

BiOWiSH® Odor Control Program

Food Waste Recycling Facility Gyeong-Ju, South Korea



BiOWiSH® Technology

- Removes rather than masks odors
- Fast acting
- Effective on a wide range of volatile organic compounds (VOC)
- Cost effective
- Operates at low dosage rates
- Accelerates decomposition of organic waste
- Natural and non-toxic

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biowishtech.com

Executive Summary

How can effective odor control help food waste facilities?

BiOWiSH Technologies, along with local partner, Smart Bio Korea (SBK), worked with a food waste recycling facility in South Korea to find out. Over the course of two trials, BiOWiSH® technology proved to be an effective odor control treatment. By quickly reducing odor levels, the facility was able to meet regulatory compliance, avoid potential penalties, and cooperate with city official plans to develop nearby spaces.

Background

This study was conducted at a food waste recycling facility in South Korea that treats approximately 60 tons of food waste each day. The effluent from this facility then goes to another treatment plant where about 114m³ of landfill leachate and 35m³ of sewage are treated daily.

Characteristically, Korean foods include salty soups, vegetables with various seasonings and oils, and a large number of juicy, often acidic, side dishes. Because of these characteristics, food waste results in high levels of organic loading which leads to noxious odors.

Gyeong-Ju City plans to build an auto-camping resort very close to this food waste recycling facility. Naturally, odor from the facility is a main concern for the city officials. SBK conducted trials on-site to show the effectiveness of BiOWiSH® technology for reducing odor around the food waste recycling facility.

Objectives

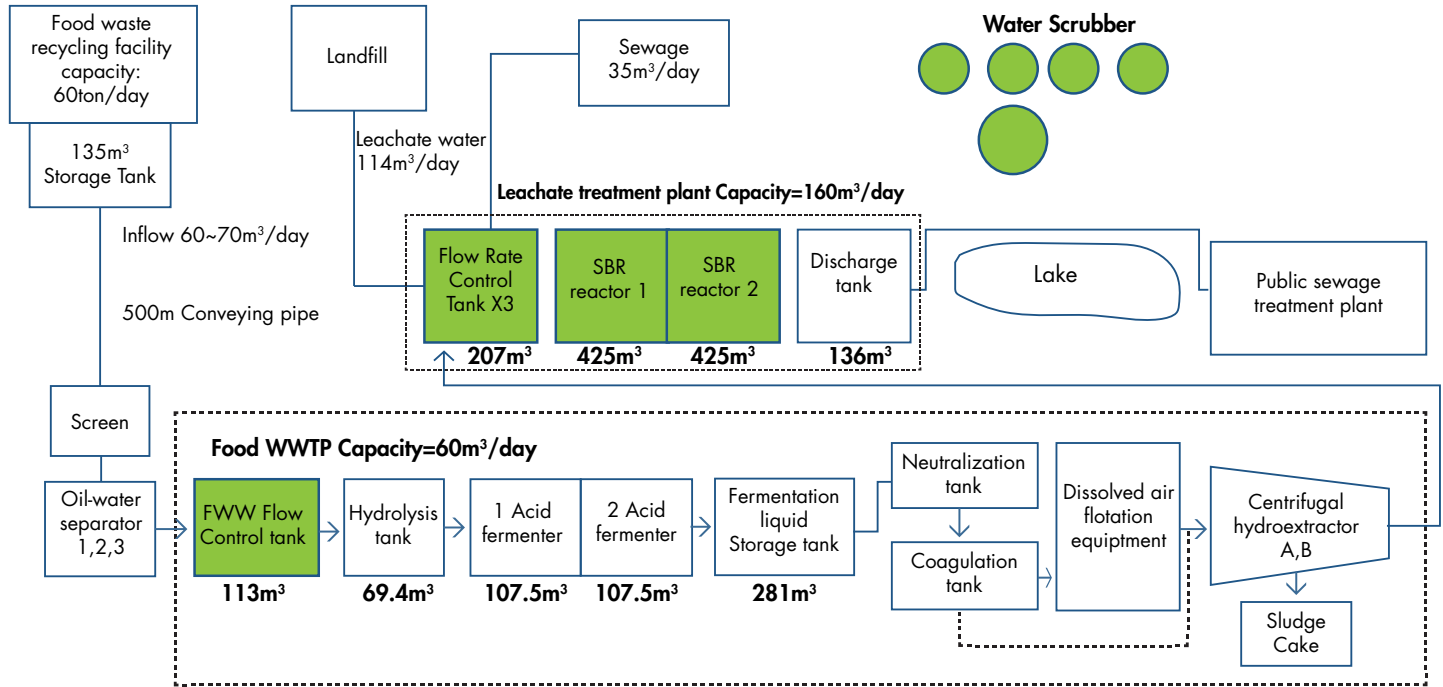
The main objective of this study was to reduce odor from the food waste and landfill leachate on-site.

Solution

Two trials were conducted to confirm complete odor elimination from the facility.

Trial 1

SBK conducted the first trial over 4 weeks, from March to April in 2017. Throughout the trial, odor was monitored via sensory evaluation by human perception.



Green indicates BiOWiSH® dosing points

Dose Amount	
Week 1 (shock dose)	2kg/day
Weeks 2-4	1kg/day

Results

Based on the operator's sensory evaluation report, odor levels were reported at Level 5 before dosing BiOWiSH®. After four weeks of dosing BiOWiSH®, odor levels were reported at Level 2.

These results indicate that using BiOWiSH® resulted in significant odor reduction at the food waste recycling treatment facility.

