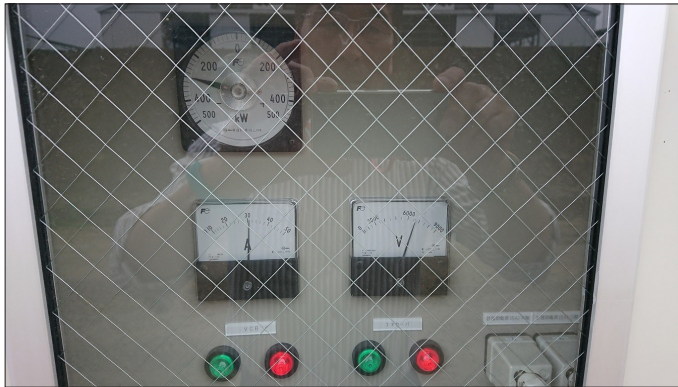


INDUSTRIAL WASTE TREATMENT



CASE HISTORY

Bionetix® Products Help Increase Biogas Production from 40% to 60%



CUSTOMER
Biogas Plant

BIONETIX® REPRESENTATIVE
F.E.I. Inc. (formerly Far East Int.)

PRODUCT
BCP12™
BCP57™
BCP80™
DAIRY-FEED™



PROBLEM

Many biogas power plants have issues with inefficient operations and offensive odors. In this case, F.E.I. investigated the processes at two biogas power plants in Japan:

1. The first plant used waste from livestock manure.
2. The second plant used herbage waste.

Normally, biogas power plants generate 60% methane, 40% carbon dioxide, and less than 1% of hydrogen sulfide and some other impurities. For these two plants, low efficiency operation led to methane production at only 40%. It was found that hydrolysis and acidogenesis were limiting stages of anaerobic digestion. Incomplete hydrolysis and suppressed performance of hydrolytic bacteria were causing certain bacteria to generate excess hydrogen sulfide, resulting in a malodor problem. Although the biogas plants were designed with a 300 kW/generator power generation capacity, in reality, the power generated was only 100 kW/generator.

DATE
2018

LOCATION
Japan

ch029 7/2019 Page 1 of 2

Printed on recycled paper  100% Post Consumer

©2018, Bionetix® International. All Rights Reserved. Copying of these materials in any form without the written authorization of Bionetix® International is strictly prohibited. ISO Accreditation applies to Bionetix's processes only.


Bionetix
INTERNATIONAL



We work for nature

Bionetix® International Corporation, Inc.

21 040 rue Daoust, Ste-Anne-de-Bellevue Quebec, Canada H9X 4C7
T 514 457 2914 • F 514 457 3589 • www.bionetix-international.com

During further investigation of the processes it was concluded that ammonia nitrogen was another impediment to methane generation at the manure-based biogas plant. The normal pH of operation is 7.4-7.7, but when total solids concentration was increasing up to 8.9-11%, ammonia nitrogen concentration also increased, leading to higher pH values of 7.84-8.13. The presence of ammonia nitrogen strongly affects the hydrolysis of organic matter.

APPLICATION

The biogas plants operate in a 45-day fermentation cycle. BCP12™ and STIMULUS™ were dosed to the raw material tank at each plant. BCP12™ was used along with BCP80™ at the manure biogas plant. At the second plant, BCP12™ was used with BCP57™ due to the high herbage content.

CONCLUSION

After dosing Bionetix® products, the issue of offensive odor was resolved. The methane production increased from 40% to 60%. At the same time, the amount of H₂S was reduced to less than 1%. The plants also improved to 300 kW/generator power production. In addition, it was noted that the manure biogas plant generated more power when using manure from livestock fed with ACTIV AID (DAIRY-FEED™).

Based on the investigation, F.E.I. recommends using BCP12™ together with BCP80™ at the biogas plants fueled by manure wastes and BCP12™ with BCP57™ at plants using wastes with high herbage content. Because fermentation requires multiple minerals, F.E.I. also recommends the use of STIMULUS™ as a biostimulant for the biogas production process.

