

Tokyo Gas to Participate in “Yokohama Smart City Project”

Tokyo Gas Co., Ltd. (President: Tsuyoshi Okamoto; hereafter “Tokyo Gas”) will begin a demonstration project toward building up smart energy network for the optimal stable supply of heat and electric energy at the district level while widely introducing renewable energies and unused energies, as part of the Yokohama Smart City Project (YSCP).¹ YSCP is one of the “Next-Generation Energy and Social Systems Demonstration Areas”² that are being advanced in four regions around Japan by the Ministry of Economy, Trade and Industry (METI). The City of Yokohama is submitting the YSCP master plan to METI today.

<Main Items>

(1) Tokyo Gas Company Housing (New Multi-family Dwelling) Smart House Demonstration

Tokyo Gas will construct a new four-story multiple family building (tentatively 20 - 30 units) in Isogo Ward, Yokohama City, and conduct the demonstration tests described below. This demonstration project is expected to reduce CO₂ emissions by approximately 30% from existing levels.³ The building and facilities design works are scheduled to begin in FY2010, with construction completed within FY2011. The data collection and analysis works, with employees and their families in actual residence, are scheduled to begin from FY2012.⁴

■ Establish heat and electricity energy management methods using renewable energies, residential fuel cells, etc.

The project aims at establishment of an energy management system to achieve stable energy supply, energy conservation and CO₂ emissions reductions through the optimal control of combined facilities by installing *Solamo* solar thermal and gas hot water systems, and photovoltaic power generation equipment, toward the preferential use of renewable energies, as well as *Ene Farm* residential fuel cells and other devices.

Specifically, the demonstration will verify the energy conservation and CO₂ emissions reduction effects from sharing the heat and electric power generated by the solar thermal energy collectors, photovoltaic power generation equipment and *Ene Farm* systems among the housing units. Tokyo Gas also plans to demonstrate next-generation fuel cells in the future.

■ Verify Methods to Promote Changes in Energy Consumption Behavior

This demonstration will make gas and electricity consumption visible and display the quantities of renewable energy available for use, to promote energy conservation and CO₂ emissions reduction behavior by residents. The project will test methods of promoting more appropriate use of appliances which consume energy to match renewable energy and other supply conditions, and verify the effects.

In addition to these works at the multi-family company housing, Tokyo Gas will also promote the introduction of HEMS (Home Energy Management Systems)⁵ to cooperating customers at other apartment buildings and single-family homes, to accelerate HEMS commercialization.

(2) Smart City Demonstration for Optimal Energy Management at Commercial Facilities and Expanded District Heat Networks

This demonstration will advance the use of solar thermal energy for hot water supply and air conditioning and promote the introduction of renewable energies at commercial buildings, and work to establish systems for stable and efficient energy management via optimal energy control. The demonstration also aims to expand the heat network in an existing district heating and cooling area making use of waste heat from a refuse incineration plant as an unused energy source.

