



October 6, 2026

ENEOS Opens Direct MCH[®] Large Scale Demonstration Plant in Australia Demonstration Operations Begin as a Step Toward Establishing a Green Hydrogen Supply Chain

ENEOS Corporation ("ENEOS") has constructed a large scale demonstration plant^{*1} in Queensland, Australia, to produce methylcyclohexane^{*2} ("MCH"), a hydrogen carrier, using its proprietary low-cost "electrochemical synthesis of organic hydride" method^{*3} (Direct MCH^{®*4}). An opening ceremony was held today. Following trial operations, demonstration operations are scheduled to commence in January 2027.

This demonstration project aims to obtain the technical knowledge required for the commercialization of Direct MCH[®] technology, supporting the future development of large scale green hydrogen supply chains. Green hydrogen produced from renewable energy is expected to play a key role in achieving a carbon-neutral society. However, reducing production and transportation costs remains a significant challenge. ENEOS is working to lower the overall cost of the green hydrogen supply chain by utilizing Direct MCH[®] technology, which enables the direct, single-step synthesis of MCH. In addition, demonstration operations will be conducted in Australia, one of the world's leading renewable energy-producing regions, to identify and address technical challenges associated with plant operation at an early stage.

ENEOS has steadily advanced the development of Direct MCH[®] technology and has now developed a 1.2 MW-class electrolyzer, representing the minimum unit size for commercial deployment. The demonstration plant will utilize an electrolyzer approximately eight times larger than the unit deployed in a previous demonstration conducted in 2023^{*5} and is designed to achieve a maximum MCH production capacity of 9 tons per day. Demonstration operations are expected to continue for approximately two years. Through demonstration operations, ENEOS will evaluate performance, degradation behavior, and other operational characteristics while collecting data necessary for commercialization.

Leveraging the knowledge gained from this demonstration project, ENEOS will pursue the commercialization and deployment of the technology while comprehensively assessing technological progress, economic viability, and market conditions.

As stated in its Long-Term Vision, the ENEOS Group is taking on the challenge of achieving both a stable supply of energy and materials, and the realization of a carbon-neutral society. Going forward, ENEOS will continue to advance the development and demonstration of next-generation energy solutions, including technologies for green hydrogen supply chains, while exploring opportunities for their commercially viable deployment.

*1 This project is being conducted as part of the Green Innovation Fund Project commissioned by the New Energy and Industrial Technology Development Organization (NEDO): “Large-scale Hydrogen Supply Chain Establishment / Development of innovative liquefaction, hydrogenation, and dehydrogenation technology / Direct MCH electrosynthesis technology development.”

*2 A liquid hydrogen carrier that can store hydrogen at ambient temperature and atmospheric pressure at approximately 1/500 of the volume of hydrogen gas.

*3 Hydrogen produced via water electrolysis must be stored in a tank and reacted with toluene in order to convert it into MCH, a type of organic hydride (hydrogen carrier) useful for storage and transport. However, the electrochemical synthesis of organic hydride method produces MCH from water and toluene in a single-step reaction using electricity generated from renewable energy and other sources.

Announced on March 15, 2019

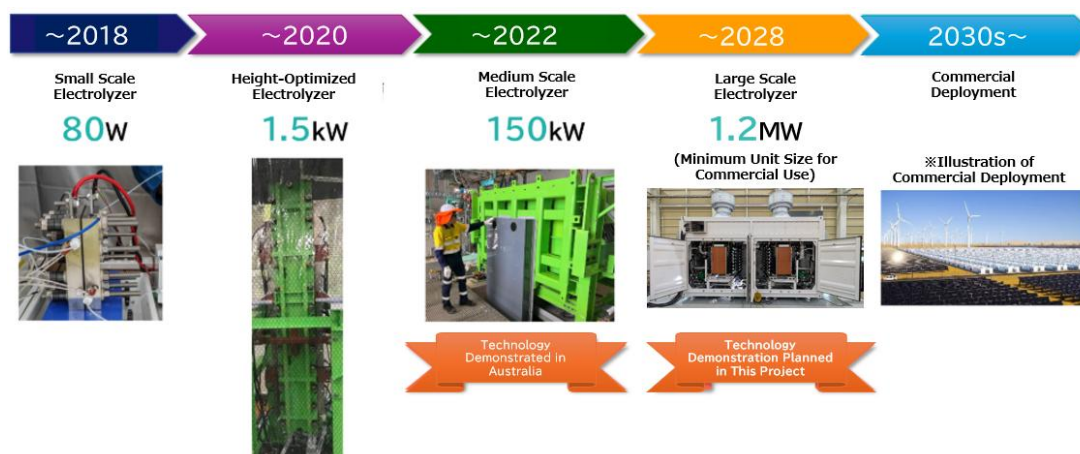
[Succeeded in the world's first technical verification to produce "CO2-free hydrogen" at low cost](#)

