

Residential Fuel Cell Cogeneration System

Products

Main CHP product indicators

Electrical capacity (total)	W	750
Heat capacity (total)	W	940
Technology	FUEL CELL (PEFC)	
No. of units	More than 10,000 units (accumulated total)	
Manufacturer	Panasonic	
Type of Fuel	Natural gas	
Year of Sales	2011	
Financing	Self-funded	
State support	Investment subsidy	
Location	Residences	

General description of the case

In May 2009, Panasonic launched the residential fuel cell cogeneration system called "ENE-FARM" which was the first commercialised residential fuel cell in the world. Following the first generation model, Panasonic launched the second generation model in 2011, which achieved an even higher efficiency of power generation with reduced cost in April 2011. The fuel cell unit generates electricity using an electrochemical reaction between hydrogen, transformed from natural gas, and oxygen from the air. The electricity generated is used in the home. In addition, the thermal energy created by power generation can be used for domestic hot water: the bath, washroom, kitchen or floor heating. The fuel cell cogeneration system enables decentralised electricity generation and heat at the consumer's home, so energy is generated efficiently without transmission loss in the grid. Therefore, ENE-FARM is a highly efficient and environment-friendly product.

The concept of ENE-FARM is "to create energy for your home by yourself". So the name of ENE-FARM is a combination of "energy" and "farm".

Picture



Success factors

Compared with the 2009 first model, significant improvements were made in efficiency of rated power generation and the lifetime of the product. In addition, significant cost reductions were achieved by adapting new technology and simplifying the system structure. Furthermore, the key factor for success is the strategic subsidy by government and significant technical and sales support by gas utilities in Japan.

Main barriers

The main barrier is the current price of the system. Further cost reductions are necessary for mass deployment to the general population. In addition, basic performance and downsizing the product are key areas targeted for improvement.

Recommendations

The residential fuel cell system has a high rate of efficiency of using primary energy compared with conventional thermal power generation. Therefore, primary energy usage can be reduced significantly. In addition, the environment-friendly system contributes towards CO2 emission reductions.