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Idemitsu Kosan Co.,Ltd.

ENEOS Corporation

Toyota Motor Corporation

Mitsubishi Heavy Industries, Ltd.

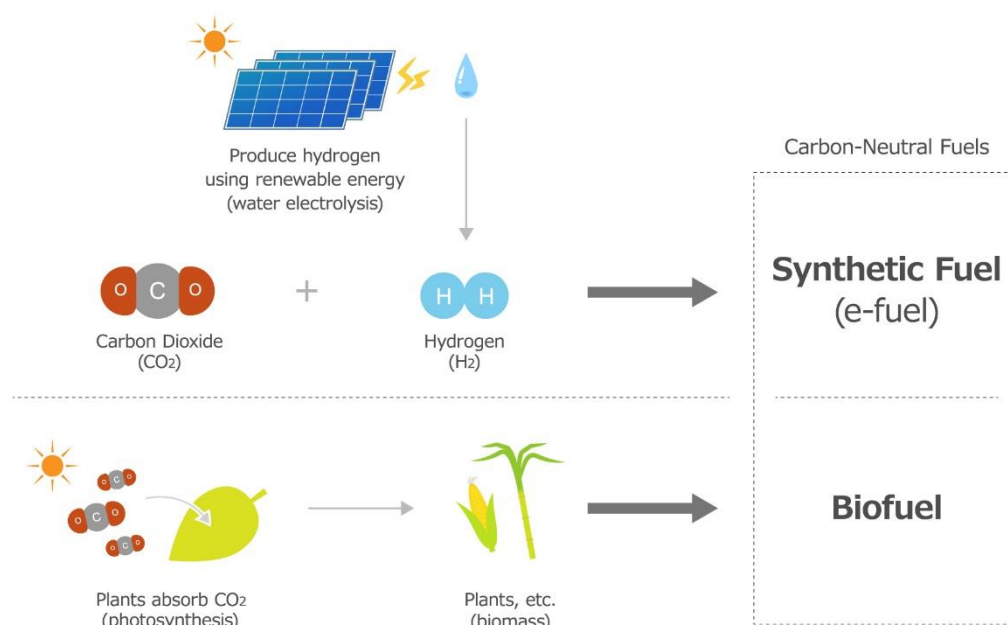
Idemitsu Kosan, ENEOS, Toyota, and MHI Commence Study toward Introduction and Spread of Carbon-Neutral Fuels for Automobiles

Idemitsu Kosan Co.,Ltd. (“Idemitsu Kosan”), ENEOS Corporation (“ENEOS”), Toyota Motor Corporation (“Toyota”), and Mitsubishi Heavy Industries, Ltd. (“MHI”) announce that they have commenced a study toward the introduction and spread of carbon-neutral fuels that contribute to the decarbonization of automobiles with the aim of realizing a carbon-neutral society. Seeking to introduce carbon-neutral fuels in Japan around 2030, the four companies fulfilling major roles respectively in supply, technology, and demand will jointly embark on this study.

<About carbon-neutral fuels>

Carbon-neutral fuels are fuels that limit CO₂ emissions across the entire product life cycle. It is a collective term that includes synthetic fuels (e-fuel) made using hydrogen and CO₂, and biofuels made from raw materials such as plants that absorb CO₂ via photosynthesis. Liquid carbon-neutral fuels in particular are advantageous in terms of energy storage and transportation and are suitable as energy sources that can be transported.

Types of carbon-neutral fuels and their production processes



<Scope of joint study by the four companies>

- (1) Discuss and study scenarios and roadmaps for the introduction of carbon-neutral fuels in Japan's automobile market and the various systems necessary for market introduction
- (2) Investigate the feasibility of production from perspectives such as energy security in Japan

“Shaping Change” is Idemitsu Kosan’s Vision for 2050, and based on this vision, it is working on the social implementation of a steady supply of diverse, eco-friendly “Energy one step ahead” that forms one of the three business domains stated in its [Medium-term Management Plan](#). As part of this effort, it is seeking the early introduction and spread of carbon-neutral fuels—synthetic fuels and biofuels—while collaborating with various companies within and outside Japan.

ENEOS stated in its Group’s Long-Term Vision that it will take on the challenge of achieving both a stable supply of energy and materials and the realization of a carbon-neutral society. It is undertaking various initiatives to reduce greenhouse gas emissions, including using hydrogen and renewable energy and carrying out business development of carbon-neutral fuels such as synthetic fuels.

Centered on a multi-pathway approach, Toyota is working toward carbon neutrality not just through the spread of electrified vehicles, but also by reducing the CO₂ emissions of internal combustion engine vehicles. In 2007, it introduced flex-fuel vehicles (vehicles that can run on both biofuels and gasoline) in Brazil. Going forward, it will continue to work on reducing the CO₂ emissions of internal combustion engine vehicles, including vehicles-in-operation, and will also consider the development of engines specifically designed for electrified vehicles that contribute to the spread of carbon-neutral fuels.

MHI Group has made our 2040 carbon neutrality declaration “[MISSION NET ZERO](#)” and is actively working to build a CO₂ solutions ecosystem and a hydrogen solutions ecosystem. Through MHI group products, technologies, and services that help reduce CO₂ emissions, as well as new solutions and innovations to be developed with partners around the world, we will contribute to realizing a carbon neutral society.

Collaboration and partnership across industries are essential for the spread of carbon-neutral fuels toward the realization of a carbon-neutral society. As the first step in this direction, Idemitsu Kosan, ENEOS, Toyota and MHI will collaborate to undertake a study toward the introduction and spread of carbon-neutral fuels.

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