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Mitsui Chemicals, Inc.
Maruzen Petrochemical Co., Ltd.
Toyo Engineering Corporation
Sojitz Machinery Corporation

**Launch of Pilot Project Aimed at Commercial Use of
Fuel Ammonia to Naphtha Crackers**
Adopted as NEDO Green Innovation Fund R&D Project

Mitsui Chemicals, Inc. (Minato-ku, Tokyo; President & CEO: HASHIMOTO Osamu), Maruzen Petrochemical Co., Ltd. (Chuo-ku, Tokyo; President & Representative Director: NABESHIMA Masaru), Toyo Engineering Corporation (Narashino-shi, Chiba; President & CEO: NAGAMATSU Haruo) and Sojitz Machinery Corporation (Chiyoda-ku, Tokyo; President & CEO: MATSUMOTO Yukihiisa) today announced that a joint pilot project to be demonstrated by the four companies is to be funded by the New Energy and Industrial Technology Development Organization (NEDO). The project partners had applied to the Green Innovation Fund for projects aimed at the development of technology for producing raw materials for plastics using CO₂ and other sources, focusing in particular on the development of advanced technologies for naphtha crackers.

The goal of the pilot project is to switch naphtha crackers from running on conventional methane-based fuel to one in which ammonia is the principal component, thereby reducing the CO₂ emissions generated by combustion virtually to zero. The trial is expected to run for 10 years, from FY2021 until FY2030 in order to be implemented in society after feasibility has been demonstrated in an entirely ammonia-fired commercial cracker in the project's final year.

■ **Roles of the project partners**

Company Name	Role
Mitsui Chemicals (project manager)	Overall coordination Deliberations on obtaining permits and approval from government agencies Operation of the test cracker Operation of the demonstration cracker

Maruzen Petrochemical	Deliberations on obtaining permits and approval from government agencies Operation of the demonstration cracker
Toyo Engineering	Conceptual design of optimal fuel conversion Engineering and construction of the test cracker and auxiliary facilities Engineering and construction of the demonstration cracker and auxiliary facilities
Sojitz Machinery	Burner development and manufacture

Through the construction and operation of the plant along with the manufacture of the equipment, these four companies will leverage their knowledge and technical capabilities in the field of ethylene plants as they aim now to achieve the social implementation of entirely ammonia-fired crackers, thereby contributing to the reduction of CO₂ emissions throughout the petrochemical industry.

■ Company profiles

Mitsui Chemicals, Inc.

In November 2020, Mitsui Chemicals announced its commitment to achieving carbon neutrality by 2050. The company's carbon neutrality strategy is based on the two-pronged approach of reducing the Mitsui Chemicals Group's Scope 1 and 2 greenhouse gas emissions while also maximizing the ability of the Group's products to reduce greenhouse gas emissions throughout their life cycle. In this project, Mitsui Chemicals aims to tap into its experience as the operator of Japan's longest-running cracker and its many years in the ammonia business to make entirely ammonia-fired commercial crackers a reality.

Maruzen Petrochemical Co., Ltd.

Operating two ethylene plants near by one another in Chiba, Maruzen Petrochemical recognizes that decarbonizing ethylene crackers is crucial. The company aims through this project to reduce CO₂ emissions, ultimately developing plant technology and supplying petrochemical products free from CO₂ in an effort to ensure carbon neutrality throughout the supply chain, including its business partners.

Toyo Engineering Corporation

In partnership with top ethylene licensor Lummus Technology LLC, Toyo Engineering is one of the world's leading contractors, with experience of 48 ethylene plant projects. The decarbonization of ethylene crackers is therefore a key R&D theme for the company. Through this project, Toyo Engineering aims to not only stimulate demand for ammonia as a fuel; it also aims to ensure the stable supply of ammonia by establishing the sort of value chain that is sought here for commercialization.

Sojitz Machinery Corporation

Sojitz Machinery designs and supplies low-NOx process burners for petroleum refineries and petrochemical plants worldwide. Based on knowledge and technologies cultivated through many years of development and practice, the company strives to shed light on combustion phenomena that are hard to grasp using logic alone and to reduce the burden of combustion on the environment. Sojitz Machinery now intends to address society's need for lower CO₂ emissions by embarking on development in the untrodden realm of ammonia fuel.

<Contacts for inquiries about this project>

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