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Fuji Electric Co., Ltd.
Toagosei Co., Ltd.

Fuji Electric and Toagosei Launch Joint Demonstration Project for a Hydrogen Fuel Cell System Powered by Electrolytic Hydrogen

Fuji Electric Co., Ltd. (“FE”) and Toagosei Co., Ltd. (“Toagosei”) announced today that they have launched a joint demonstration project for a power generation system using hydrogen fuel cells developed by FE and powered by unrefined hydrogen* (“electrolytic hydrogen”) co-produced at the caustic soda production facilities at Toagosei’s Nagoya Plant. This initiative aims to contribute to the realization of a decarbonized society through the effective utilization of electrolytic hydrogen at chemical plants.

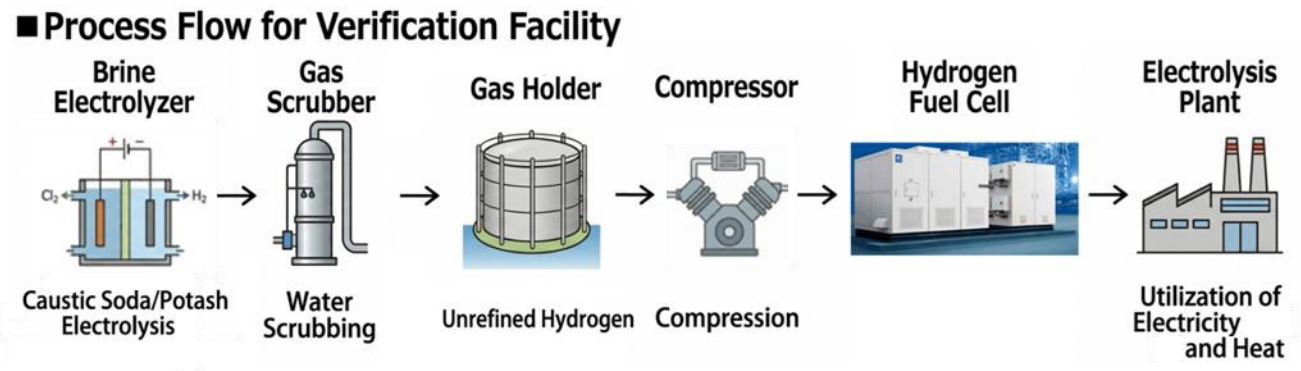
* Hydrogen containing water vapor that has only been washed with water

Hydrogen fuel cells, which generate electricity through a chemical reaction between hydrogen and oxygen, are expected to contribute significantly to green transformation (GX) as a clean power generation method that does not emit CO_2. However, ensuring a stable supply of hydrogen as fuel remains a key challenge. One potential solution is the utilization of electrolytic hydrogen generated in industrial processes such as caustic soda and caustic potash electrolysis. However, further verification is needed regarding the impact of impurities and other substances in hydrogen on power generation performance, as well as lifecycle costs for commercialization.

FE commercialized industrial fuel cells in 1998 and has since built a track record of more than 100 units in operation in Japan and overseas, including at government offices, hospitals, and universities. Drawing on its proprietary fuel cell control technology, safety design and manufacturing technology, and power electronics technology developed over many years, FE has developed a hydrogen fuel cell system that achieves low cost, high durability, and high reliability by using the hydrogen fuel cell modules installed in Toyota Motor Corporation’s MIRAI fuel cell vehicle (“MIRAI”). This hydrogen fuel cell system will be used in the current joint demonstration project.

Toagosei is able to ensure a stable supply of electrolytic hydrogen, backed by manufacturing technology developed through many years of operational experience in caustic soda and caustic potash electrolysis. Toagosei also supplies various products to the mobility sector, including products for the hydrogen fuel cell modules installed in the MIRAI used in this demonstration project.

Leveraging the resources of both companies, FE and Toagosei have launched a joint demonstration project aimed at achieving stable operation and commercialization of hydrogen fuel cells powered by electrolytic hydrogen. Through this demonstration project, the companies aim to evaluate the power generation efficiency of the hydrogen fuel cells and the impact on their durability, as well as achieve lifecycle costs suitable for commercialization, thereby contributing to the realization of a decarbonized society.



■ About Fuji Electric (FE)

FE is committed to contributing to the creation of a responsible and sustainable society through innovation in the energy and environment business. Under its Environmental Vision 2050, which aims to achieve zero environmental impact, including decarbonization and transitioning to a circular economy, FE aims to contribute to the achievement of a decarbonized society, a recycling-oriented society, and a society that is in harmony with nature by expanding the use of FE's innovative clean energy technologies and energy-saving products. In this context, in the hydrogen and ammonia field, we promote the development of power supply systems for water electrolysis and measuring instruments, in addition to fuel cells.

Demonstration test units

■ About Toagosei

Toagosei, under its sustainability policy, promotes energy saving, CO_2 emissions reduction, and the adoption of renewable energy, aiming towards carbon neutrality in 2050. Along with these ongoing efforts, Toagosei is advancing initiatives to realize a hydrogen society. At its Tokushima Plant, it operates a hydrogen station, using hydrogen produced in-house, expanding supply to fuel cell vehicles (FCVs) and fuel-cell buses (FC buses). At its Nagoya Plant and Yokohama Plant, it is promoting the introduction of hydrogen-fired boilers and accelerating the reduction of greenhouse gas emissions through a shift away from fossil fuels. Furthermore, it is promoting hydrogen usage not only in hydrogen mobility but across a wider range of fields for industrial and consumer equipment, construction heavy machinery and other equipment through its participation in "Low-Carbon Hydrogen Model Town Pilot Project in Chita City, Aichi Prefecture." It will continue to contribute to the realization of a decarbonized society and a circular society.

Toagosei Hydrogen Station Tokushima

Hydrogen-fired boiler installed in Nagoya Plant

■ Reference

Fuji Electric

Corporate website: Hydrogen Fuel Cell System

Fuji Electric Review Vol.69-No.3, 2023

Toagosei

Corporate website: Sustainability

Note: The information in this release is current as of the date of announcement but is subject to change without notice.

■ Inquiries

Fuji Electric Co., Ltd.
Brand PR Department,
Public Relations and Investor Relations Office,
Corporate Management Planning Headquarters
Phone: +81-(0)3-5435-7206

Toagosei Co., Ltd.
Corporate Communication Department
Phone: +81-(0)3-3597-7215