



Future Cities of Japan Starting from Tomiya City

Aiming to become a future city with no CO₂ emissions, Tomiya City expand this demonstration project to the Tohoku region and all over Japan.



4. Cassettes are delivered together with other goods

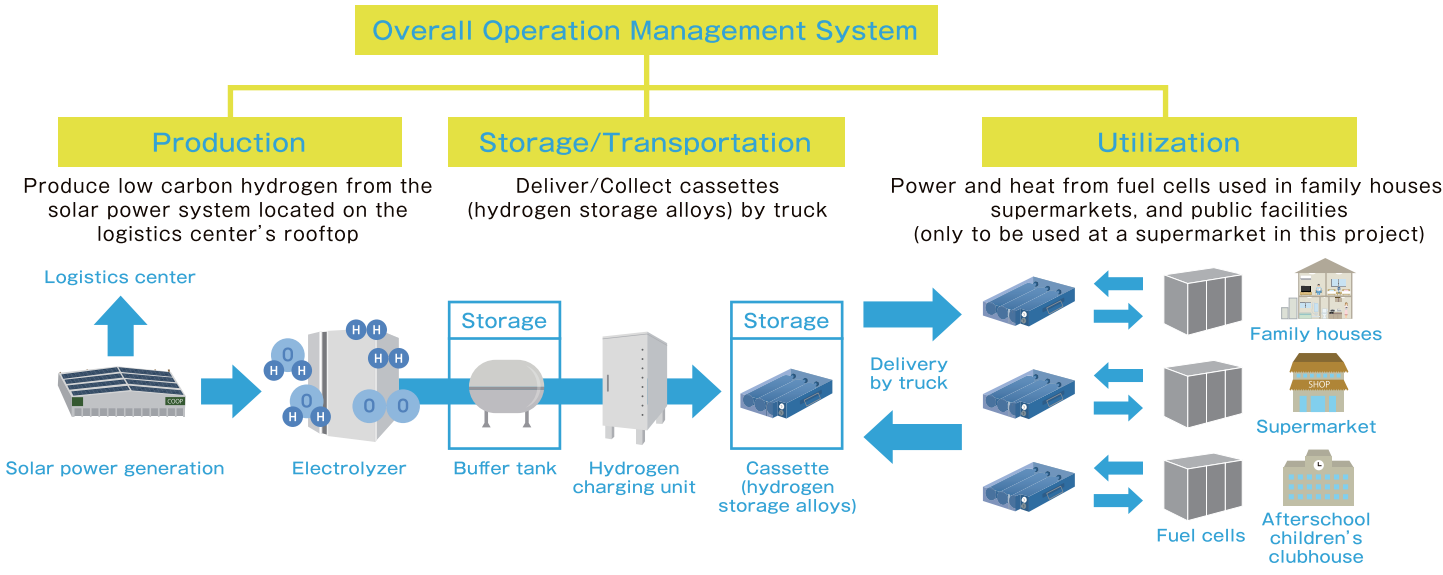
4 Delivery to Family houses and Public Facilities

The hydrogen cassettes are transported by trucks that are also delivering such goods as food and water to the family houses of Co-op members.



Project's System Flow Chart

Such renewable energy power generation as solar power fluctuates in accordance with the sun's radiation conditions. To solve this, the power that is generated is used for the electrolysis of water to produce hydrogen, which is stored and delivered in secure cassettes (hydrogen storage alloys). The hydrogen is supplied to fuel cells in remote energy demand areas and used to generate power and heat.



SUSTAINABLE CITY TOMIYA

Ministry of the Environment,
Low Carbon Hydrogen Technology Demonstration Project in Cooperation with Local Government



Lifestyle of the Future, Starting from Tomiya

TOMIYA Hydrogen Supply Chain Demonstration Project



Hand-in-Hand with the Community!

— Low Carbon Hydrogen Supply Chain Demonstration Project —

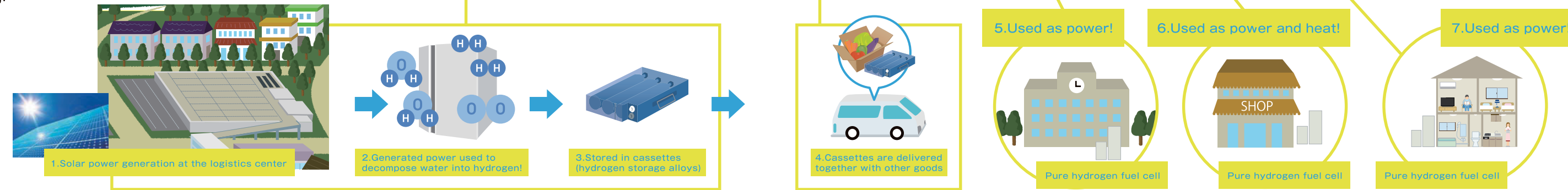
Ministry of the Environment, Low Carbon Hydrogen Technology Demonstration in Cooperation with Local Government

