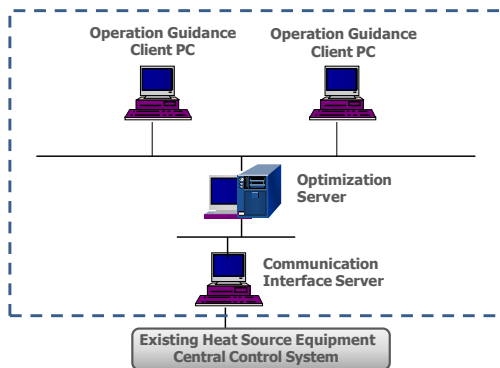
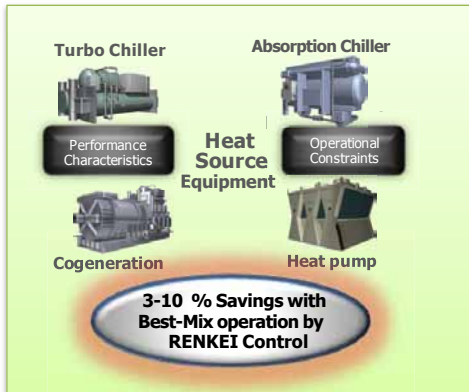


Automotive Plant Heat Source Plant Operation

- Demand and Supply RENKEI Control -

■ Overview

The plant's primary energy supply is city gas and electricity. Renkei control optimally allocates the load of two types of chillers (turbo and absorption) and minimizes the primary energy cost while satisfying the electricity contract demand. Renkei control effectively utilizes the thermal storage tank in order to use lower-cost nighttime electricity. The control system enables optimum supply of energy in response to demand — hence the name "Demand and Supply RENKEI Control."



■ Heat source facility description

- Chillers (absorption and turbo types)
- Cogeneration system
- Thermal storage tank
- Primary energy: city gas and electricity

■ Overview of optimization concept

- Forecast AC cooling water demand up to 24 hours in advance
- Preset to operate at minimal energy cost after the demand requirement is met
- Pursue further efficiency by applying energy management concepts
- Add a communication interface and optimization server on top of the existing central control system to provide necessary information to client PCs

■ Savings estimate (automotive plant example)

- 7 to 8 % when using two different energy source chillers with combined use of thermal storage tank

3 % range only using turbo chillers combined with use of a thermal storage tank

■ Comments

- Significant waste is prevented through monitoring of heat demand forecasting and thermal storage tank heat capacity trends. Operator guidance provides timely predictions as well as information on past results, allowing operators to trust the system's recommendations.
- Information technology allows RENKEI control to improve performance without the need to renovate existing facilities.

■ RENKEI control introduction procedure

Phase 1: Feasibility study (technical and economical analysis)

Phase 2: Budgeting

Phase 3: Implementation and savings verification

And: Option to upgrade from the guidance system to the online control system

■ Energy users who can benefit from the RENKEI Control concept

Automotive, electric/electronics, food processing plants, district heating and cooling plants, etc.

Reference: **RENKEI Control Guidebook (JEITA/GIPC, 2012)**