

## Joint Research on Biomass Methane Fermentation

Year of Research

2007・2008

### (Purpose)

In biomass methane fermentation facility in Suzu City, mixtures of sewage sludge, night soil, purification tank sludge, rural sewage sludge and business-based garbage generated from Suzu City are fermented. Furthermore, sludge dried by biogas after fermenting are utilized as fertilizer.

The specification of the facility was decided by the practical study in 2005. Moreover, we evaluated environmental effects of the facility and the possibility of utilization of dried sludge as fertilizer.

From 2007 to 2008, the performance of the facility is evaluated with reference to practical study in 2005. The purpose of this study is to evaluate the facility about its validity of specification and its effects of the introduction.

### (Results)

#### (1) Property evaluation of collected biomass

- The amount of collected biomass was by an average of 82% of the set value. Especially, the amount of business-based garbage was little.(38.5% of the set value)
- The volatile solids of night soil was 51.5%-TS which was less than the set value(80%-TS).

#### (2) Evaluation of the facility performance

It was considered that the biomass methane fermentation facility operated well as follows.

Fig.1 Results of operation

Evaluation item	Unit	target	Result
Recovering garbage rate	(%)	More than 90	89.2
VS degradation rate	(%)	More than 45	50.6
Gas volume per decompositionVS	(Nm <sup>3</sup> /kg- decompositionVS)	More than 0.55	0.785

#### (3) Possibility of utilizing the dried sludge as fertilizer.

- As a result of the pot test, hindrance to plant growth by the dried sludge was not observed.
- The dried sludge fulfilled the EPA standards on dry treatment condition.

#### (4) Environmental impacts

- Judging from sidestreams analysis , it is possible to reduce the impacts of circulating water on the existing water treatment facility by controlling the operation condition of aeration equipment.

### (Future plan)

These results are evaluations of the facility in winter. Through 2008, seasonal changes of the facility performance will be investigated as follows.

- Performance evaluations of the facility in spring and summer.
- Project effect.
- Energy income and expenditure.
- Caution for the facility maintenance.

Collaborators: Suzu City of Ishikawa Prefecture, Japan Institute of Wastewater Engineering Technology

Contact : Takashi Ishida, Minoru Saitoh, Masahiro Fujikawa

Key words

Biomass, methane fermentation, Suzu City