

A Case of Utilizing Results

Formulation of Guideline for B-DASH Project (Power generation from sewage sludge biomass and solid fuelization)

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1. Introduction

The Ministry of Land, Infrastructure, Transport and Tourism ("MLIT") launched the "Breakthrough by Dynamic Approach in Sewage High Technology" (B-DASH) project in fiscal 2011, and the Water Quality Control Department of NILIM serves as an executing agency of this project.

The Department formulated Technology Introduction Guidelines in September 2015 for three innovative technologies, i.e., a technology for conversion into solid fuel, adopted in fiscal 2012 and two technologies for power generation from sewage sludge biomass, adopted in fiscal 2013, based on the finding of empirical studies and opinions of local governments and experts.

2. Outline of demonstrated technologies

(1) Technology for power generation from sewage sludge biomass

This technology is a combination of (i) technology to lower water content in sludge, (ii) technology for energy-saving incineration, and (iii) technology for power generation from incineration waste heat. The technology eliminates the need for supplemental fuel for incinerators by reducing water content in sludge and enables the production of energy with power generation using waste heat in the incinerating process, which has been seldom used.

(2) Technology for sewage sludge solid fuelization using hydrothermal treatment and high temperature digestion with carrier with reduced greenhouse gas

This technology consists of three processes of hydrothermal treatment, digestion, and solid fuelization. With this technology, it is possible to control the emissions of greenhouse gas to be generated in converting residues into solid fuel by converting the organic matter hydrolyzed by hydrothermal processing into digester gas using it as supplemental fuel.

3. Composition of the guideline

Table shows the composition of the guideline formulated. Chapter 2 describes the characteristics, performance, etc. of the technology, and Chapter 3 estimates the effect of the technology when introduced in treatment facilities. If introduction of the technology is determined to be highly effective based on the results of estimation, examination should be made concerning basic planning, equipment design, etc. for introduction as described in Chapter 4. Chapter 5 describes inspection items after introduction of the technology, operation management method, etc.

Table: Composition of Guideline

Chapter 1. General Provisions	Objective, scope of application, definitions of terms
Chapter 2. Outline of the Technology	Characteristics of the technologies, conditions of application, evaluation results
Chapter 3. Examination for Introduction	Introduction examination method, examples for examination of introduction effect
Chapter 4. Planning and Design	Introduction plan, design
Chapter 5. Maintenance	Inspection items, operation management method
Reference Data	Verification results, case study, etc.

4. Utilization of findings and future development

In order to introduce this guideline to local governments, sewerage-related companies, etc., the NILIM held a guideline presentation seminar in Tokyo Big Sight in July 2015, attended by about 100 persons (Photo 1). We continue to introduce the guideline actively through such presentation seminars, etc. to promote utilization of sewage energy by disseminating the technologies.



Photo 1: Guideline Presentation Hall

[Reference]

- 1) Technical Note of NILIM, No. 859
Guideline for introducing an innovative energy conversion system through total optimization of sludge dehydration, combustion and electricity generation (Draft)
- 2) Technical Note of NILIM, No. 860
Guideline for introducing an electricity generation system from sewage biomass source (Draft)
- 3) Technical Note of NILIM, No. 870
Guideline for introducing a technology for sewage sludge solid fuelization using hydrothermal processing with reduced greenhouse gas and high temperature digestion with carrier.
<http://www.nilim.go.jp/lab/ecg/bdash/bdash.htm>