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Osaka Gas Co., Ltd.

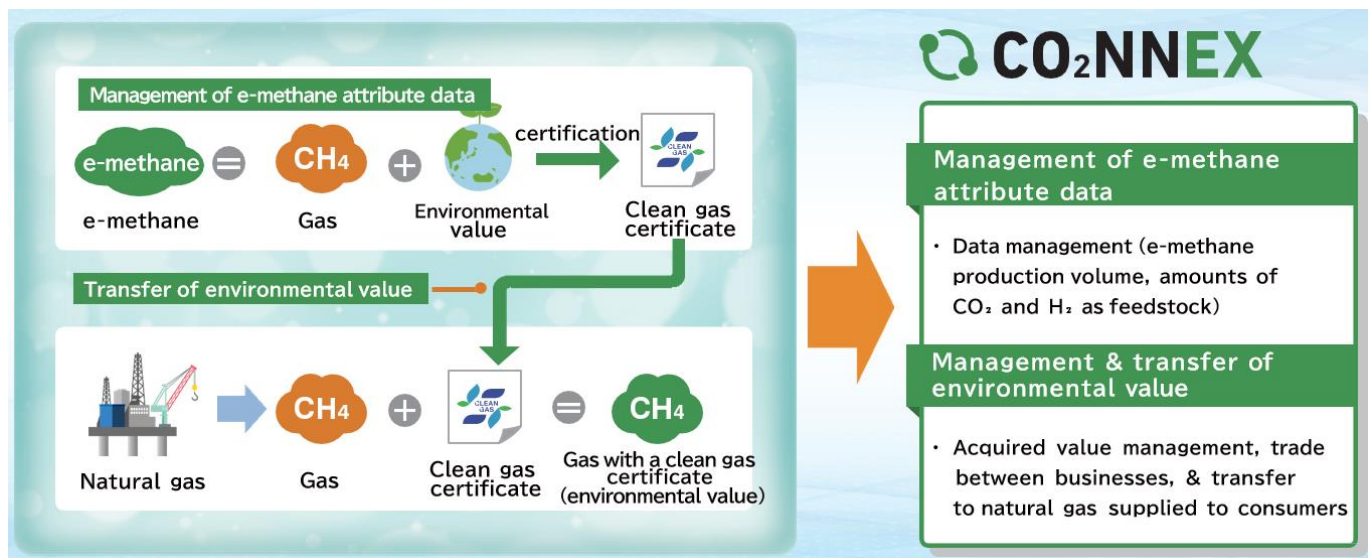
Mitsubishi Heavy Industries, Ltd.

## Osaka Gas and MHI to Implement the CO<sub>2</sub>NNEX<sup>®</sup> Digital Platform for Managing and Transferring the Environmental Value of e-Methane at Expo 2025 Osaka, Kansai, Japan

Osaka Gas Co., Ltd. (Osaka Gas) and Mitsubishi Heavy Industries, Ltd. (MHI) today announced their agreement to implement CO<sub>2</sub>NNEX<sup>®</sup>, the city gas industry's first digital platform for visualizing traded carbon dioxide (CO<sub>2</sub>) at Expo 2025 Osaka, Kansai, Japan (the Expo). In addition to using this platform for e-methane, Osaka Gas and MHI will also pursue the possibility of expanding its application to carbon recycles fuel (e-fuel, SAF, Green LPG) in the future.

