



April 14, 2023

Press Release

Company Name: Idemitsu Kosan Co., Ltd.
Representative Director & Chief Executive Officer:
Shunichi Kito
(Company Code: 5019, TSE Prime Market)
Contact person:
Daisuke Mogi, General Manager,
Investor Relations Office, Finance & Accounting
Department (TEL: +81-3-3213-9307)

Idemitsu launches feasibility study in Japan into clean hydrogen production from waste

Idemitsu Kosan Co.,Ltd., one of Japan’s leading producers and suppliers of energy (headquarters: Tokyo, Japan; Representative Director, President and CEO: Shunichi Kito; hereinafter “Idemitsu”), has launched a feasibility study of clean hydrogen production in Japan generated from waste, including municipal waste, in April. The goal is to launch a first hydrogen production facility around 2030 capable of processing 200-300 tons of waste per day.

The study is conducted in collaboration with California-based H-Cycle, LLC (CEO: Rob Morgan; hereinafter “HC”), which has developed a thermal conversion process using heat and electricity to transform waste into hydrogen with minimal emissions. HC is an investee of the Azimuth V Energy Evolution Fund, an investment fund launched by Azimuth Capital Management (headquarters: Alberta, Calgary, Canada) specializing in technology-enabled energy transition opportunities. Idemitsu has committed to invest in the fund in November 2021.

Hydrogen, which does not emit CO₂ when burned, is widely expected to be deployed at large scale as a next-generation energy source to realize a carbon-neutral society. In the future, Japan is expected to rely on imports for most of the hydrogen procurement, and to be used mostly by industrial facilities in coastal areas. Widespread use of hydrogen will require securing inexpensive raw materials and reducing supply costs by building a supply chain enabling mass manufacturing and mass transportation.

The hydrogen production now being considered by Idemitsu and HC will use waste discharged in Japan, including municipal waste, as raw material. The system converts these waste products into high value-added clean hydrogen using an integrated gasification and plasma polishing process for which HC holds exclusive rights to deploy in Japan.



Features of the project

1. By utilizing resources such as waste as a raw material, clean hydrogen can be produced and supplied domestically.

In conventional hydrogen production, fossil fuels such as natural gas are used as raw materials. In production with waste, there is no need to use fossil fuels as raw materials.

The hydrogen production now being considered can process a wide variety of wastes as raw materials, not limited to household waste. Biomass feedstock such as food waste offsets CO₂ emissions during hydrogen production, making this a production method with lower CO₂ emissions than conventional hydrogen production. Furthermore, by sequestering and utilizing the highly concentrated CO₂ emitted during the production process, even cleaner hydrogen production becomes possible, and this also contributes to reducing CO₂ emissions associated with waste disposal.

2. Hydrogen production from waste in various regions of Japan will be possible through collaboration with local governments.

By installing this integrated gasification and plasma polishing process as a waste treatment facility in each region to produce hydrogen, it is possible to reduce transportation costs and develop supply bases for hydrogen that is locally produced and consumed. We aim to spread efficient waste treatment technology and realize "local production for local consumption of energy."

The clean hydrogen produced is expected to be used not only for industrial and mobility applications, such as fuel cell vehicles, but also as raw material for synthetic fuels.

Aiming to construct an initial hydrogen production facility around 2030 that will process 200–300 tons of waste per day, Idemitsu will go forward seek the cooperation of local governments and determine partner companies for equipment operation and maintenance.

As Japan moves toward realizing a carbon-neutral society by 2050, Idemitsu has set forth a 2030 vision, Your Reliable Partner for a Brighter Future, and a 2050 vision, Shaping Change. As per the medium-term management plan announced in November last year (target years: FY2023–2025), Idemitsu will fulfill its responsibility to support people and their daily lives and to protect the global environment now and in the future by implementing the following three business domains throughout society.



Three business domains driving the evolution of Idemitsu's business portfolio

The feasibility study is positioned as an initiative to realize the Energy one step ahead and Diverse resource conservation / circulation solutions business domains shown above.

About Idemitsu Kosan Co.,Ltd.

Idemitsu Kosan Co.,Ltd. is one of Japan's leading producers and suppliers of energy. Our global operations, spanning 66 business bases across 20 countries and regions outside of Japan, encompass fuel oils, lubricants, asphalt, oil and gas development, renewable energy, coal and low-carbon solutions, petrochemicals, and electronic materials. Founded in 1911, Idemitsu Group has for over a century provided the stable energy supply that is indispensable for industry and daily life. Under our corporate vision for 2030, titled "Your Reliable Partner for a Brighter Future" and vision for 2050, titled "Shaping Change", we will tackle social challenges and work toward net-zero carbon emissions (Scope1+2) by 2050, while remaining focused on our social mission: To provide a stable supply of energy, where and when people need it.

For more information about Idemitsu Group, see:

<https://www.idemitsu.com/en/index.html>

For information on our medium-term management plan, see:

<https://www.idemitsu.com/en/company/managementplan/index.html>

About H Cycle

H Cycle will produce renewable, low-carbon hydrogen using an innovative waste processing system and thermal conversion, redirecting municipal and organic waste away from landfills. The company's principles include: 1) recycle what is recyclable; 2) divert local, unrecyclable waste away from landfills – avoiding harmful methane production; and 3) extract renewable hydrogen to de-carbonize local and regional transportation, reducing local air emissions. H Cycle has multiple projects in development in the Western United States, slated for commercial operation in the mid- to late-2020s, along with partnership activities in Japan and Korea, representing a US \$2 billion portfolio of prospective capital investments.

For more information, see: <https://hcycle.com/>