

Japanese Project: “An Economical Thermal Network Cogeneration System for Apartment Building (Neighbouring Cogeneration system)”

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SUMMARY:

In order to spread economically viable distributed generation systems, it is essential to develop an energy-efficient and low-cost heat supply system. We have been developing a new centralized cogeneration system for apartment buildings (Neighbouring Co-Generation: NCG).

The key concept of this system is to install a heat storage unit equipped with a hot water supply and a space heating function at each household and to connect heat storage units by a single loop of hot water piping. As a result, time leveling of the heat supply becomes possible. Thus, the costs of the piping and heat source equipment decrease. Furthermore, because of the large capacity of accumulation of the system, the cogeneration can generate according to the electricity demand. Thus, the high operating rate of the cogeneration can be achieved.

When comparing to a system with a boiler in each household, the NCG can reduce the primary energy consumption by 14.9% over the course of a year.

In this study, we have developed a new heat storage unit, and installed an NCG system for actually seven lived-in households in an experimental condominium (NEXT21). It was confirmed that this system could supply heat stably throughout the year.