Furthermore, measurements showed that within just 3 days of spraying BiOWiSH®, H₂S levels in the leachate decreased from 60ppm to 2ppm.

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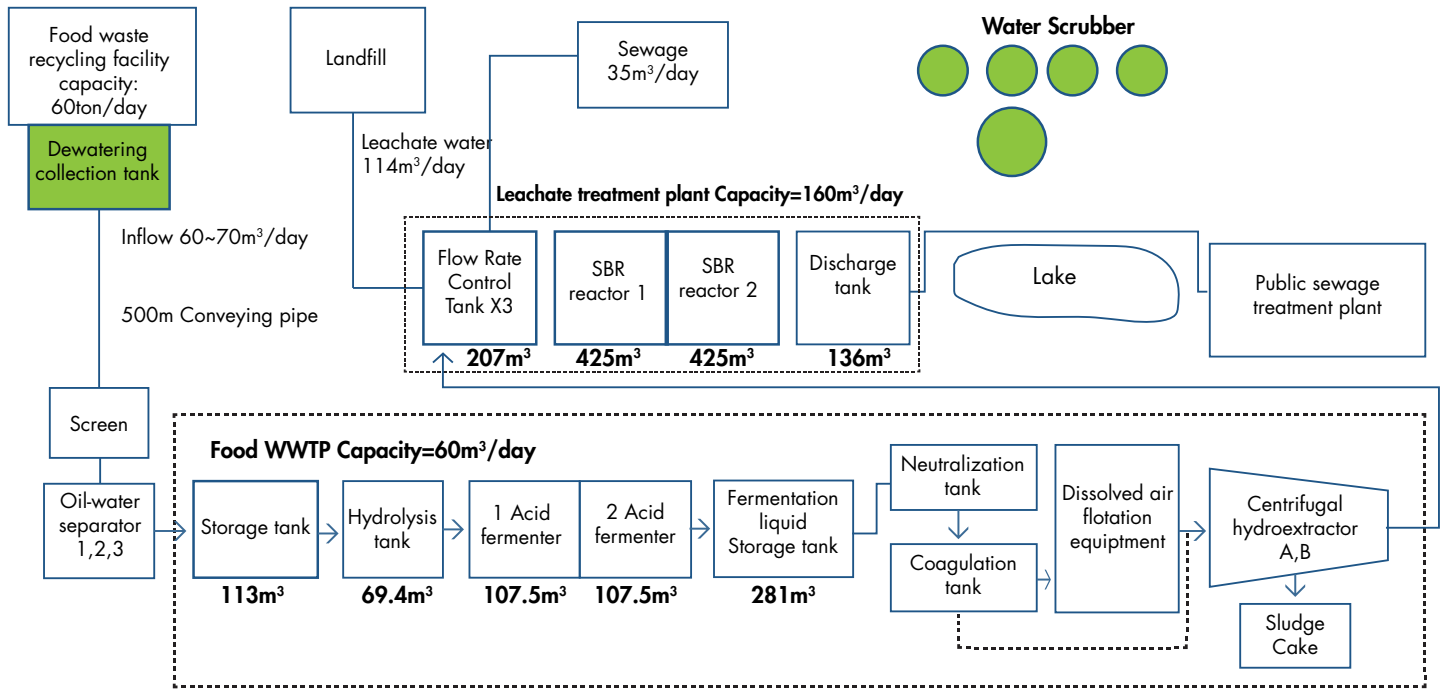
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During the first trial, odor levels reduced from Level 5 to 2.

After stopping treatment, odor returned to Level 4.

Trial 2

The client requested that an extended trial be planned for 10 weeks. The trial was conducted from June to August 2017. In this case, odor was quantified by using OMX-ADM handheld odor meter. Odor was also measured by a certified 3rd party testing institute using 'Air Dilution Sensory Test' and 'Composite Malodor' level of sampled gases.



Green indicates BiOWiSH® dosing points

Dose Amount

Dewatering collection tank 6kg/week

Water scrubber tanks 0.5kg/week

Note: BiOWiSH® was dosed right after the dewatering process to maximize the retention time and to reduce odor at the source.

Odor measurement by Air Dilution Sensory Test

A certified 3rd party testing institute conducted an 'Air Dilution Sensory Test' and measured 'Composite Malodor' level of sampled gases.

Sampling position 1: Outlet of exhaust stack at water scrubber

The report showed odor strength of the sample collected from the outlet of the exhaust stack at the water scrubber was 448 which meets the regulation limit (<500).

Sampling position 2: Site boundary

The report showed odor strength of the sample collected from the site boundary (in the backyard, close to the water scrubber) was 4 which meets the regulation limit (<15).

Note: The sampling position and the respective regulation limit are set by regulations/laws.

Summary

BiOWiSH® technology effectively reduced odor at the South Korean food waste recycling facility.

Throughout both trials, BiOWiSH® products performed effectively despite harsh temperatures (40~45°C), high salinity (50,000ppm), and pH (4.4-5.5). Additionally, when comparing the results of each trial, the facility found that dosing BiOWiSH® upstream led to better results thanks to the additional retention time.

What does this mean for the food waste facility?

By reducing odor and meeting regulatory limits, the South Korean food waste recycling facility will avoid penalty fines. They will also benefit from a cooperative relationship with Gyeong-Ju City and future tenants of the auto-camping resort. The reduction in smell means fewer odor-related complaints to the facility and worker time that can be spent seeing to other business needs.



BiOWiSH® is a registered trademark of BiOWiSH Technologies International, Inc.

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