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Toyota to Continue Providing Residential Fuel Cell Cogeneration System for Government Project

Tokyo — TOYOTA MOTOR CORPORATION (TMC) announced today that it plans to provide, for the third year in a row, home-use fuel cell cogeneration units as part of a government project to verify the practical use of CO₂-reducing stationary fuel cells.

The municipal-gas-fueled 1-kW home-use fuel cell cogeneration units—which generate electricity and capture waste heat for household heating—are to play a role in the continuing Large-Scale Stationary Fuel Cell Demonstration Project of Japan's Ministry of Economy, Trade and Industry (METI). Twenty-four of the units will be provided to project participant Toho Gas Co., Ltd. (Toho), which will install them in homes in three central-Japan prefectures (Aichi, Gifu and Mie) to collect data toward commercialization. The government project, which was originally scheduled to conclude on March 31, 2008, is now expected to run until the end of March 2009.

TMC's home-use fuel cell cogeneration units run on a system—jointly developed with Aisin Seiki Co., Ltd.—consisting of a stationary fuel cell and a hot water storage tank. Recent improvements, such as a modified heat-recovery circuit, have boosted heat-recovery efficiency by roughly 20% (as measured by TMC) without any loss in power-generation efficiency. The result is a marked reduction in household primary-energy consumption and CO₂ emissions.

As part of its corporate social responsibility program, TMC has long positioned global environmental preservation as a top-priority management concern and is actively working to provide technological and commercial solutions to various environmental issues. To this end, TMC intends to continue investing in the research and development needed to reduce costs and improve the overall efficiency and durability of its residential fuel cell cogeneration system.

About TMC's participation in government stationary fuel cell project

TMC has been participating in METI's Large-Scale Stationary Fuel Cell Demonstration Project since 2006. The project is being carried out by the New Energy Foundation, which has been encouraging energy suppliers to participate every year since 2005. As a fuel cell system manufacturer, TMC provided 24 residential fuel cell cogeneration units to energy supplier and project participant Toho in 2006 and 28 units in 2007.

Outline of TMC's residential fuel cell cogeneration system

1) Development

TMC's residential fuel cell cogeneration system is the result of a joint effort involving the respective technologies of TMC and Aisin. TMC developed the fuel cell and Aisin developed the overall system.

To verify if TMC's residential fuel cell cogeneration system could be practically applied to multi-unit housing complexes, two system units were installed at the residence for official participants in the 2005 World Exposition, Aichi, Japan (EXPO 2005 Aichi, Japan) and used from February through the end of September 2005.

To verify the system's energy-saving performance and reliability, a unit was installed at the Aichi Prefectural Government Office in July 2006 and used until the end of March 2008.

2) Main Features

TMC's residential fuel cell cogeneration system provides a high level of power-generation efficiency, even when used frequently in the low-to-medium load range. It is extremely quiet, requires little maintenance and is light and compact.

3) Main Specifications

TMC's residential fuel cell cogeneration system consists of a fuel cell unit and a hot water storage tank.

Fuel cell unit

Type	Polymer electrolyte
Fuel	Processed natural gas (13A)
Output	1kW
Rated generation efficiency (LHV* ¹)	38% (35% HHV* ²)

Heat recovery efficiency (LHV)	52% (48% HHV)
Rated total efficiency (LHV)	90% (83% HHV)
Size	Height: 900mm; width: 860mm; depth: 350mm
Weight	120kg (dry weight)

Hot water storage unit

Capacity	200 liters
Temperature	Approximately 60°C
Standard functions	Backup hot water supply, fully automatic bath, multifunctional heat reservoir (floor heating, etc.)
Size	Height: 1,840mm; width: 800mm; depth: 450mm
Weight	122kg (dry weight)

*1. Lower heating value. Does not include the latent heat of vaporization of water.

*2. Higher heating value. Includes the latent heat of vaporization of water.