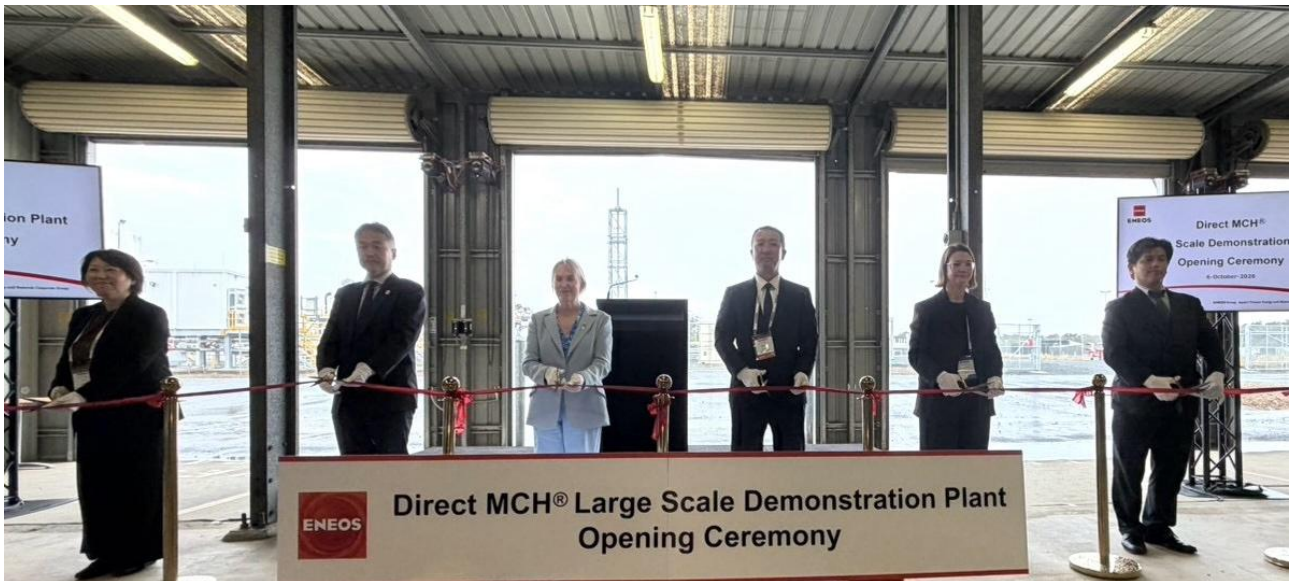
*4 Direct MCH® is a registered trademark of ENEOS Corporation.

*5 Announced on January 30, 2023

[Australian Demonstration Plant Begins Operation toward the Development of a CO2-free Hydrogen Supply Chain](#)

Roadmap for future development of Direct MCH® technologies





(From left to right)

- Ritsuko Sanuki, Director, Hydrogen and Fuel Cells Strategy Office, Hydrogen and Ammonia Division, Energy Efficiency and Renewable Energy Department, Ministry of Economy, Trade and Industry (METI)
- Takayoshi Kuromiya, Minister and Deputy Head of Mission, Embassy of Japan in Australia
- The Honourable Rosslyn (Ros) Bates MP, Minister for Finance, Trade, Employment and Training, Queensland State Government
- Atsuji Yamaguchi, Representative Director and President, ENEOS Corporation
- Catherine Zerger, Branch Head, Emerging Industries Branch, Adaptation and Future Industries Division, Department of Climate Change, Energy, the Environment and Water (DCCEEW)
- Shintaro Matsumoto, Executive Director, New Energy and Industrial Technology Development Organization (NEDO)



Plant appearance