

R-04	Keywords	Y2	device	Z4	electricity	S5	renewable energy
						L	Technical Services

## Air/Heat Pump Water Heater with Natural-Refrigerant

### Features

- ◆ A high efficient water heating system that uses heat in the air to boil water.
  - Developed in 2001.
  - Achieves heat energy for water heating with less than 1/3 of the electricity.
- ◆ Low running costs
  - This highly efficient system enables less power consumption and running costs can be significantly reduced by utilizing electricity during cheaper times.
- ◆ Dramatic reduction of household energy consumption
  - Approximately 30% of total energy in an average Japanese household is used for the hot water supply. Energy-saving water heaters contributes significant energy conservation.
  - Dramatic CO<sub>2</sub> emission reductions are achieved when compared to conventional fossil-fuel burning water heaters.
- ◆ Eco-friendly natural refrigerant (CO<sub>2</sub> refrigerant) is used.



### Basic Concept or Summary

- The “Eco-Cute” water heater uses heat in the air. It’s officially known as Heat Pump Water Heater with Natural-Refrigerant.
- Like hot and cold, untouched and unused heat energy in the air and water abounds. Heat pump technology utilizes this thermal energy for various uses such as air conditioning and hot water/water supply.
- Heat in the air and water—yet unutilized—is used instead of fossil fuels, making this water heater energy-efficient.
- On sale since 2001, the Eco-Cute is the world’s first heat pump water heater to use natural CO<sub>2</sub> as refrigerant. Until then, most water heaters were combustion type (gas or petroleum water heaters) or electric type (electric water heaters), with a few solar-powered water heaters and virtually there were no other types.
- Eco-Cute is combination of “eco” from economy and ecology and kyuto, the Japanese word for hot water supply (pronounced like “cute”).

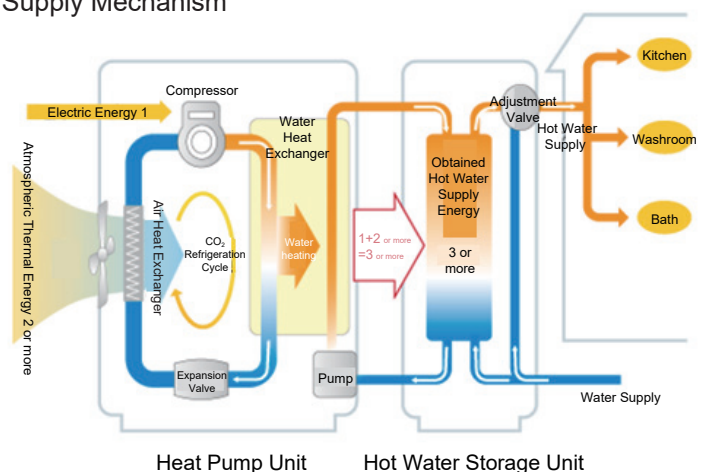
- ◆ Natural Refrigerant Heat Pump Water Heater  
EcoCute Equipment Overview and Hot Water Supply Mechanism

