# Empirical Study on B-DASH Project (Technology for Power Generation from Sewage Sludge Biomass)

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## 1. Introduction

Sewerage is essential social capital for the life of citizens, and as response to the global warming and tight supply of resources / energy, further effective use of the energy contained in sewage sludge is sought in addition to the greenhouse gas reduction measures.

To response to such social request and administrative needs, new technologies are being developed but are less used in practice and many sewerage service providers are cautious about introduction. For this reason, the Sewerage and Wastewater Management Department of the Ministry of Land, Infrastructure and Transport (MLIT) launched the "Breakthrough by Dynamic Approach in Sewage High Technology" (B-DASH) Project in fiscal 2011, and the Water Quality Control Department of the National Institute for Land and Infrastructure Management (NILIM) has been conducting empirical study for the Project. The objective of B-DASH Project is to realize cost reduction in sewerage projects and creation of renewable energy through the demonstration and dissemination of excellent innovative technologies and to support the overseas development of the water business by Japanese enterprises.

Of such activities, this paper introduces the outline of two empirical studies concerning the technology for power generation from sewage sludge biomass, which was adopted in fiscal 2013.

## 2. Outline of the technology for power generation from sewage sludge biomass

This technology is a combination of 1) technology to lower water content in sludge, 2) technology for energy-saving incineration, and 3) technology for power generation from incineration. The technology eliminates the need for supplemental fuel for incinerators by reducing water content in sludge and enables the creation of energy with power generation using waste heat in the incinerating process, which has been seldom used. Characteristics of these two empirical studies are as follows.

In the empirical study on the innovative sewage sludge energy conversion system with total optimization of dewatering, combustion, and power generation (Metawater-Ikeda City Joint Research Organization), the binary power generation technology was adopted as power generation technology since it has been in practical use in geothermal power generation and power generation is possible with low temperature difference, and cooperative control of the operation of each facility aiming for the efficient operation of the whole system enables further energy and cost saving (Figure 1).

In the empirical study on the system for power generation from sewage biomass (Joint Research Organization of Wakayama City, Japan Sewage Works Agency, Kyoto University, Nishihara Environment Co., Ltd., and Takuma Co., Ltd.), it is possible for even small facilities to secure a sufficient amount of power generation by adopting the low-power consuming stoker furnace as incineration technology and the small steam and binary power generation as power generation technology.

## 3. Future development

NILIM will continue to lead the empirical study and formulate guidelines based on study findings for sewerage service providers to consider introduction, and promote the dissemination of guidelines.

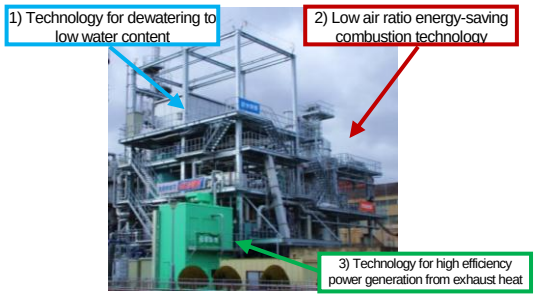


Figure 1. Demonstration Facility (Ikeda Sewage Treatment Plant)

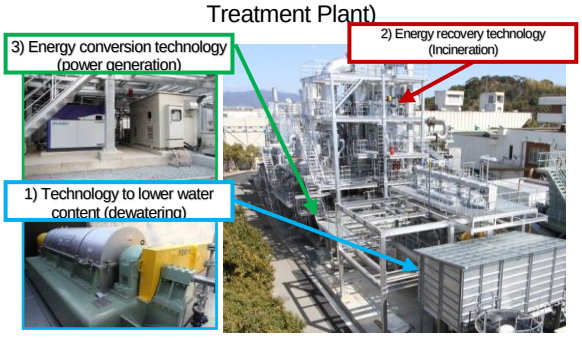


Figure 2. Demonstration Facility (Wakayama Central SewageTreatment Plant)

[Reference]

http://www.nilim.go.jp/lab/ecg/bdash/bdash.htm