

Achievement of Accumulated Sales of 100,000 Units of “ENE-FARM” Household Fuel Cell System

March 13, 2019

Osaka Gas Co., Ltd.

On March 12, 2019, Osaka Gas Co., Ltd. (President: Takehiro Honjo; hereinafter, “Osaka Gas”) achieved accumulated sales of 100,000 units*¹ of ENE-FARM, a household fuel cell co-generation system.

With its high capacity to save energy and reduce CO₂ emissions, ENE-FARM, a distributed energy system, enhances socially needed energy security and enables electricity peak cuts, thus contributing to realization of the national energy policy, 3E+S (energy security, economic efficiency, environment & safety).

Since its sales launch in June 2009, ENE-FARM has been well accepted by many household customers, recently having sold a total of 100,000 units. The CO₂ emissions saved by 100,000 units of ENE-FARM equals approximately 170,000 tons*² annually, equivalent to forestation of 12.18 million*³ Japanese cedar trees.

In April 2016, Osaka Gas introduced a new product, ENE-FARM type S equipped with IoT functions, which achieved the world’s highest*⁴ generation efficiency*⁵ in the world’s smallest*⁶ body, and began purchasing surplus electricity*⁷ generated by household ENE-FARM units for the first time in Japan, following the deregulation of retail sale of electricity. The purchased surplus electricity is also used as a power source for new service menu Style Plan E (E-SHARE) under Osaka Gas’s Electricity service, which will accept new customers from March 20, 2019.

In the meantime, with its availability during power outages, ENE-FARM's disaster reduction capacity is attracting public attention. During large-scale power outages caused by Typhoon Jebi (No. 21) in September 2018, ENE-FARM type S autonomously continued power generation, providing electricity to many households.

Osaka Gas will soon celebrate the 10th anniversary of its launch of ENE-FARM. While continuing to promote the spread of ENE-FARM, the company will advance R&D and reduce costs, thereby achieving a comfortable life for customers, reducing environmental burdens, and contributing to enhanced energy security.

*1 Number of orders received by Osaka Gas

*2 Our model calculation by converting a conventional gas heating and hot water system to ENE-FARM or ENE-FARM Type S (based on a single detached house with four family members)

[Conventional system] Gas heating and hot water system, gas hot water floor heating system (living room and dining room), gas hot water bath heating and drying system with mist sauna, gas cooker, and electric air conditioner

[ENE-FARM / ENE-FARM type S] ENE-FARM / ENE-FARM type S, gas hot water floor heating system (living room and dining room), gas hot water bath heating and drying system with mist sauna, gas cooker, and electric air conditioner

[CO₂ emissions coefficient] Gas: 2.29 kg-CO₂/m³ (Osaka Gas data), Electricity: 0.65 kg-CO₂/kWh

(Based on the average coefficient of FY2013 thermal power generation sources in the Plan for Global Warming Countermeasures approved by the Cabinet in May 2016.)

*3 Basic unit of CO₂ absorption of Japanese cedar trees = 13.9 kg-CO₂/year/tree (based on 50-year-old trees measuring 26 cm in diameter and 22 m high, from the 1997 Annual Report on Forest and Forestry)

*4 World’s highest power generation efficiency with a household fuel cell with a rated capacity of 1 kW or less (surveyed by Osaka Gas on January 29, 2018)

*5 Electricity generation efficiency is based on consistent generation of rated electricity for 10 hours or longer, as

in purchasing surplus electricity. In cases other than the above, the rated electricity generation efficiency is 52% (total efficiency 87%).

For LP gas, the rated electricity generation efficiency is 51% (total efficiency 85%). These are calculated at the lower heating value (LHV).

LHV is the heat quantity minus the generated heat of vaporization of the water vapor from complete combustion of fuel gas.

*6 World's smallest size for household solid oxide-type fuel cell (including waste heat recovery system) (surveyed by Osaka Gas on January 29, 2018)

*7 First in Japan for commercial-based purchases of surplus electricity generated by household fuel cells via a grid (surveyed by Osaka Gas on February 24, 2016)

The purchase of surplus electricity is available for customers who conclude a gas contract with us and use our products (Types 192-AS05, 192-AS06, 192-AS07, and 192-AS08).

By law, the purchase of surplus electricity is not available for solar power generation systems subject to the feed-in tariff (FIT) system for renewable energy (except systems with an output of 10 kW or more and purchase of full generation).

The purchase price per unit of surplus electricity varies by month according to calculated unit price adjustments.

Purchasing price per unit (yen/kWh) = $10.54 \pm \text{monthly adjustment} \times 0.133$ (rounded up to two decimal places, including consumption tax)