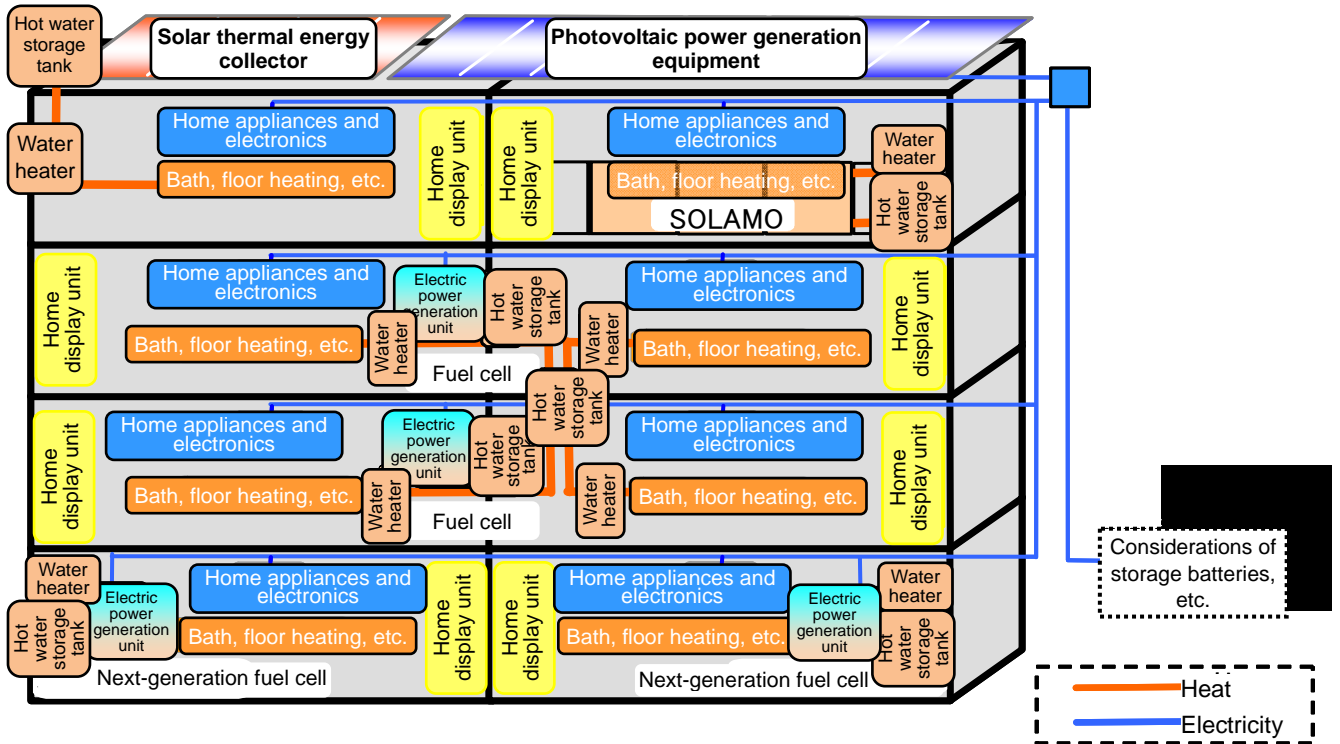
Specifically, in addition to verifying the Tokyo Gas Kohoku New Town Building as a net zero energy building (ZEB) with virtually zero primary energy consumption in 2030⁶, Tokyo Gas will actively provide technical assistance for the installation of solar thermal energy collection equipment at public welfare facilities and other buildings in Yokohama. Tokyo Gas will also advance a study on upgrading high-temperature heat supply pipes to use the refuse incineration plant waste heat in the existing district heating and cooling area, with a target date of FY2012.

Through the YSCP demonstration, Tokyo Gas is applying the results of its development works and other demonstrations to date toward the early realization of a smart community as next-generation energy and social systems. The company intends to broadly share the results gained from YSCP and contribute to the transition toward a safe, secure and comfortable low-carbon society.

1. The Yokohama Smart City Project (YSCP) is a demonstration project to be carried out by the City of Yokohama and seven companies (Accenture, Tokyo Gas, Tokyo Electric Power Company, Toshiba Corporation, Nissan Motor Co. Ltd., Panasonic Corporation, and Meidensha Corporation) as the implementing bodies over five years from FY2010 (ending March 31, 2011), with the mission of “taking the lead in establishing the world’s best smart city model in the advanced city Yokohama with population of 3.7 million, and exporting Yokohama-style solutions to cities overseas.”
2. These Next-Generation Energy and Social Systems Demonstration Areas are social demonstrations aimed at building up smart communities which improve heat and electric energy efficiency at the district level and establish stable energy supply, while widely introducing renewable energies and responding to new demand for next-generation motor vehicles, etc. The four demonstration areas Yokohama City, Toyota City, Kansai Science City (Kyoto Prefecture) and Kita-Kyushu City were selected nationwide, and the demonstrations are scheduled to run for five years from FY2010.
3. The 30% reduction in CO₂ emissions is for a three-person family, compared with the use of conventional water heaters and system electricity (assuming per unit CO₂ emissions of 0.69kg-CO₂/kWh for electric power and 2.29kg-CO₂ /m³N for city gas [13A]).
4. The demonstration trial results will also be used for joint research that Tokyo Gas is conducting together with the Tokyo Institute of Technology Advanced Energy Systems for Sustainability (AES Center).
5. Home Energy Management Systems (HEMS) use information and communications technologies to make visible, and appropriately manage, heat and electricity demand and supply in individual homes.
6. For details, see the Feb 3, 2010 Tokyo Gas press release at <http://www.tokyo-gas.co.jp/Press/20100203-01.html>.

<Reference>

■ Tokyo Gas Company Housing (New Multi-family Dwelling) Smart House Demonstration Image



Equipment	Specifications
Photovoltaic power generation equipment	Approx. 10kW; installed on roof
Solar thermal energy collector	Approx. 10kW; installed on roof
Solamo solar thermal and gas hot water systems	Several units; solar thermal collection panels installed on balcony railing
Ene Farm residential fuel cells	Approx. 10 units
Home Energy Management Systems (HEMS)	Gas and electric power use display system; Control system for preferential use of renewable energies; Smart meter (gas), etc.
Next-generation fuel cells	Several units (scheduled for future introduction)

■ Tokyo Gas Kohoku New Town Building ~ Working to Become a Net Zero Energy Building (ZEB) by 2030



*Photo taken in 1996 upon completion of the building construction.