The Low Carbon Hydrogen Technology Demonstration in Cooperation with Local Government is a public tender by the Ministry of the Environment to demonstrate a low carbon hydrogen supply chain as a mid- to long-term global warming countermeasure. A collaboration between Hitachi, Marubeni, Miyagi Co-op, and Tomiya City in Miyagi Prefecture was approved for this project. Since hydrogen does not emit CO₂ during use, it is an effective energy for preventing global warming.



New Energy with Great Potential for the Future

In the case of energy storage, electricity can be stored in batteries, but will self-discharge over time. With hydrogen, it rarely self-discharges once it is stored, so it is a new energy suitable for long-term storage. (Other storage/transportation methods beside hydrogen storage alloys include high-pressure compression and cryogenic liquefaction.)



1 Production

Power generated by the logistics center's rooftop solar system is used for the electrolyzer.



2 Electrolyzer

Water (H₂O) is decomposed into hydrogen (H₂).



Electrolyzer

Buffer tank

3 Cassette (Hydrogen storage Alloys)

Easy to carry, low pressure, and a safe storage/transportation method

Hydrogen is stored and transported by hydrogen storage alloys.



Hydrogen storage alloys



Attach/Detach cassette

5 Hiyoshidai Elementary School (Afterschool children's clubhouse)

Power is supplied to the afterschool children's clubhouse at Tomiya City's Hiyoshidai Elementary School. The students also learn about hydrogen in class.



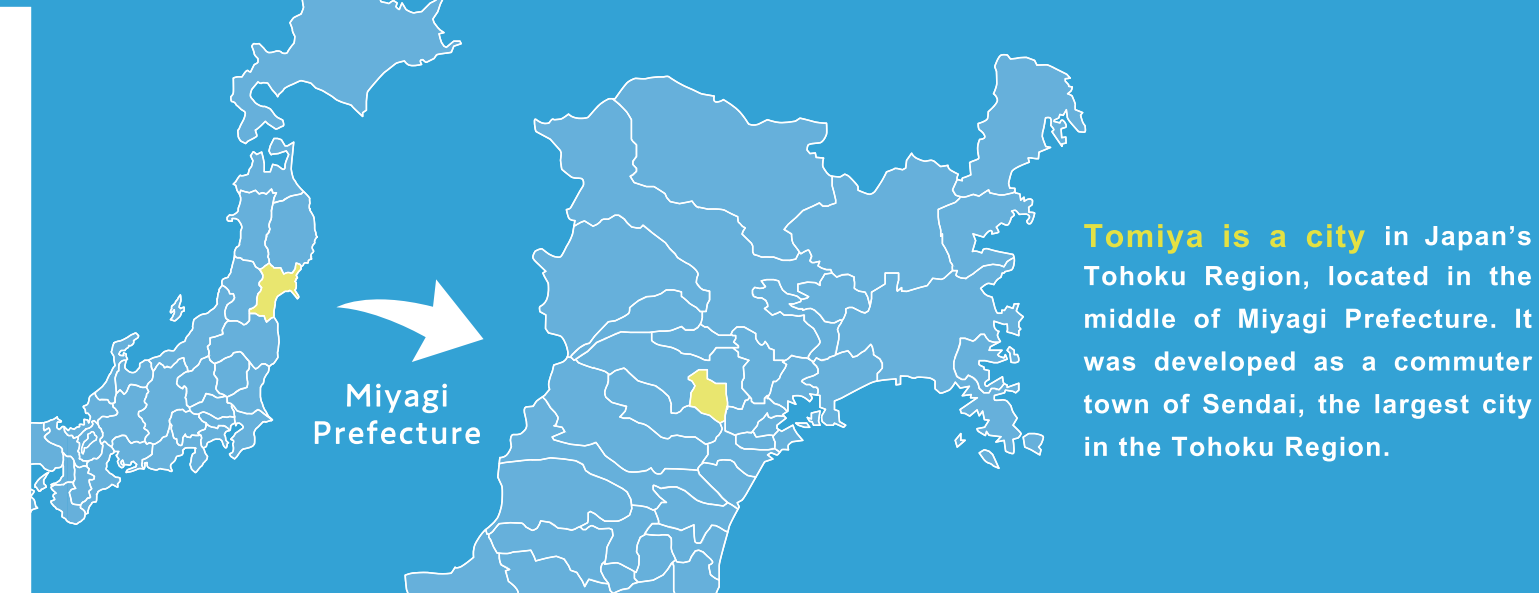
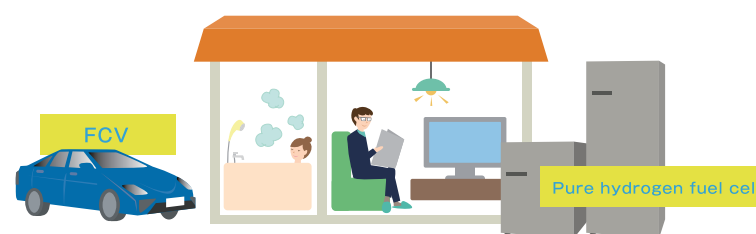
7 Family houses