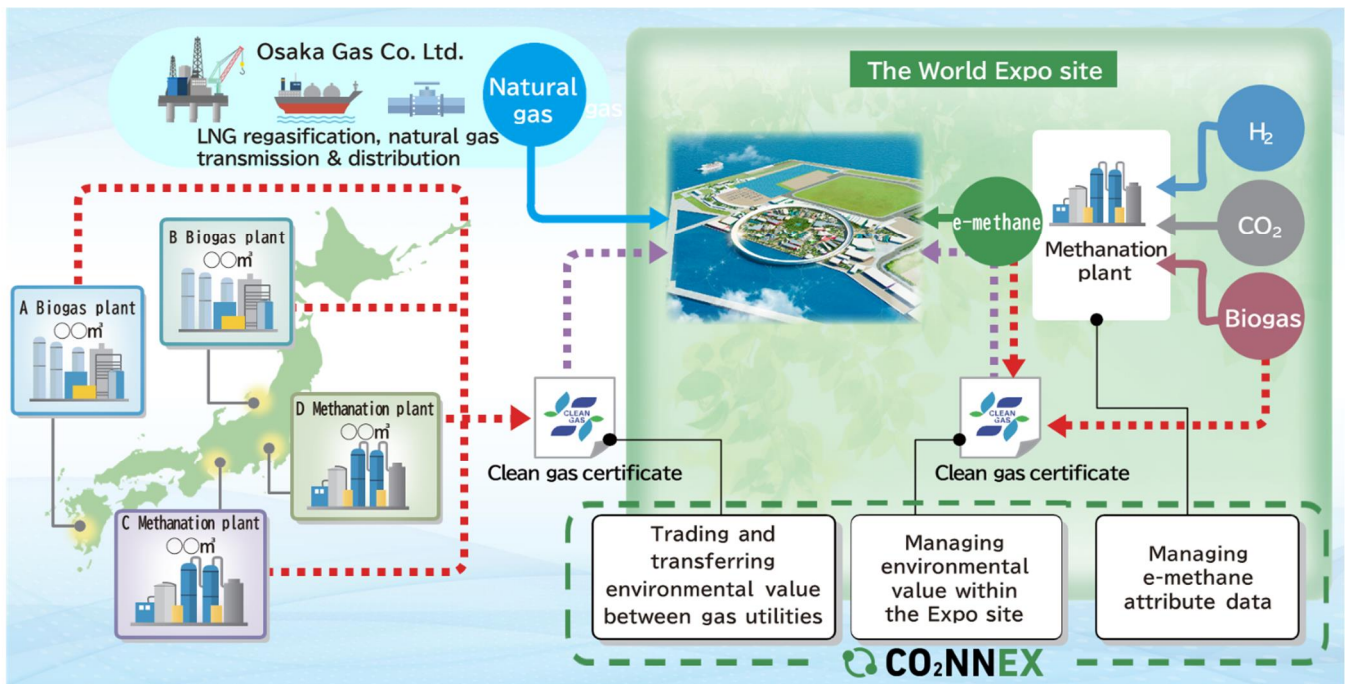
On April 1, 2024, the private sector began to use clean gas certificates, which certifies the environmental value<sup>1</sup> of e-methane and biogas. As the same operation as non-fossil fuel certificates for electricity is proceeding for gas, a system is required to manage transactions and transfers of the environmental value of clean gas certificates. CO<sub>2</sub>NNEX<sup>®</sup> will be equipped with functions to manage e-methane attribute data (production volume, amount of CO<sub>2</sub> and H<sub>2</sub> used as raw materials, etc.), which is necessary for the social implementation of e-methane, and functions to manage and transfer the environmental value created by e-methane and biogas. The Japan Gas Association has indicated that further guidance will be provided to companies regarding the functions installed in this platform and proceed with implementation. (Figure 1)

Figure 1: e-methane-related functions of CO<sub>2</sub>NNEX



During the Expo, Osaka Gas will provide the guesthouses and other facilities with on-site-produced e-methane, natural gas adds a value of environmental value of e-methane or biogas. The platform will manage attributed data and the environmental value created during the production and use demonstration<sup>2</sup> of e-methane at the Expo site, as well as to transfer the environmental value of e-methane and biogas produced by city gas companies around Japan to Osaka Gas natural gas supplied to the Expo site, further contributing to the carbon neutrality of the Expo 2025. (Figure 2)

**Figure 2: Image of CO<sub>2</sub>NNEX implementation at the Expo**



The Expo site perspective drawing provided by: Japan Association for the 2025 World Exposition

Osaka Gas aims to introduce e-methane, which accounts for 1% of the city gas it delivers, by 2030. As the value of e-methane and environmental value transactions will increase significantly in the future, MHI anticipates expanding the use of this platform, which can manage e-methane attribute data and manage and transfer environmental value. Introduction to the carbon recycling fuels other than e-methane (e-fuel, SAF, and Green LPG) is also under consideration, and as value of trade increase, a system for managing attribute data and managing and transferring environmental value is expected to become necessary. In addition to CCU<sup>3</sup> (CO<sub>2</sub> utilization), such as carbon recycling fuel, CCS<sup>4</sup> (storage of CO<sub>2</sub>) is expected to be more widely used in the future and MHI is actively exploring the potential of expanding the application of the platform to manage CO<sub>2</sub> distribution. Furthermore, it is also expected to expand to introduce this platform to Asian countries that are considering the introduction of e-methane and SAF. (Figure 3)

Through the development and commercialization of CO<sub>2</sub>NNEX®, Osaka Gas and MHI aim to promote the widespread usage of e-methane, contributing to achieving a carbon-neutral society.

- 1 This environmental value refers to the net zero emissions of CO<sub>2</sub> from utilizing (combusting) e-methane, which is achieved through the carbon recycling by producing e-methane from captured CO<sub>2</sub> emitted into or already existing in the atmosphere.
- 2 This e-methane production and utilization refers to the project of hydrogen supply chain development and demonstration in urban areas using e-methane produced from green hydrogen and biogas derived from kitchen waste. The project has been adopted as the FY2022 model development and demonstration project for the cost reduction in hydrogen supply utilizing the existing infrastructure.
- 3 CCU refers to Carbon dioxide Capture and Utilization.
- 4 CCS refers to Carbon dioxide Capture and Storage.

**Figure 3: Future potential expansion of the CO<sub>2</sub>NNEX platform**



**About Osaka Gas**

Osaka Gas aims to achieve net-zero emissions across its group under the Carbon Neutral Vision the company announced in 2021. Osaka Gas is developing technologies and services that drive the decarbonization of society. As a company serving customers for their life and business advancement, Osaka Gas is actively addressing climate change and other social challenges.

**About MHI**

MHI Group is actively involved in programs targeting the realization of a carbon neutral society. Building a CO<sub>2</sub> ecosystem is central to its energy transition initiatives. As a global leader in CCUS, the company aims to accelerate this ecosystem development by seeking widespread adoption of related hardware as well as the CO<sub>2</sub>NNEX® digital platform.