

NEWS RELEASE

Teijin Develops Portable Fuel Cell and Pressure Vessel Units to Promote Wider Use of Clean Hydrogen Energy

Tokyo, Japan, March 8, 2023 --- [Teijin Limited](#) announced today that it has developed a compact, lightweight and highly portable fuel cell unit and a companion pressure vessel unit that supplies hydrogen fuel from three lightweight cylinders.

The new solution for integrated fuel cell operation and easy fuel supply is expected to help expand the range and scope of fuel cell use. The units will be used for the first time from June 2023 in a demonstration with [Tokyu Construction Co., Ltd.](#), which is participating in a major redevelopment of the Shibuya Station area in Tokyo where the demonstration will take place. After verifying performance during the demonstration, Teijin expects to begin selling commercial versions of the fuel cell and pressure vessel in Japan from around the spring of 2024.



Concept model of fuel cell unit



Concept model of pressure vessel unit

The fuel cell unit is a portable generator that conveniently integrates the equipment necessary for fuel cell operation. Its compact and lightweight design incorporates the new *IE-LIFT*TM 1T fuel cell developed by British manufacturer [Intelligent Energy Limited](#). A large-capacity battery ensures about one hour of continued operation at the rated output if the hydrogen supply is temporarily depleted or the fuel cell fails for any reason. A built-in communication terminal enables the level of remaining hydrogen as well as the unit's operating status to be monitored remotely via a mobile device, reducing the burden of monitoring critical information and the risk of encountering potential problems. The unit even has an internal system to visualize the amount of CO₂ emissions eliminated compared to a fossil-fuel generator. The fuel cell, which measures 450 (W) x 570 (D) x 910 (H) mm and weighs about 60kg, is rated for 700-800W continuous power and 1,500W maximum power.

The new pressure vessel unit is a portable hydrogen-fuel supply device equipped with three *Ultrassa*[®] lightweight, corrosion-resistant composite pressure-cylinders developed

by [Teijin Engineering Limited](#), a subsidiary of Teijin. In addition to reducing the overall weight when transporting hydrogen fuel under high pressure, the cylinders feature an inner liner made of seamless gas-tight aluminum alloy wrapped in high-strength fibers in a multilayer structure impregnated with epoxy resin. In the unlikely event of cylinder failure due to overpressure, the liner will begin to leak gas rather than rupture (i.e., a "leak before break" structure). Also, a decompression device reliably lowers the pressure with a simple valve operation to supply hydrogen safely even when a cylinder is at maximum pressure. The unit, which measures 510 (W) x 765 (D) x 814 (H) mm and weighs about 80kg, is also rated for 700-800W continuous power and 1,500W maximum power.

Teijin is contributing to CO2 emissions reduction by helping to expand the use of hydrogen fuel cells in fields such as construction work. By developing hydrogen fuel cells and promoting their expanded use, Teijin—a company aiming to support the society of the future—hopes to help Japan reduce its CO2 emissions and achieve its targets under the United Nations' [Sustainable Development Goals](#) (SDGs).

Fuel cells powered by hydrogen, a next-generation energy source, are quieter than fossil-fuel generators and do not emit unpleasant odors as well as harmful greenhouse gases. Current fuel cells, which require a generator system combined with a battery and a controller, are relatively large and heavy, so transporting them can be difficult and require the use of heavy machinery. In addition, hydrogen storage cylinders must be transported and installed at a safe distance from the generator system. Moreover, residual hydrogen levels must be carefully monitored, which complicates the operation of current fuel cells.

About Intelligent Energy

Intelligent Energy is focused on the development and manufacture of its Proton Exchange Membrane (PEM) fuel cell products for customers in the automotive, aerospace, generator, telecoms, materials handling and unmanned aerial vehicle (UAV) sectors. The company is headquartered and manufactures in Loughborough in the UK, with additional offices and representation in the US, Japan, China and South Korea.
www.intelligent-energy.com

About the Teijin Group

Teijin (TSE: 3401) is a technology-driven global group offering advanced solutions in the fields of environmental value; safety, security and disaster mitigation; and demographic change and increased health consciousness. Originally established as Japan's first rayon manufacturer in 1918, Teijin has evolved into a unique enterprise encompassing three core business domains: high-performance materials including aramid, carbon fibers and composites, and also resin and plastic processing, films, polyester fibers and products converting; healthcare including pharmaceuticals and home healthcare

equipment for bone/joint, respiratory and cardiovascular/metabolic diseases, nursing care and pre-symptomatic healthcare; and IT including B2B solutions for medical, corporate and public systems as well as packaged software and B2C online services for digital entertainment. Deeply committed to its stakeholders, as expressed in the brand statement “Human Chemistry, Human Solutions,” Teijin aims to be a company that supports the society of the future. The group comprises some 170 companies and employs some 20,000 people across 20 countries worldwide. Teijin posted consolidated sales of JPY 926.1 billion (USD 7.2 billion) and total assets of JPY 1,207.6 billion (USD 9.4 billion) in the fiscal year that ended on March 31, 2022.

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