The hydrogen is used for power supply in the family houses. Eight fully-charged hydrogen cassettes can accommodate approximately a day's power demand for one household.

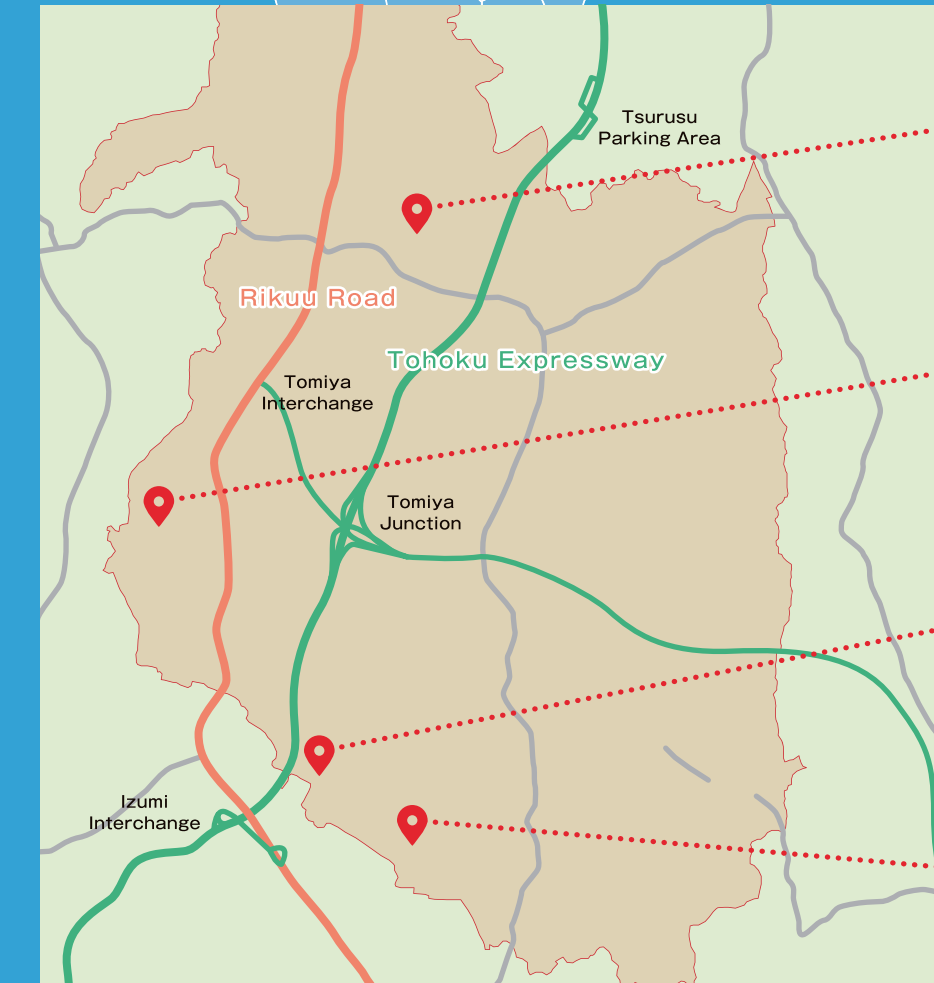


6 Miyagi Co-op Akaishidai Supermarket

At the supermarket, power and heat are generated from hydrogen. The power is used for lighting and refrigeration among other uses, and the heat is used to produce hot water.



Tomiya is a city in Japan's Tohoku Region, located in the middle of Miyagi Prefecture. It was developed as a commuter town of Sendai, the largest city in the Tohoku Region.



Tomiya City Office



Hiyoshidai Elementary School (Afterschool children's clubhouse)



Miyagi Co-op logistics center



Miyagi Co-op Akaishidai Supermarket

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