P11. Cooling and Heating Performance Characterisitics using Filtered Seawater

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As the sustainable use of energy and the mandatory installation of new and renewable energy in the country, hydrothermal energy has attracted attention as an alternative to reduce the energy demand of the coastal area. The seawater filtration system shows stable annual temperature change and withdrawal rate, and designed a seawater filtered water heat source system. The design of the heat source system using 100RT class beach filtration water showed a high performance coefficient of 3.6 or higher, the performance of the pilot plant of 10RT scale was verified through operation test. When applying the Heat Pump system using the beach filtration water, the power reduction of up to 25% compared to the existing electric facility was confirmed, stable room temperature change was confirmed.

The institute is conducting basic research on the development of a high-efficiency thermal energy conversion cycle model in an attempt to improve the efficiency and output of the thermal energy conversion method using seawater thermal energy. This study aims to develop a high-efficiency thermal energy conversion cycle model using various unused heat sources and seawater thermal energy.

The center is also studying the applicability of the seawater cooling/heating system using filtered seawater. In this study, a seawater intake system was designed and installed to use filtered seawater as a heat source for the seawater cooling/heating system, while the system performance was analyzed by designing, installing, and operating a seawater cooling/heating system that uses filtered seawater. The institute compared and analyzed the energy efficiency of the proposed system with the conventional heating/cooling system through long-term monitoring.

In this presentation, we would like to introduce the performance evaluation results of the developed seawater cooling/heating system that uses filtered seawater.

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