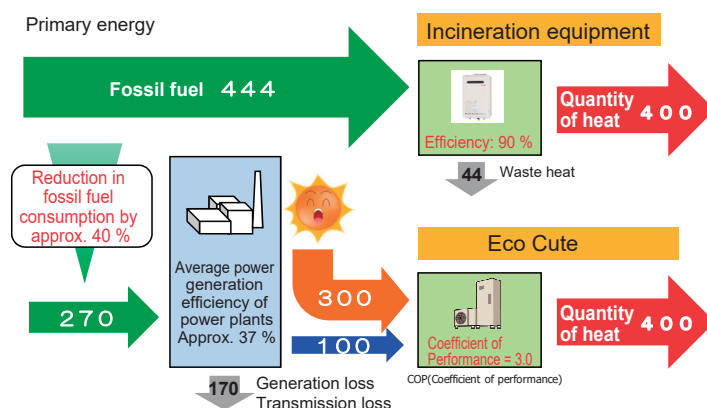


Heat Pump Unit



Hot Water Storage Unit



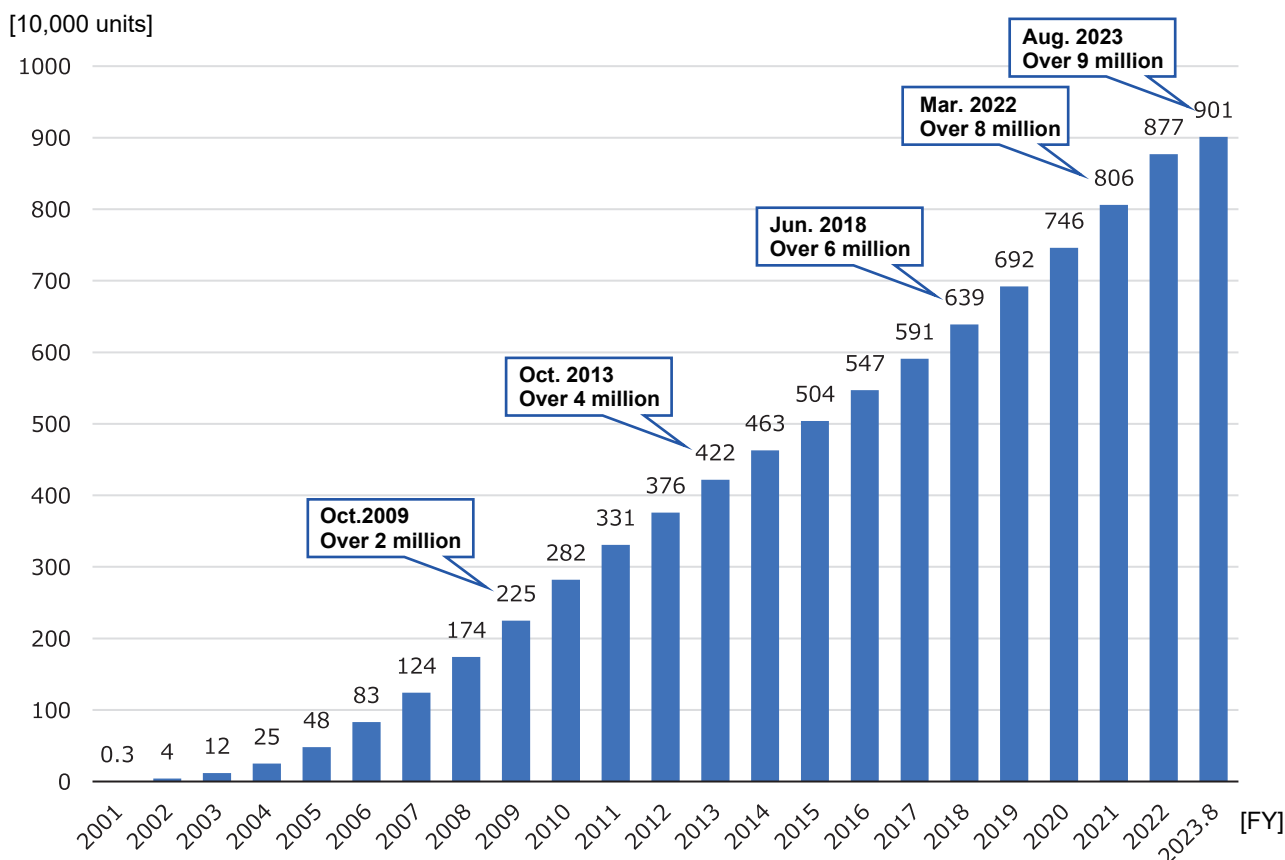


- ◆ Compared to flash urban gas-powered water heaters, the Eco-Cute reduces primary energy used 40%.
- ◆ The natural refrigerant (CO<sub>2</sub>) used in the Eco-Cute does not destroy the ozone layer. Additionally, since CO<sub>2</sub> generated in industrial and manufacturing processes is used as refrigerant, the Eco-Cute promotes the recycling of resources.
- ◆ Since its launch in 2001, cumulative shipments have exceeded 9 million units.

### Installation in Practice or Schedule

#### Domestic ◆ Natural Refrigerant Heat Pump Water Heaters

Trends in Cumulative EcoCute Shipments



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