

A water-cooling inverter-driven screw chiller that attained the industry's highest energy efficiency

## High Efficiency Mini II

### Features

- Attained the industry's highest coefficient of performance (a COP of 6.0) simultaneously with an integrated part load value (IPLV) of 9.2 as annual energy efficiency.
- Supports a wide range of load, i.e., 100 to 660 USRt (352 to 2320 kW).
- Reduces approximately 70% of CO<sub>2</sub> emissions from conventional absorption-type refrigerators when used for industrial purposes.

### Overview

(Technical principles, actions, etc.)

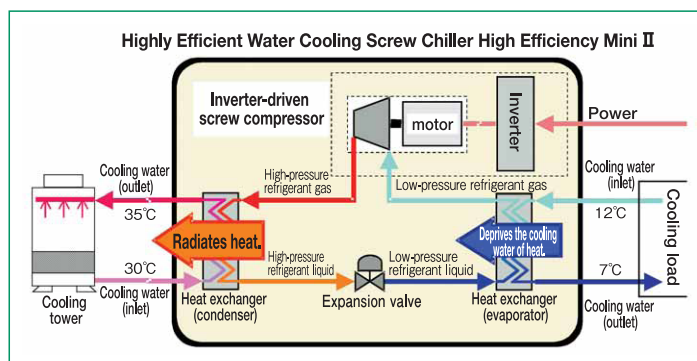
High Efficiency Mini II is a water-cooling screw chiller consisting of an inverter-driven compressor, condenser, expansion valve, and evaporator (see the photograph of the appearance).

A refrigerant circulates in the system of High Efficiency Mini II to support cooling loads in the following actions. The evaporated refrigerant is compressed in the compressor and converted into high-pressure refrigerant gas, which is guided to the condenser, where the refrigerant gas is cooled with cooling water to condensing state of high-pressure refrigerant liquid. The high-pressure refrigerant liquid is expanded with an expansion valve into a low-pressure refrigerant liquid and sent to the evaporator. The low-pressure refrigerant in the evaporator will deprive cooling water of heat when the refrigerant evaporates, and turn into low-pressure refrigerant gas. The low-pressure refrigerant gas will be sucked into the compressor again, and the refrigerant will circulate in the system (see the flow of High Efficiency Mini II).

Current export and sales activities include distribution in Korea, which started in 2011.



Appearance



Flow of High Efficiency Mini II

### Effects

- The COP of a chiller is calculated from the ratio of the cooling capability to the power consumption of the chiller. High Efficiency Mini II attains a COP of 6.0 on the condition that the inlet and outlet temperatures of cooling water are 30°C and 7°C (under Japanese Industrial Standard conditions). Furthermore, the operating efficiency of High Efficiency Mini II will become higher if the inlet temperature of cooling water is as low as 13°C with a partial load imposed. High Efficiency Mini II has excellent total and partial load performance, and consumes less power, reduces CO<sub>2</sub> emissions to a greater extent, and operates at a lower running cost than conventional models. For example, the CO<sub>2</sub> emission rate of High Efficiency Mini II is lower than that of a conventional chiller of gas absorption type, which saves approximately 70% of CO<sub>2</sub> emissions from the conventional chiller per year with a 50% reduction in running costs.