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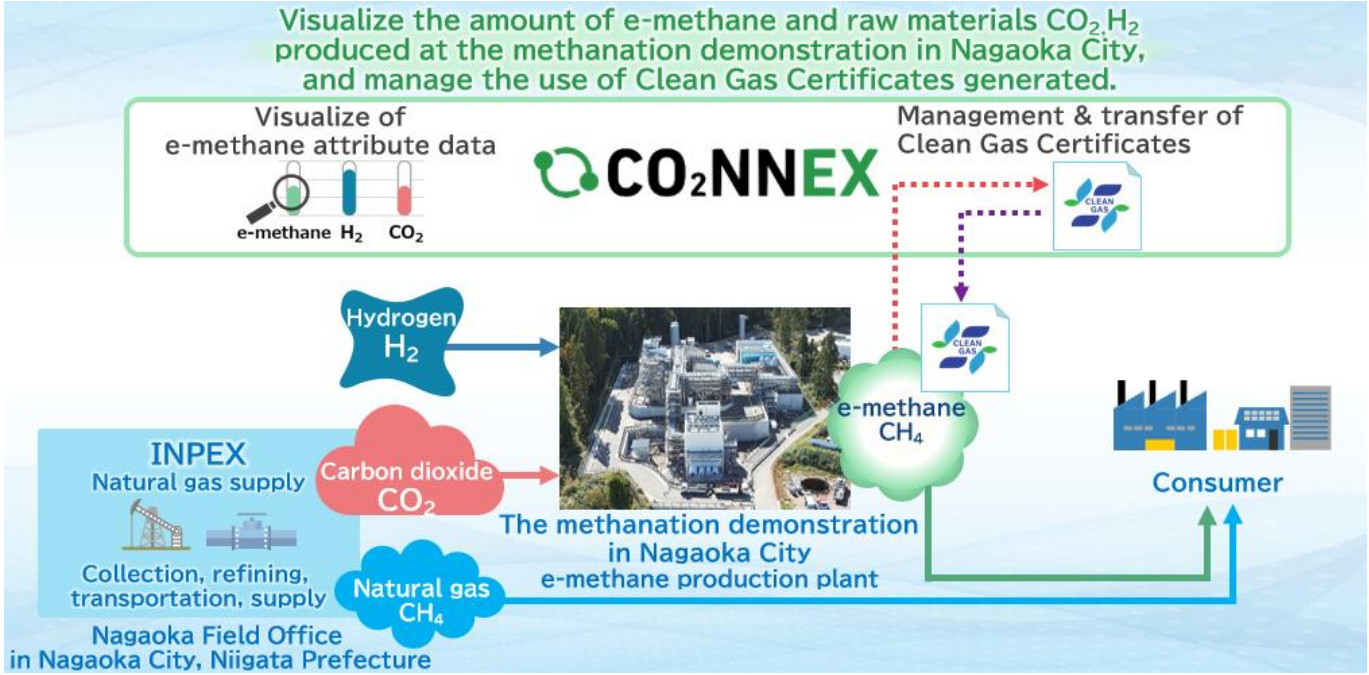
INPEX Corporation
Osaka Gas Co., Ltd.
Mitsubishi Heavy Industries, Ltd.

CO_2NNEX® Digital Platform for Transfer and Management of e-Methane Clean Gas Certificates to Be Utilized in Nagaoka Methanation Demonstration

INPEX Corporation (INPEX), Osaka Gas Co., Ltd. (Osaka Gas), and Mitsubishi Heavy Industries, Ltd. (MHI) today announced an agreement to implement the city gas industry's first system for transfer and management of Clean Gas Certificates to certify the environmental value[*2] of e-methane, which is being developed by Osaka Gas and MHI using the CO_2NNEX®[*1] digital platform, for a project being jointly conducted by INPEX and Osaka Gas aimed at developing practical technology for the reduction and effective utilization of CO_2 emissions by using one of the world's largest methanation systems (hereinafter, the "Nagaoka Methanation Demonstration")[*3].

