

May 19, 2023

MITSUBISHI GAS CHEMICAL COMPANY, INC.

**Mitsubishi Gas Chemical Reaches Basic Agreement with Mitsui O.S.K. Lines on Long-term Time Charter Contract for Dual-fuel Methanol Carrier**

Mitsubishi Gas Chemical Company, Inc. (MGC; Head Office: Chiyoda-ku, Tokyo; President: Masashi Fujii) today announced the signing of basic agreement with Mitsui O.S.K. Lines, Ltd. (MOL; Head Office: Minato-ku, Tokyo; President & CEO: Takeshi Hashimoto) on 28 April, 2023 for the long-term charter of a methanol carrier, which can run on either methanol or conventional heavy fuel oil. The vessel, slated for delivery in 2025, will be built at Hyundai Mipo Dockyard.

Since MGC chartered Japan's first methanol carrier, the KOHZAN MARU (first generation), from MOL in 1983, the two companies have built a partnership centered on the marine transportation of methanol. This vessel will be the first methanol dual-fuel carrier vessel chartered by a Japanese company under a long-term charter, and the two companies aim to further develop the marine transportation of methanol through this agreement.

Methanol fuel can reduce sulfur oxide (SOx) emissions by up to 99%, particulate matter (PM) emissions by up to 95%, nitrogen oxide (NOx) emissions by up to 80%, and carbon dioxide (CO<sub>2</sub>) emissions by up to 15% in comparison to burning conventional marine fuel. It is already in practical use and available for bunkering at about 130 major ports around the world. In the future, net greenhouse gas (GHG) emissions can be reduced by using methanol derived from non-fossil raw materials, such as e-methanol produced by CO<sub>2</sub> captured from diverse sources of emissions and hydrogen produced using renewable energy sources, and biogas-derived biomethanol.

Based on the Group mission of "creating value to share with society," MGC is promoting the Circular Carbon Methanol concept "Carbopath™", an initiative to recycle CO<sub>2</sub>, waste plastics, biomass, and other resources into methanol for use in chemical products, fuels, and power generation. MGC is considering the commercialization of carbon circular methanol "Carbopath™" production and sale to realize this concept in Japan and overseas.

Recently, the International Maritime Organization (IMO) and the shipping industry have been addressing the pressing issue of reducing GHG emissions, and methanol produced from bio-derived or renewable energy-derived raw materials is attracting significant attention as a next-generation fuel that can replace heavy fuel oil. Methanol has an advantage in terms of being able to be handled at normal temperature and pressure, as well as to make use of existing infrastructure. Construction of dual-fuel container transport ships that can utilize both

heavy fuel oil and methanol is becoming ever more widespread.

With the conclusion of this agreement, MGC will create demand for Carbopath™ and promote its use in society based on our group's mission “creating value to share with society.” MGC will continue to actively work towards reduction of GHG emission and recycling resources to achieve a society with carbon neutrality and circular economy.

