October 27, 2022

ENEOS Corporation
Hokkaido Electric Power Co., Inc.
JFE Engineering Corporation
Hokkaido Electric Power Network, Inc.
Deloitte Tohmatsu Consulting LLC

Study for the Development of a Large-scale Green Hydrogen Supply Chain in Hokkaido Selected as NEDO Project
- Toward Building Japan's Largest Scale Domestic Green Hydrogen Supply Chain -

ENEOS Corporation, Hokkaido Electric Power Co., Inc., JFE Engineering Corporation, Hokkaido Electric Power Network, Inc., and Deloitte Tohmatsu Consulting LLC announced that the study for the development of a large-scale green hydrogen supply chain in Hokkaido proposed by the five companies has been selected by the New Energy and Industrial Technology Development Organization (NEDO) for NEDO's "Hydrogen Production and Utilization Potential Study" under the theme of "Regional Hydrogen Utilization Technology Development" in the "Development of Technologies for Realizing a Hydrogen Society" project.

Hokkaido is rich in renewable energy resources such as solar and wind power. On the other hand, due to limited electric supply versatility with Honshu and the relatively small electricity demand within Hokkaido, when expanding the introduction of electricity from renewable energy, there are issues such as the effective use of excess electricity and securing of adjustment capabilities to handle fluctuations in the output of renewable energy power supply. To solve these issues, the use of water electrolysis units is expected to be an effective method that allows the adjustment of electricity load by changing the production volume of hydrogen.

The five companies will conduct this study to build a large-scale green hydrogen supply chain in Hokkaido. Specifically, the study will examine the feasibility of building a domestic green hydrogen supply chain by introducing a water electrolysis unit (of around 100 MW) that produces green hydrogen on a scale of approximately 10,000 tons (enough to refuel fuel cell vehicles approximately two million times) annually—the largest scale in Japan—at the Tomakomai area in Hokkaido. At the same time, the study will also consider the utilization of excess electricity and for its adjustment capabilities.

In addition, the adoption of "a next-generation water electrolysis energy management system" for the electric grid control system will also be examined. This system seeks to reduce the cost of producing hydrogen by effectively using excess electricity from renewable energy in Hokkaido while discerning factors such as electricity market prices and the state of demand and supply to optimally control the water electrolysis unit and reused storage batteries.

After this study, a technological verification with actual units will be conducted with completion by 2030. The aim is the implementation into society and commercialization of a domestic green hydrogen supply chain. In the future, a business for supplying green hydrogen outside Hokkaido will also be considered depending on the increase in power generation capabilities accompanying the expansion of offshore wind power implementation.

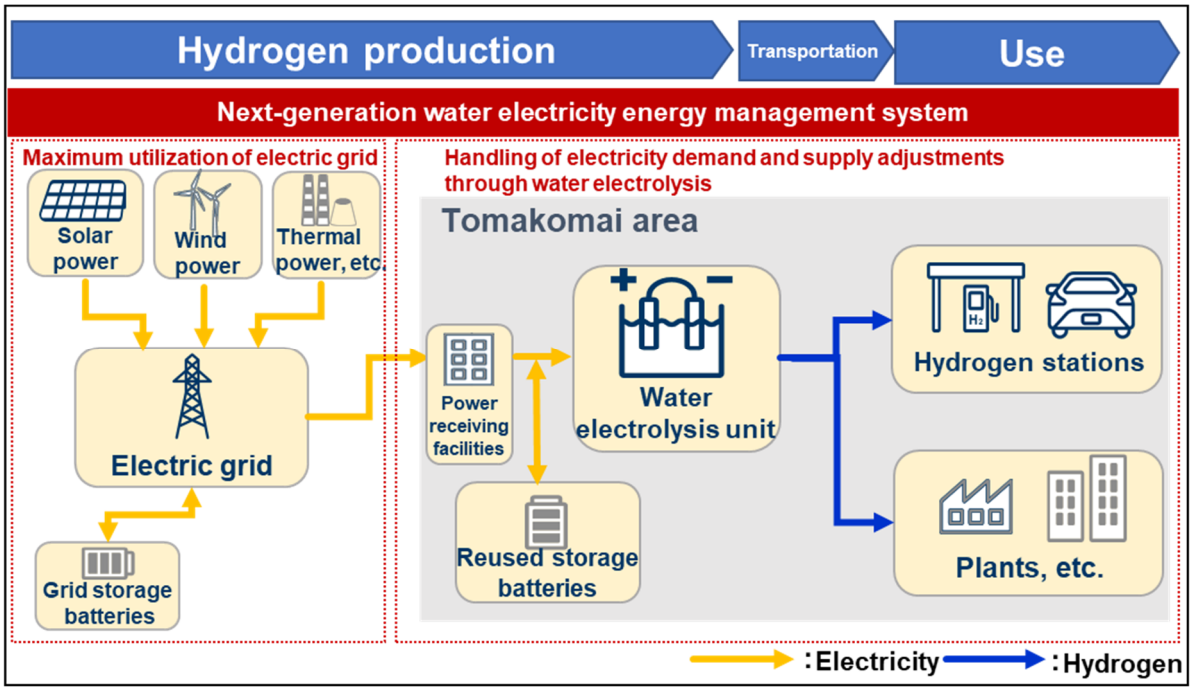
The five companies will use their respective expertise and contribute toward the realization of a carbon neutral society and increasing the rate of self-sufficiency in energy through the social implementation of Japan's largest scale green hydrogen supply chain with price competitiveness and achieving carbon neutrality in industries and transportation fields where electrification is difficult.

Overview of this study

Selected theme	Study for the development of a large-scale green hydrogen supply chain in Hokkaido
Applicable area	Hokkaido area centered on Tomakomai City
Main study topics	- Building of business model for the production, transportation, and use of green hydrogen and evaluation of business feasibility - Consideration of specifications for water electrolysis unit and reused storage batteries - Consideration of specifications for next-generation water electrolysis energy management system - Study on amount of electricity generated through renewable energy, amount of electricity that can be used, and the impact on the grid - Study on hydrogen demand potential in the Tomakomai area and its surrounding region
Period of study	October 2022 to September 2023(TBS)
Participating companies and their main roles	[ENEOS Corporation (project representative)] - Building of business model for the production, transportation, and use of green hydrogen and evaluation of business feasibility - Consideration of specifications for next-generation water electrolysis energy management system - Study on hydrogen demand potential in the Tomakomai area and its surrounding region [Hokkaido Electric Power Co., Inc.] - Building of business model for the production, transportation, and use of green hydrogen and evaluation of business feasibility - Consideration of specifications for next-generation water electrolysis energy management system - Study on amount of electricity generated through renewable energy, amount of electricity that can be used, and the impact on the grid

	- Study on hydrogen demand potential in the Tomakomai area and its surrounding region [JFE Engineering Corporation] - Study on specifications for reused storage batteries and safety standards - Consideration of issues in building a system using reused storage batteries [Hokkaido Electric Power Network, Inc.] - Confirmation related to coordination control with electric grid during consideration of specifications for next-generation water electrolysis energy management system - Study on amount of electricity generated through renewable energy, amount of electricity that can be used, and the impact on the grid [Deloitte Tohmatsu Consulting LLC] - Project management - Building of business model for the production, transportation, and use of green hydrogen and evaluation of business feasibility

Concept of a large-scale green hydrogen supply chain in Hokkaido



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