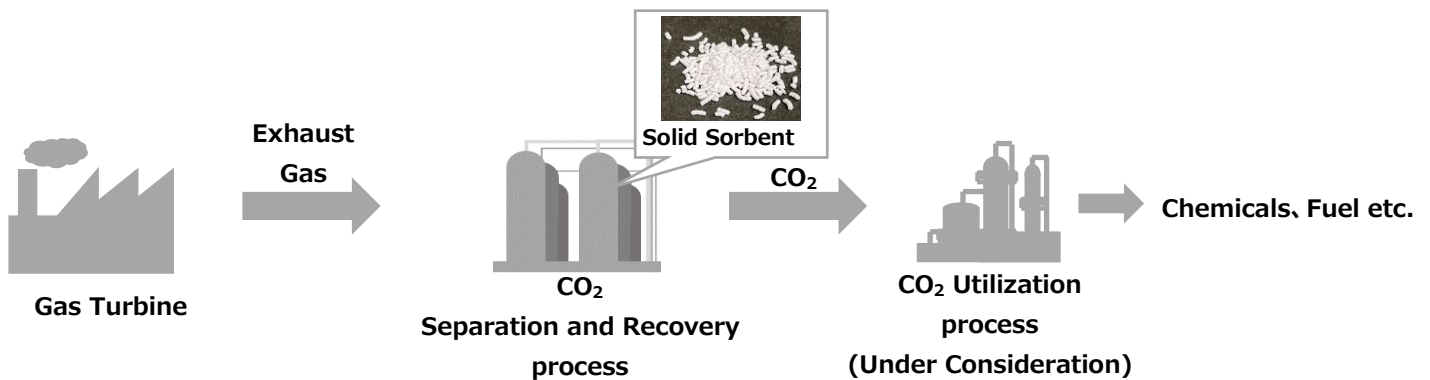


13 May 2022

Chiyoda, JERA, and RITE to Start Development and Demonstration Project of Large-scale CO₂ Separation and Recovery Technology from Gas-fired Power Generation Exhaust Gas under a Green Innovation Fund Program

Chiyoda Corporation (Chiyoda), JERA Co. Inc. (JERA) and The Research Institute of Innovative Technology for the Earth (RITE) have commenced technology development and demonstration project of large-scale CO₂ separation and recovery from gas-fired power generation exhaust gas, under the New Energy and Industrial Technology Development Organization’s Green Innovation Fund program.

As shown below, the development and demonstration centers on domestic solid sorbent material to realize low cost separation and recovery of CO₂ emitted from gas turbines of gas-fired power plants.



This demonstration image (for reference)

There is an increasing need for gas turbine exhaust gas CO₂ separation and storage towards low carbonization in the electric power and LNG supply chain sectors and carbon capture utilization and storage (CCUS). As gas-fired power plants with high combustion efficiency emit low concentrations of CO₂, the issues are: (1) High energy input is required for CO₂ separation and storage, (2) High equipment and absorption material costs etc., and (3) Large site areas required. Development of technology to realize smaller site areas at low cost is therefore required for full-scale social dissemination and market formation.

This project combines RITE’s knowledge of CO₂ separation and recovery technology from blast furnace gas and coal combustion exhaust gas, Chiyoda’s knowledge and experience of process development, scale-up, social implementation and LNG production plant construction and JERA’s knowledge of operation and maintenance of gas-fired power plants, to develop innovative and economical CO₂ separation and recovery technology and reduce the required area for gas turbine combustion exhaust gas with 3% to 4% (or less) CO₂.

The project will cost approximately 10 billion yen over its nine (9) year schedule from 2022 to 2030 and

will be executed in three (3) phases as follows:

- Phase 1: Absorbent material development and conceptual design for a commercial plant.
- Phase 2: Establish absorbent material manufacturing and construct and operate bench test equipment.
- Phase 3: Establish absorbent material mass production and construct and operate a 20 t-CO₂ / d scale real gas pilot plant including CO₂ Utilization process.

The solutions that Chiyoda, JERA and RITE will provide to achieve low carbonization, while utilizing existing infrastructure and realizing low carbonization utilization of natural gas, are anticipated to be in high demand in Japan and overseas.

Chiyoda Corporation

Under its corporate philosophy of 'Energy and Environment in Harmony', Chiyoda has grown since its founding in 1948 by responding to the changing needs of each generation through research and development, continuous technology and by successfully delivering projects worldwide in sectors such as oil & gas, chemicals and petrochemicals, life science, renewable energy and the environment. Through this initiative, Chiyoda continues to support carbon neutrality in the global drive towards a sustainable environment.

JERA Co. Inc.

Under its 'JERA Zero CO₂ Emissions 2050' objective, JERA is working to reduce CO₂ emissions from its domestic and overseas businesses to zero by 2050, promoting the adoption of greener fuels that does not emit CO₂ during power generation. JERA continues contributing to energy industry decarbonization and the development of decarbonization technologies, such as CO₂ separation and recovery, while ensuring economic rationality.

RITE

RITE was established in 1990 as a center of excellence to work internationally towards developing innovative environmental technologies based on the Earth Regeneration Plan 'New Earth 21' compiled by the Government of Japan. Since then, RITE has been carrying out R&D activities particularly for the mitigation of global warming, including R&D on carbon dioxide capture and storage, biorefinery technologies, and integrated analysis on strategies for mitigating global warming. Based on this knowledge, RITE continues to promote R&D that contributes to preventing global warming and achieving carbon neutrality by 2050.

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