In the Nagaoka Methanation Demonstration, hydrogen (H_2) and CO_2 recovered from the Koshijihara Plant at the INPEX Nagaoka Field Office (Nagaoka City, Niigata Prefecture) will be used to produce e-methane, which will be injected into INPEX's natural gas pipeline and delivered to customers in an effort to build a model for local production and local consumption, planned to be implemented as part of the Nagaoka Methanation Demonstration. The CO_2NNEX®[*1] platform will be used to provide visualization of e-methane and its raw materials (H_2 and CO_2) (hereinafter "attribute data"), and manage the transfer and use of Clean Gas Certificates created through the demonstration. In addition, by utilizing the MRV function[*4] to monitor and graph attribute data, issue Clean Gas Certificate usage certificates, and verify the appropriate use of certificates, the companies will contribute to the practical application of the CO_2 methanation system in the Nagaoka Methanation Demonstration.

Figure: Initiatives using CO_2NNEX®



Going forward, along with Clean Fuel Certificates to certify the environmental value of liquid fuels such as synthetic fuels (SAF, e-fuel), the companies plan to study and demonstrate a certificate system for Clean Gas Certificates for gaseous fuels such as synthetic methane (e-methane, biomethane).*5 Since the discussions for the study and demonstration project are expected to include the appropriate management of environmental values using the certificate system, the companies will pursue initiatives to make use of attribute data and knowledge on the appropriate management of environmental values obtained through this initiative.

Through this initiative, INPEX, Osaka Gas, and MHI will contribute to the practical application of e-methane and the realization of a carbon-neutral society.

Notes

**1: CO_2NNEX® is a platform developed by MHI for visualization and management of the CO_2 supply chain. Osaka Gas and MHI are now working jointly to implement functions on the platform for e-methane attribute data management, and the transfer and management of Clean Gas Certificates.*

**2: Environmental value: Since CO_2 emitted into the atmosphere (or CO_2 in the atmosphere) is captured and carbon recycled as raw material for e-methane, even when e-methane is used (burned), the amount of CO_2 in the atmosphere does not increase in real terms, so CO_2 emissions are effectively zero.*

**3: Nagaoka Methanation Demonstration: Project entitled "Development of CO_2 utilization technology for gaseous fuel and Development of practical technology for pipeline injection using large-scale CO_2-methanation system", subsidized by Japan's New Energy and Industrial Technology Development Organization (NEDO)*
For details, see the following press release:
"INPEX, Osaka Gas Commence Construction of Test Facility for CO_2 Emissions Reduction and Practical Application of Effective CO_2 Use Through One of World's Largest Methanation Operations" (October 24, 2023)
https://www.osakagas.co.jp/en/whatsnew/__icsFiles/afieldfile/2023/10/23/231024_2.pdf
https://www.inpex.com/english/news/english/news/assets/pdf/20231024.pdf

**4: MRV: Measurement, Reporting and Verification*

**5: Japan's Ministry of Economy, Trade and Industry (METI) plans to conduct a demonstration for the phased launch of a clean fuel certificate system, including gaseous fuels such as synthetic methane (FY2026), and is holding discussions and making other preparations for the establishment of a management system and the development of regulations for the certification system to support implementation (FY2025).*
For details, see the following document (Japanese):
14th Public-Private Council for the Promotion of Methanation (June 18, 2025)
Document 3: "Current Situation Surrounding Synthetic Methane (e-Methane) and Other Materials"
https://www.meti.go.jp/shingikai/energy_environment/methanation_suishin/pdf/014_03_00.pdf

About INPEX

INPEX Group, in its INPEX Vision 2035 released in February this year, announced its aim to execute a responsible energy transition focused on ensuring stable supply of lower-carbon energy in a sustainable manner, promoting lower-carbon solutions by leveraging its capabilities and technical expertise. In particular, along with reductions in GHG emissions by integrating CCS into its natural gas/LNG projects, INPEX will provide GHG reduction solutions to third parties.

About Osaka Gas

Daigas Group, based on its Energy Transition 2050 released in February this year, will work to develop technologies and services that contribute to a carbon-neutral society, actively address climate change and other social challenges, and aim to be a corporate group that contributes to the further advancement of everyday life and business.

About MHI

MHI Group is actively involved in programs targeting the realization of a carbon neutral society. Building a CO_2 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_2NNEX® digital platform.

For more information, see the CO_2NNEX website.