

Parallel Operation of Absorption and Turbo Chillers

- Demand and Supply RENKEI Control -

■ Overview

- With a set of absorption chillers running on city gas, and a set of turbo chillers running on electricity, used in parallel, RENKEI control determines the optimal supply ratio of the two sources so that the electricity does not exceed the contracted demand while holding down CO₂ emissions.
- Utilizing forecasts for cooling or heating demand, efficient operation of absorption and turbo chillers can be maintained.
- The system enables compliance with the particularly stringent energy efficiency requirements of recent years, while minimizing carbon dioxide emissions to counter environmental impact.

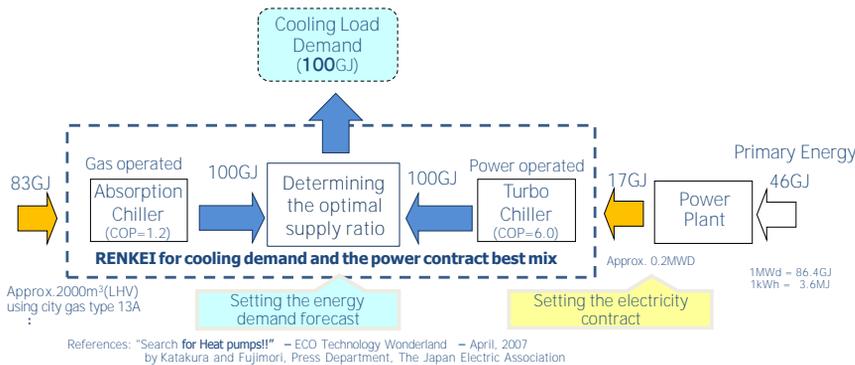
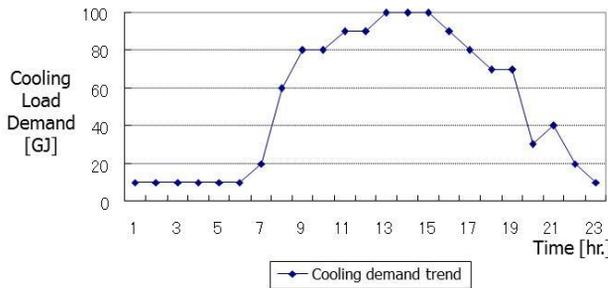


Fig. 1. System Overview

• Cooling load demand case study:

Demand reaches maximum of 100 GJ early in the afternoon



Cooling operation must be conducted below 4,000 kW contracted level (green dotted line)

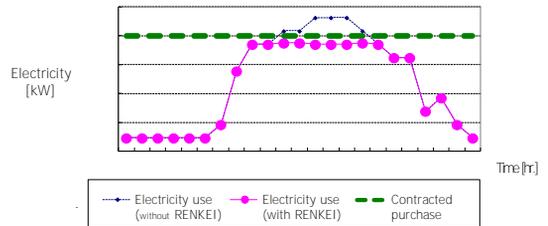


Fig. 2. Simulated Savings

■ Comments

- Based on the forecast for cooling demand, RENKEI control assigns the appropriate starting times so that chillers requiring significant time for startup are ready when needed.
- ➡ During the peak power use period, absorption chillers are also operated. In this way it is possible to hug the contracted electricity line while not exceeding it.

■ Who can benefit

Objective Facility: Utility or heat source facility for manufacturing plant or large size building.

Availability: nationwide (however for cold regions, heat pump capacity must be carefully evaluated)

References:

RENKEI Control Guidebook (JEITA/GIPC, 2012)

Energy Conservation Monthly vol. 64 No. 10 (JEITA, October 2012; in Japanese)