

Research Study on Introducing Energy Saving - Creating Technologies into Sewerage System

Year of Research

2007 • 2008

(Purpose)

According to the “Sewerage Works Vision 2100”, which was formulated by Ministry of Land, Infrastructure and Transport in September 2005, “The Passage of Resources” was newly created to contribute to the self reliance of energy and the prevention of global warming by enhancing energy saving – energy creating function to wastewater treatment plants using potentialities of resource recovery and delivery, - the sewerage system originally has as its characteristics.

In this study, research surveys were conducted to collect actual practices which the local municipal bodies have worked for the purpose of promoting energy saving – energy creating measures, and the direction for the future energy saving solutions by case studies which suppose addition of energy saving – energy creating technologies to the existing wastewater treatment plants and balance of consumed energy and cost were compared, and allowable range of curtailment of energy and cost effectiveness were studied.

(Results)

(1) Case Studies for Introduction of Energy Saving – Creating Technologies

A reduction target (as reduction rate of energy consumption with target year) was set by referring energy saving schemes taken by the board members’ municipalities and the national energy saving law, and energy balance was calculated if the new energy saving technologies are applied to the existing system and degrees of attainment and cost estimation were studied. Eleven wastewater treatment plants were selected for sites of case study and evaluation of effectiveness for introducing energy saving units and required costs based on the actual condition (including capacity, treatment process, energy consumption, initial cost, running cost, etc.).

According to the evaluation, yearly reduced electric energy was estimated at around 30.2 – 39.3 % compared with the existing system and set reduction target (15%) was accomplished. In addition, assumed additional construction cost was estimated at approx. 169 million JPY per year and O&M cost turned out to be cheaper at 90 – 117 million JPY per year by the effect of saving electricity cost.

(2) Future direction to energy saving measures

Based on the results from case studies, effective and demanded technologies and equipments were summarized and suggested by collecting current condition of R/D by manufacturers in saving – creating energy and studying energy consumption among nationwide treatment plants.

And from the aspects of policies, establishment of industry – government – academia joint development aiming cost reduction for new technologies, new subsidization scheme which promotes reasonable replacement cost and a new frame work to prioritize energy saving equipment were also suggested to promote introducing energy saving technologies smoothly.

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Key words

Global Warming, Energy Saving, Energy Creating