

KAWASAKI HEAVY INDUSTRIES, LTD.

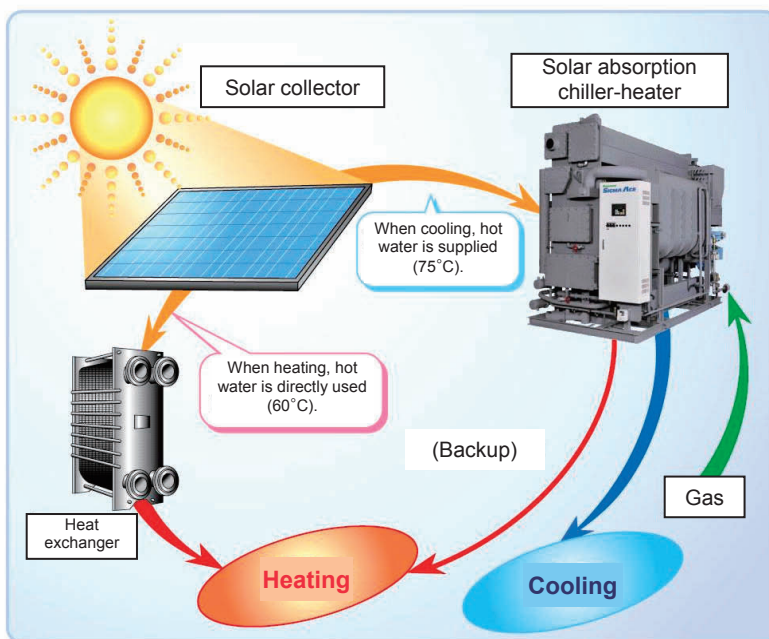
Solar Absorption Chiller-heater

Features Air Conditioning using Solar Thermal Energy

- Freon Free:
Absorption chiller-heaters contain “water” as refrigerant and Freon gas, which has high global warming potential, is not used.
- Low Electricity Consumption:
Absorption chiller-heaters provide chilled water by means of renewable energy or natural gas combustion, which contributes to significant reduction of electricity consumption.
- Application for Solar Thermal Energy:
Solar absorption chiller-heaters preferentially utilize solar thermal energy, which can reduce consumption of natural gas.
- The lower limit temperature of the solar hot water is “75 °C”.
- The base model is a worldly high efficient machine with high COP and CO₂ emission can be reduced.
- Waste heat from Gas Engine or Gas Turbine Co-generation system is also applicable.

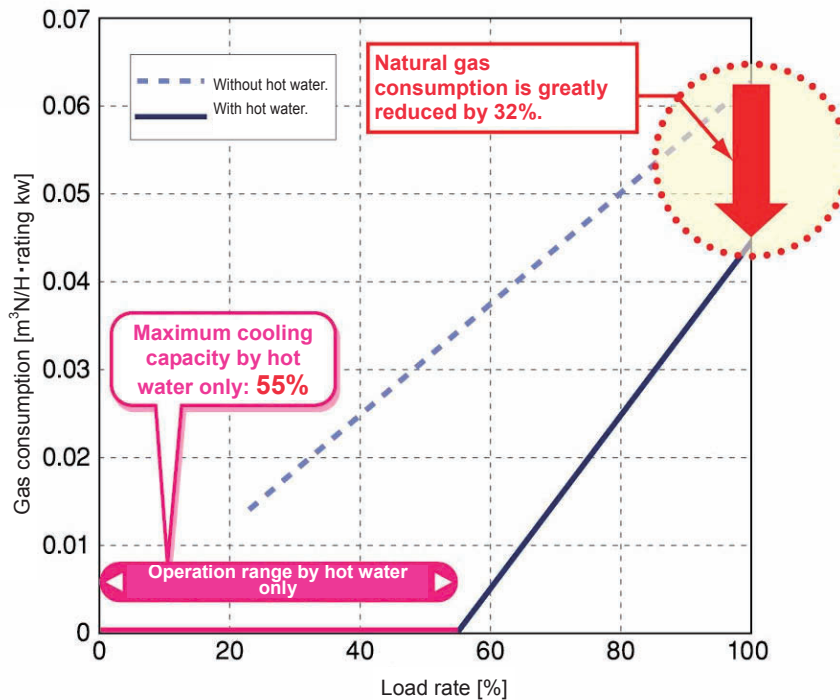


Basic Concept or Summary



- The hot water heated by the solar thermal energy through solar collectors is supplied to the solar absorption chiller-heater. The solar absorption chiller-heater thermally recovers heat from hot water and exchanges it to lithium bromide solution in the machine, and then the natural gas consumption is reduced.
- As the solar absorption chiller itself is equipped with a burner, which provides combustion heat necessary in the machine, back-up system is not necessary even if the solar heat is insufficient. Furthermore, as hot water by the solar heat is preferentially used, the cooling operation is possible with the solar heat alone when cooling load is low.
- The newly developed heat exchanger specifically for the solar hot water has realized to set lower limit temperature up to “75 °C”. (The previous lower limit temperature for hot water recovery was “83 °C”.)
- For the heating in winter, the solar hot water can be supplied for the heating.

Great reduction of natural gas consumption can be realized by utilizing hot water by the solar thermal energy.



- Natural gas consumption at a rated operation can be saved by 32% compared with the base type. (In the case that hot water inlet temperature is 90°C.)
- The Maximum cooling capacity with hot water only is “55%”. (In the case that hot water inlet temperature is 90°C.)
<Example> In the case of 100 RT, the machine is capable to supply chilled water up to 55 RT by hot water only.
- CO₂ emission can be significantly reduced by solar thermal energy compared with the direct fired type.
- Total motor output is only “4.85 kW in the case of 185 RT.

Installation in Practice or Schedule

Domestic

Launched in June 2010.

Overseas

Launched in June 2010.

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