

April 20, 2015

Press release

Kawasaki City

TOSHIBA CORPORATION

**Start of an autonomous energy supply system based on renewable energy and hydrogen
CO₂-emission-free hydrogen energy can provide
about one week's worth of power and hot water for 300 people.**

In the public facilities of Kawasaki Marien and Higashi Ohgishimanaka Park on the coast, Kawasaki City and Toshiba Corporation have completed H2One, an autonomous energy supply system based on renewable energy and hydrogen, and have started demonstration operations.

H2One is an autonomous energy supply system equipped with solar power generation facilities, storage batteries, an electrolyzer to generate hydrogen, a hydrogen storage tank, fuel cells, and other equipment. Using power generated by its solar power generation facilities, the system stores hydrogen generated by the electrolysis of water, which is then used as the fuel of the fuel cells to supply power and hot water. Since the system can operate on only water and sunlight, it can supply electricity and water by itself even when critical infrastructure is disrupted in a disaster. At Kawasaki Marien, which is designated as a temporary shelter for people who are unable to return home in a disaster, the system uses its stored hydrogen to supply about one week's worth of power and hot water for 300 people. In addition, because the system is packaged in a container, it can be transported to a disaster area by a trailer.

Its hydrogen energy management system (Hydrogen EMS) normally provides optimum control of the amount of generated hydrogen, stored power, and generated power, contributing to the peak-shift and peak-cut of power.

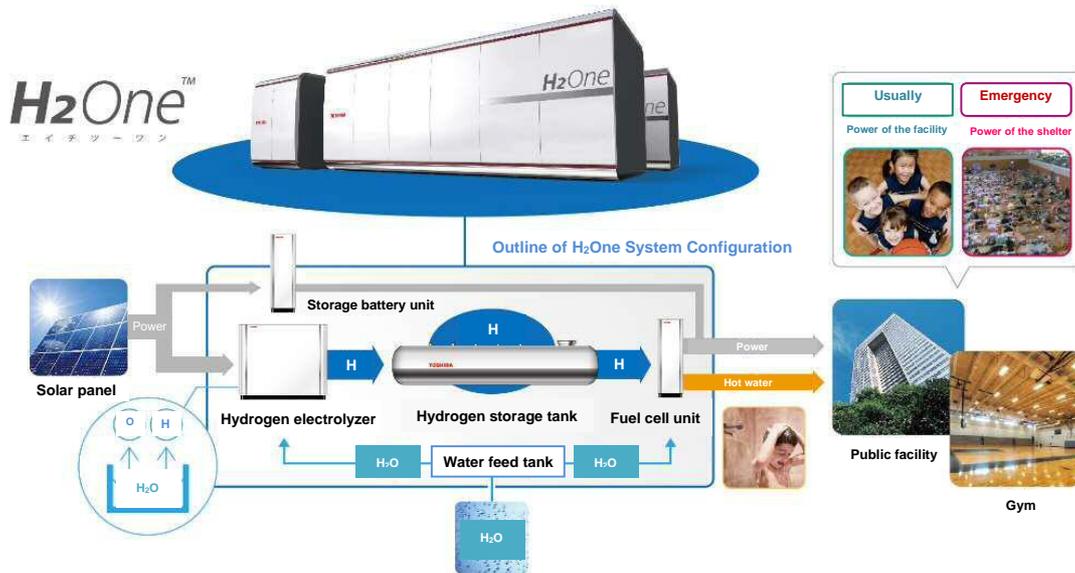
The demonstration operation will verify the effectiveness of the hydrogen BCP system assuming a disaster and the hydrogen energy management system in normal conditions, and further increase the efficiency of the entire system. Furthermore, by improving the hydrogen storage capacity, the system is scheduled to be developed as a fully locally-produced, locally-consumed energy supply system.

In 2013, Kawasaki City and Toshiba Corporation concluded an agreement to cooperate and collaborate with each other to achieve a smart community. Since then, they have been cooperating on various issues regarding energy, traffic, and lifestyles.

Kawasaki City will continue its cooperative efforts with various entities such as affiliated companies to realize a "future environment and industrial city" through the proactive introduction and use of hydrogen energy.

Toshiba Corporation will continue to strive to realize a safe, secure and comfortable human smart community with renewable hydrogen that does not emit CO₂ by fusing technologies in a wide range of business fields within its group.

System configuration diagram



Outline of the demonstration

Venue	Kawasaki Marien and Higashi Ohgishimanaka Park
Period	April 20, 2015 to March 31, 2021
Contents of the demonstration	<ul style="list-style-type: none"> • Verification of the hydrogen energy management system in normal conditions • Verification of the hydrogen BCP system assuming a disaster
Main specifications for the system	<p>Amount of generated hydrogen: 1 m³/h max.</p> <p>Hydrogen consumption: 2.5 m³/h max. 5 m³/h</p> <p>Stored hydrogen: 33 m³ max. (270 Nm³, 0.8 MPa)</p> <p>Water supply: 75 L/h max. (40 °C)</p> <p>Solar power generation capacity: 30 kW</p> <p>Fuel cell output: 3.5 kW</p> <p>Amount of stored power: 350 kWh</p> <p>Fuel cell efficiency: 95 % (power generation: 55%, hot water: 40%)</p>

Note. BCP: Business Community Plan

Visit the Toshiba website to learn more about the hydrogen society it hopes to create.

<https://www.toshiba-newenergy.com/en/>

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