**Vessel specifications**

DWT	Approx. 47,802 tons
Main engine	HYUNDAI-MAN B&W 6G50ME-C9.6-LGIM-EGRBP

**Circular Carbon Methanol Concept:**

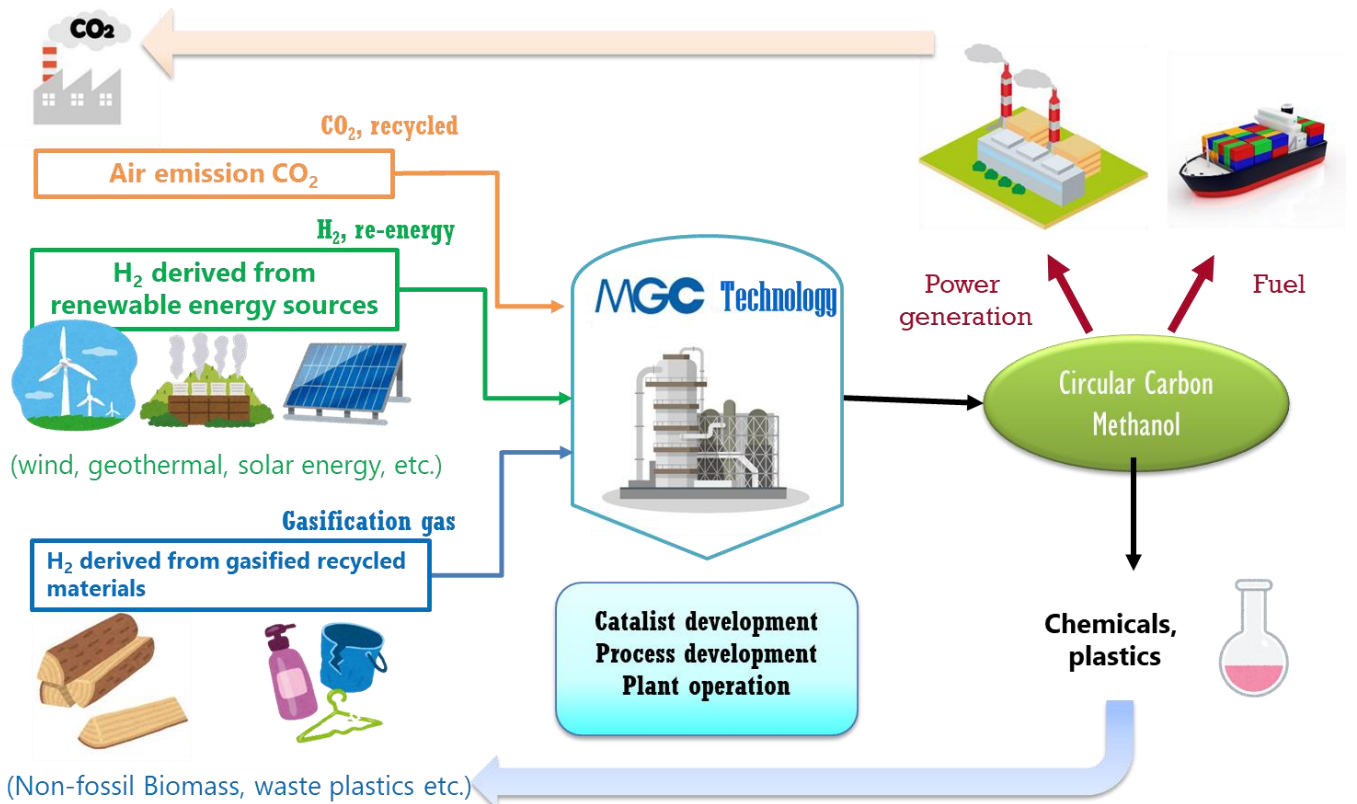


Fig. Circular Carbon Methanol

## Reference

- Mitsubishi Gas Chemical to Launch 'Circular Carbon Methanol' Production (March 30, 2021)  
<https://www.mgc.co.jp/eng/corporate/news/files/210330e.pdf>
- MGC and DBJ Sign Agreement for DBJ-Interactive Sustainability Linked Loan (February 10, 2022)  
<https://www.mgc.co.jp/corporate/news/2022/220210.html> (Japanese)
- Japan's First Successful Production of Methanol from Municipal solid waste (March 31, 2022)  
<https://www.mgc.co.jp/corporate/news/2022/220331.html>
- 'Artificial Photosynthesis-based Chemical Feedstock Production Commercialization Development' Selected by NEDO Green Innovation Fund - Contributing to the Realization of Carbon Neutrality through Artificial Photosynthesis (February 18, 2022)  
<https://www.mgc.co.jp/corporate/news/2022/220218.html> (Japanese)
- Launch of Japan's First Demonstration Project for Gasification and Methanol Conversion of Waste Plastic -Subsidy for Carbon Dioxide Emission Control Measures, Selected by Ministry of the Environment for 'Demonstration Project for Establishing a Recycling System for Plastics and Other Resources to Support a De-carbonized Society' (August 23, 2023)  
<https://www.mgc.co.jp/corporate/news/files/220823.pdf> (Japanese)
- Cement Australia and Mitsubishi Gas Chemical Company Begin Joint Study on the Production of Green Methanol using Green Hydrogen and CO2 (October 28, 2023)  
<https://www.mgc.co.jp/corporate/news/2022/221028.html>

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## INQUIRIES

Public Relations Department  
Administrative & Personnel Division  
MITSUBISHI GAS CHEMICAL COMPANY, INC.  
TEL: +81-3-3283-5040 <https://www.mgc.co.jp/eng/>