

PRELIMINARY RETRO-COMMISSIONING STUDY ON OPTIMAL OPERATION FOR THE HEAT SOURCE SYSTEM OF A DISTRICT HEATING/COOLING PLANT

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ABSTRACT

In order to improve the energy performance of a district heating and cooling (DHC) plant, the expected performance of the plant is studied using simulations based on mathematical models. An complete heat source system model, equipped with an embedded module that automatically determines the on/off states of heat source equipment using cooling/heating loads, has been developed and validated using actual performance measurements. The mean error between the simulated and measured total energy consumption was 4.2%.

Using the developed model, three proposals for improving the plant operation are simulated in order to determine how much energy can be saved. The simulation result shows that the three proposals, automating primary water flow rate, fully open bypass valve of heat exchanger during no-ice-thermal-discharge period, and increase chilled water supply temperature to 8°C, could reduce plant total energy consumption by 2.1%, 0.7% and 3.3% respectively.

INTRODUCTION

District Heating and Cooling (DHC) systems

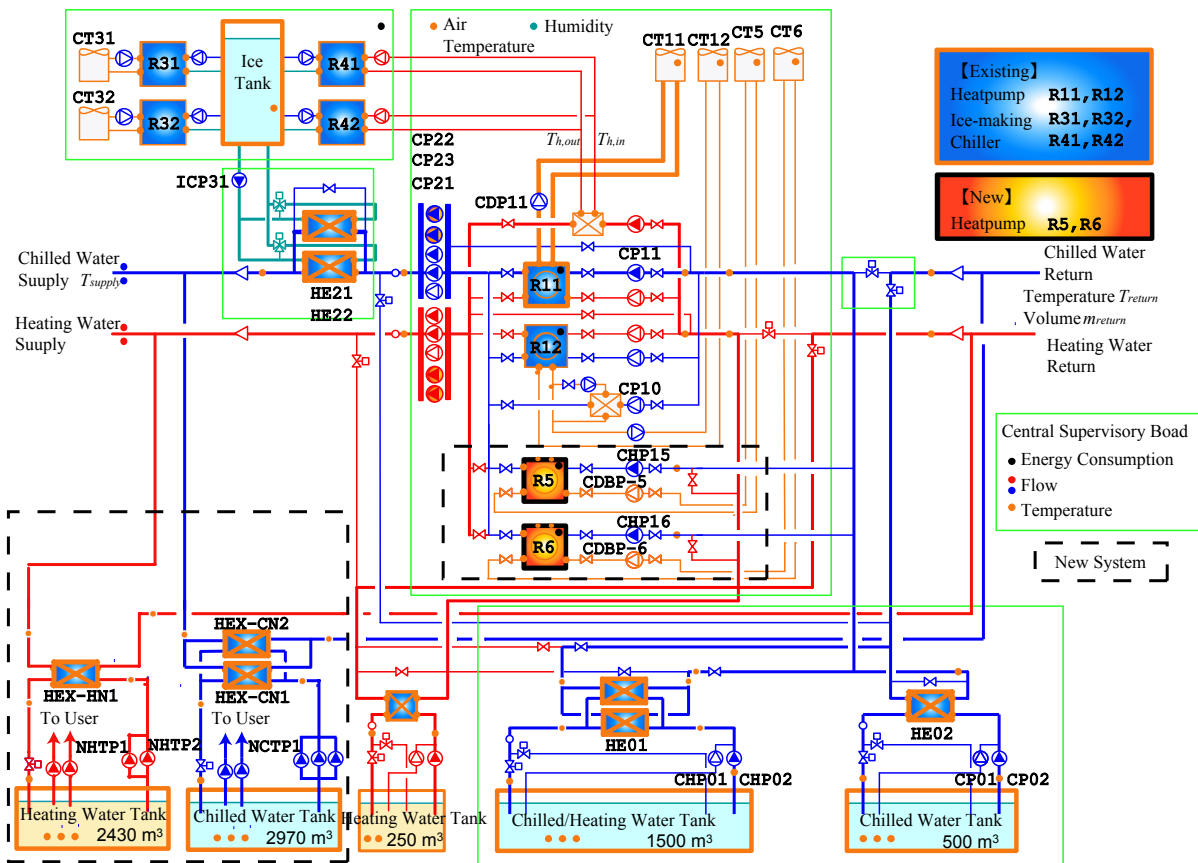


Figure 1: Heat source system diagram