



Multi-Stage filter to prevent odors and H₂S emissions at new biogas plant

Ozonation and adsorption with activated carbons keep the air clean in the Finnish town of Mäntsälä

MELLIFIQ

Mäntsälä, Finland

Mäntsälä is a town in the central part of Finland, situated just one hour from Helsinki, the Finnish capital. Founded back in 1585, Mäntsälä has been growing in the recent years. Now the local authorities decided to further develop by installing a biogas plant. This site handles 20,000 tons of organic waste every year, while having a biogas capacity of 2 MW. The location of the plant has been strategically selected for increasing the offer of biofuel in the southern part of Finland, in the surroundings of Helsinki's area.

Facts

Name:	Finnish Biogas Plant
Location:	Mäntsälä, Finland
Industry:	Biogas
Air flow:	20000 m ³ /h
Purpose:	Odor control and H ₂ S removal
Performance:	<ol style="list-style-type: none">1. No odor emissions2. No H₂S emissions3. No complaints from neighbors

Solution:

RENA Pro C6 Ozone System

Dimensions (LxWxH):	800x600x1800 mm
Weight:	190 kg
Input power:	2.8 kW

Nodora X3000 Activated Carbon System

Dimensions (LxWxH):	2700x2200x2000
Hatches for inspection:	1
Active material:	OCM-SulfCAT
Weight:	2500 kg

The problem

All biogas plants produce fuel from collecting waste of different nature. When organic waste is used as source, production sites often suffers from pungent odor emissions. Finnish population is particularly conscious about breathing clean air, so they always try to minimize any emission. When the new biogas plant was approved, odor emissions were expected, probably leading to complaints from neighbors especially during summer.

The owner of the plant took a proactive approach, incorporating an odor control system already in the initial design phase.

As in similar biogas plants, emissions from both H₂S and VOC (Volatile Organic Compounds) were suspected, thus the solution needed to remove both air pollutants.



Example of the organic waste used as fuel source.

The solution

As odors originated from various compounds, the final solution needed to be tailored-made, ensuring the removal of every pollutant. Ozonotech was chosen for this supply, thanks to its extensive experience and strong local presence in Finland. Ozonation and adsorption with activated carbons was the selected technology combination, due to the synergy between these two stages.

The RENA Pro C-series Ozone System was the first treatment step. In only a half-pallet footprint, this product removes most of the odors from industrial air streams, due to the high reactivity of ozone with H₂S.

After this stage, an odor removal of at least 80 % was expected. However, a complete odor removal was required, so the Nodora X3000 was added to the delivery. This product is an activated carbon filter designed for industrial application. OCM-Sulfcat was the chosen carbon type to perform the treatment. Due to a metal-based impregnation of the substrate, this material is particularly suitable for removing odors from a combination of H₂S and VOC.



RENA Pro G-series Ozone System (front) and Nodora X3000 Activated Carbon Filter (back) ready before shipment.

Evaluation

Both treatment units were delivered during the construction of the biogas plant. The ventilation system was connected to the RENA Pro and Nodora, with the ventilation fan placed at the end of the line. This configuration ensures a slight under pressure of the process air, minimizing any risk of potential leaks. Since the startup day, no significant odor emissions were disturbing the surroundings, with a smooth operation of the whole treatment system. We are glad to help developing a green technology such as biogas, by ensuring a clean air in the production plant and surroundings.

About Mellifiq

Mellifiq is a multi-awarded environmental service company group, that has since the early nineties evolved into a world leading system and solution provider with multiple groundbreaking applications for industrial, municipal, and real estate clients. We supply cutting-edge technologies to manage the most sophisticated air, water, and energy challenges.

Mellifiq offers a complete range of air and water treatment technologies and solutions across multiple industries such as processing industry, energy sector, food and beverage, pharmaceutical, wastewater treatment and commercial real estate.

Mellifiq offers strong and renowned brands, such as Ozonotech, Nodora and Watermaid, and world-class engineering services combined an excellent track record of more than 40 years of innovation. We help our clients achieve the most efficient and sustainable solutions while creating the maximum value for their businesses.

With several business units across Europe, Mellifiq is headquartered in Stockholm where research and development, production, Q&A and certification all take place. Our unique technology and our extensive expertise have made us the Center of Excellence for the world's most complex projects, and a global player with installations on all six continents.

Everyday millions of people rely on our solutions for ventilation, disinfection, sanitation, and odor control. We are committed to raising the bar for the concept of clean and the industry standard for engineering, technical services and general contracting.

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