JGA Grand Awards for Best Research and Development, 2004

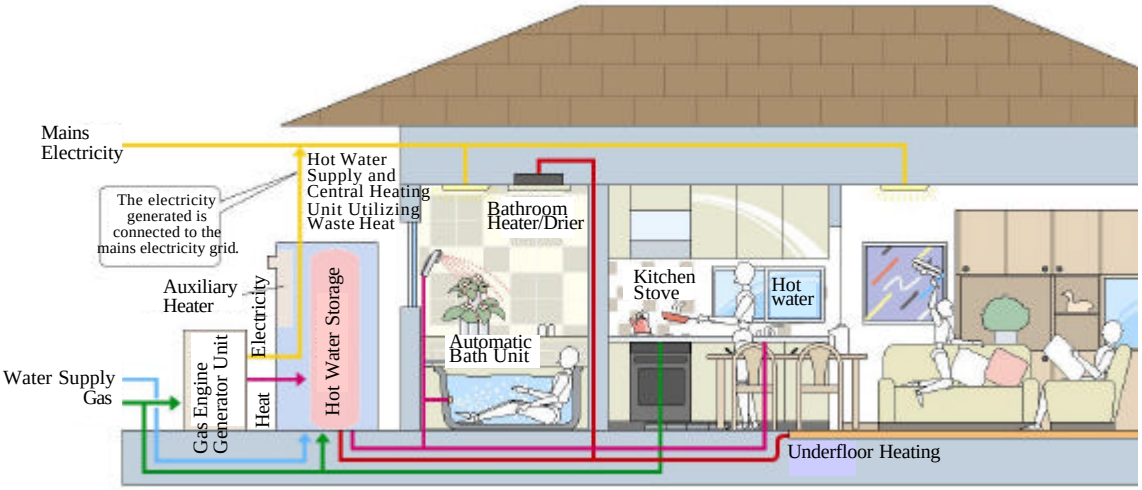
Development of "ECOWILL" Cogeneration System for Residential Applications

Osaka Gas Co., Ltd., Toho Gas Co., Ltd., Saibu Gas Co., Ltd.
Honda Motor Co., Ltd., Noritz Co., Ltd., Chofu Seisakusho Co., Ltd.

The amount of energy consumed in the residential sector continues to rise, and the efficient use of energy is a major issue. Gas cogeneration systems are now widely used in industrial and commercial applications, but technical and cost considerations had prevented the development of products for the residential market. In 2003, however, the world's first 1kW gas cogeneration system for residential applications was developed, marketed with the name "ECOWILL".

Main features of ECOWILL

1) Saves energy and is friendly to the environment: Compared with earlier systems combining a gas hot water and heating unit with a mains electricity supply, ECOWILL provides savings of around 20% in primary energy, and despite producing only 1 kW of electricity, it has an overall efficiency of 85% (LHV standard) produced by generating efficiency of 20% and waste heat recovery efficiency of 65%. This produces about a 30% cut in CO_2 emissions.
2) Economical: Heating and lighting costs are approximately JPY 40,000/year lower than ordinary systems with gas fan heaters. (Calculations are based on a 4-person household in the Osaka Gas area with a 150 m^2 floor area.)
3) Quiet: The gas engine generator produces only a 44 dB (A) noise level, similar to that of an air conditioner outdoor unit.
4) Provides comfort and convenience: The hot water produced by the gas hot water and heating unit can be utilized by all hot water or heating units designed for a hot water supply, including bathroom heater/drier units, underfloor heating, air conditioners, etc. An instantaneous water heater capable of heating 20 liters of water to 25 degrees C every minute is incorporated as an auxiliary hot water source, so there is no problem with running out of hot water.
5) Clean: Use of clean natural gas means a low level of NOx emissions.
6) Compact: A thin design is used to facilitate residential installation. The system can be installed in a space approximately 1 m deep, including the space required for maintenance.



ECOWILL system concept

Gas Engine Unit

Hot Water Supply and Heating Unit Utilizing Waste Heat

Starting with its launch in March 2003, ECOWILL has generated a substantial effect amount of interest in the market, with more than 4,000 systems sold by June 2004. The standard price for the set including the generator unit and the hot water supply and heating unit is JPY 730,000, but grants of up to JPY 213,000 per system (including installation costs) are available in order to encourage more widespread use.