multiple R&D pilot plants and research facilities led to significant process and technology improvements
- More than 207 patents pertaining to the KM CDR Process® all over the world (as of June, 2014)
- Worldwide commercial experience with large scale various Air Quality Control Systems (AQCS) plant

**FOR MORE INFORMATION, CONTACT:**

**MITSUBISHI HEAVY INDUSTRIES, LTD.**  
Energy & Environment  
3-1, Minatomirai 3-chome, Nishi-ku, Yokohama 220-8401, Japan  
Phone: 81-45-200-6801, Telefax: 81-45-200-6689  

**MITSUBISHI HEAVY INDUSTRIES AMERICA, INC.**  
Environmental & Chemical Plant Division  
20 Greenway Plaza, Suite 600 Houston, TX 77046  
713-361-6400(Direct)/713-361-6450(Fax)