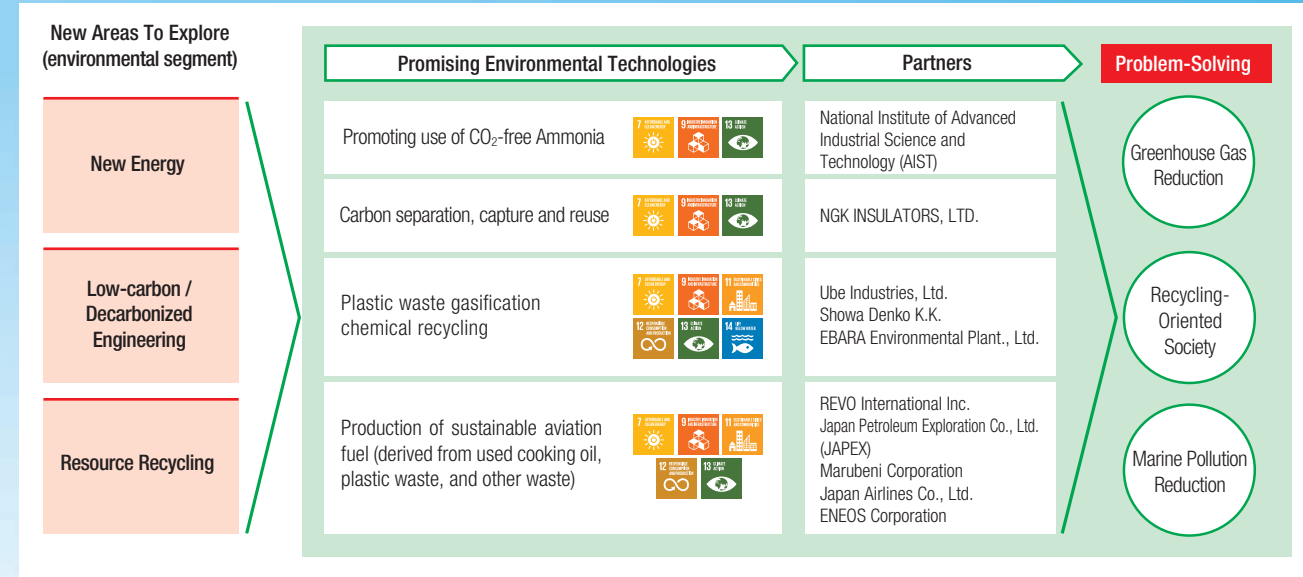


Highlights

Accelerating Commercialization of Environmental Technologies

Recognizing how firmly established the trend toward building sustainable societies has become, the JGC Group regards environmental business in particular as a priority segment. We focus on our own environmental and other technologies, drawing on collaboration with corporations and universities that maintain and develop other advanced technologies, to promote building new business. To accelerate this development, the Sustainability Co-Creation Department was established on October 1, 2019, under direct supervision of the president.



Sustainable Society as Envisioned and Pursued by the JGC Group



New Energy

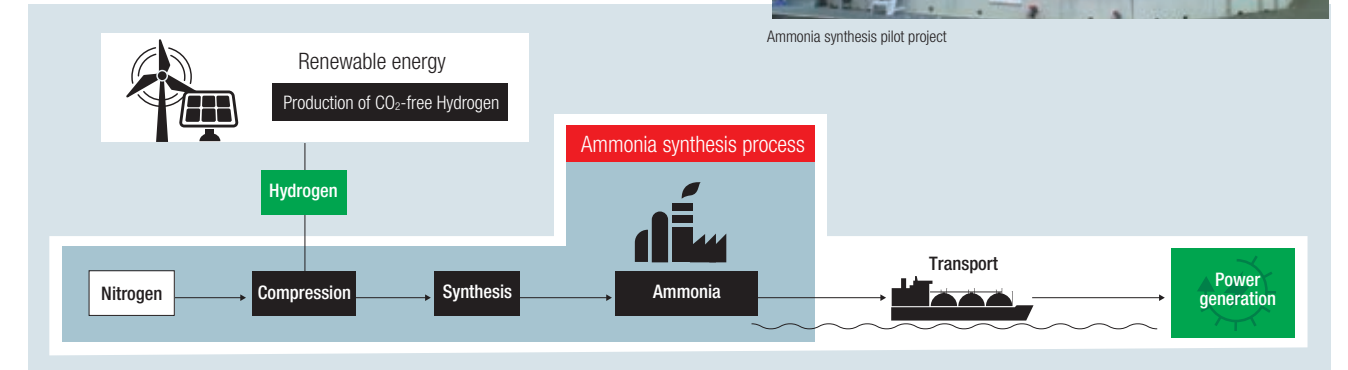
Promoting Use of CO₂-free Ammonia as a Hydrogen Energy Carrier

In efforts toward a low-carbon society, we can anticipate expanded use of hydrogen energy, which does not emit CO₂ during combustion. However, many commercial challenges remain. From an economic standpoint, for example, large-scale and highly efficient conversion to an energy carrier for transport is needed. In collaboration with AIST, the JGC Group is promoting establishment of technologies to commercialize hydrogen energy. One facet is developing new catalysts and processes to synthesize ammonia (which does not emit CO₂ during combustion) using hydrogen produced from renewable energy as a raw material.



Ammonia synthesis pilot project

Using Ammonia as a Hydrogen Energy Carrier



Low-carbon / Decarbonized Engineering

Carbon Separation, Capture and Reuse

Working with NGK INSULATORS, the JGC Group has developed high-efficiency CO₂ separation and capture technology using DDR-type zeolite membranes. Large-scale field testing is underway in the United States. Use of these techniques—separation and capture of CO₂ from associated gas during crude oil production, or removal of CO₂ during natural gas refining—helps promote CO₂ recycling as well as development of energy resources with lower environmental impact. Gas processing costs are also reduced through this technology, which requires less energy to remove CO₂. To meet increasing energy demand, the technology will be applied in the development of challenging natural gas fields with high concentrations of CO₂.



DDR-Type Zeolite Membrane (Source: NGK INSULATORS)

Recycling

Gasification Chemical Recycling of Plastic Waste

Plastic recycling is being promoted in response to global waste issues, with marine plastic pollution often cited as an example. In conjunction with Ebara Environmental Plant, Ube Industries, and Showa Denko, the JGC Group supports gasification chemical recycling that applies the Ebara Ube Process (EUP) to gasify waste plastic and convert it to synthetic gas that can be used in synthesis of chemicals such as ammonia or olefins.

