NEWS RELEASE

ENEOS

April 19, 2022

Development of Production process for Synthetic Fuels Using CO_2 Selected as Green Innovation Fund Project

ENEOS Holdings, Inc. (President: Saito Takeshi; "ENEOS"), announced that its development of production process for synthetic fuels using CO_2 was selected by the National Research and Development Agency New Energy and Industrial Technology Development Organization (NEDO) as their "Green Innovation Fund* / Development of technology for producing fuel using CO_2, etc.."

ENEOS is working on next-generation energy business to realize a decarbonized society. Synthetic fuels are carbon-neutral fuels that can reduce CO_2 emissions throughout the entire product life cycle from production of raw materials to use of the products as it uses hydrogen derived from renewable energy sources ("CO_2-free hydrogen") and CO_2 as raw materials. ENEOS regards the technological development of synthetic fuels as one of the important initiatives with the aim of achieving a decarbonized society .

One characteristic of liquid fuels is that they contain a relatively large amount of energy in a given volume and weight, compared to batteries and other sources of energy. Synthetic fuels, which are liquid fuels, are expected to be used in areas that are not suitable for electrification or hydrogen use. The development of synthetic fuels can contribute to achieving carbon neutrality in a wide range of industries such as automobiles, aircrafts, ships and so on.

ENEOS aims to establish the technology for the entire process as early as possible through bench-scale plant and scaled-up pilot plant operations. In order to reduce the cost of the raw materials (CO_2-free hydrogen and CO_2), which account for the major portion of the synthetic fuel cost, ENEOS will improve the performance of each reaction process and increase the overall efficiency by applying optimum recycle systems. Ultimately, ENEOS aims to increase the yield of liquid fuels to over 80%.

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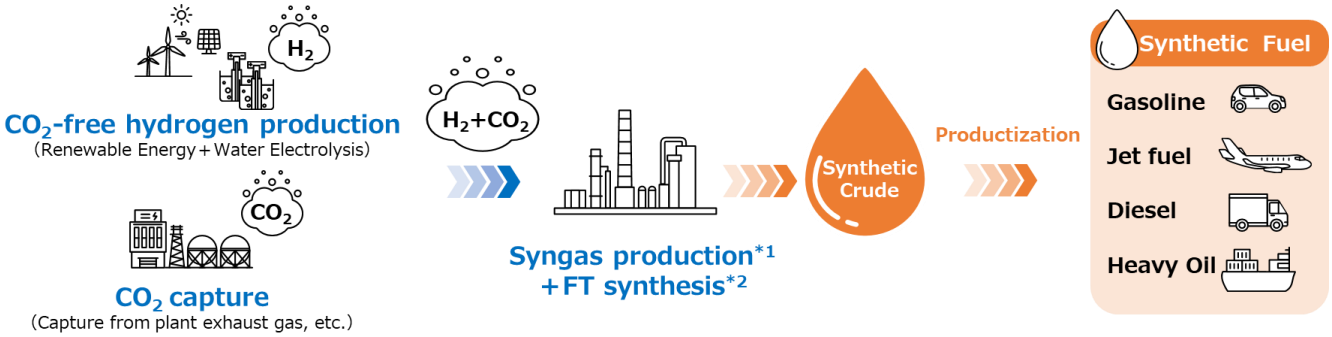
Scheduled Activities	Period	Scale	Location
Bench-scale plant design, construction and operation	FY2022–2025	1 barrel / day	Our Central Technical Research Laboratory
Large-scale pilot plant design, construction and operation	FY2024–2028	300 barrels / day	Our refinery (location TBD)

ENEOS aims to achieve commercialization of the technology by around 2040.

ENEOS will continue to engage in the next-generation energy business by promoting the development of this technology, which will contribute to the realization of a decarbonized society.

* NEDO press release related to this Green Innovation Fund Project (in Japanese)
< https://www.nedo.go.jp/koubo/EV3_100249.html >

<Reference: Synthetic fuel production process>



*1 Syngas production:
A process of producing syngas by reducing CO_2 to CO through reaction with hydrogen (reverse water gas shift reaction)

*2 FT synthesis
A process for producing synthetic crude by reacting syngas.
In the past, ENEOS has developed production processes and new catalysts for FT synthesis (Fischer-Tropsch reaction) in collaboration with Japan Oil, Gas and Metals National Corporation (JOGMEC) and Japanese private companies, and can utilize this knowledge and other expertise.