

Study on the Utilization of Sewage Sludge Energy

Whole term

1992.11 ~ 1993.2

(Purpose)

The electricity consumption in Japan has been increasing every year, while the supply capacity remains constrained especially during the peak time in summer. Considering these circumstances, independent power generation facilities, which were originally used during an instant power cut emergency in big electricity consumers like sewage treatment plants, should be changed to everyday use. Moreover, in case of on-site power generation, waste heat could be utilized more effectively.

In this study, the efficiency of sewage sludge treatment by effective utilization of independent power generation and waste heat is examined. Besides, the study also examined viability of projects where power generation plants are installed in the sewage treatment plants without buying electricity from other sources. For example, when the necessary energy for treating sludge and producing fuel or organic fertilizer is obtained from waste heat, construction and maintenance costs are compared to previous cases including cost for necessary power generation facilities according to the different treatment scales and sludge treatment flows.

(Results)

The possibility of an independent energy supply system was examined in terms of heat balance and its economic viability, on the condition that, a regular-use power generation facility is installed into the sludge treatment flow with a treatment scale of 100,000m³/day and the waste heat being used for the heat source for the sludge treatment.

A-1 concentration-digestion-dewatering-drying-agricultural use

B-1 concentration-digestion-dewatering-drying-fuel

B-2 concentration-digestion-drying-fuel

B-3 concentration-dewatering-drying-fuel

B-4 concentration-drying-fuel

C-1 concentration-digestion-dewatering-drying-composting

C-2 concentration-digestion-drying-composting

C-3 concentration-dewatering-drying-composting

C-4 concentration-drying-composting

As a result, the flows of A-1, C-1 and C-3 are considered to have possibility of installation in terms of the heat balance and the economy of the system.

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Keywords

independent energy supply system, complex cycle power generation