Ämmässuo Waste Treatment Centre Welcomes Carefree Biogas Measurement from Vaisala

Helsinki Region Environmental Services Authority (HSY) is a municipal body that provides water services, regional environmental information services and waste management in the Helsinki region. At its Ämmässuo Waste Treatment Centre in Espoo HSY arranges the disposal of municipal waste and landfill processing, as well as the treatment of biowaste for producing biogas and compost. Ämmässuo is the largest waste treatment center in Finland, and among the largest waste treatment centers in Europe. Its activities are guided by an ISO 14001 environmental management system.

As a forerunner in the field, HSY has continuously developed its waste treatment processes ever since it started. A new composting facility was completed in 2007, and a gas power plant, one of the largest utilization plants of landfill gas in Europe, was introduced in 2010. In addition, a biogas plant was built in 2015. The treatment capacity for biowaste is about 60,000 tons per year, of which about half is treated in the biogas facility. The staff monitors the environmental impacts carefully in order to meet the requirements.

Optimizing processes

Operational Engineer Sauli Kopalainen has been developing the Ämmässuo Waste Treatment Centre since the year 2000. "The diversity of my work as well as the possibility to be in the frontline piloting and implementing the latest technologies with the rest of the staff is what makes the work interesting", says Kopalainen.

It is no wonder that the center has come a long way and several successful projects have taken place. As the center has grown along the years, one of the biggest challenges is the need to monitor and maintain several processes simultaneously with a limited amount of staff members.

One of the team's responsibilities in Ämmässuo involves monitoring the amount of electricity and heat, the energy content of the gas, and the efficiency of the biogas facility in order to report the amounts regularly to the Energy Authority, Finland's national emissions trading authority, for feed-in payments. It is essential to optimize the process in order to produce the largest possible amount of methane and that the measurements are correct. In order to get the feed-in payment for produced electricity and a premium for energy recovered as heat from the Energy Authority, the biogas plant's overall efficiency has to be above 75 percent for plants larger than 1 MW (above 50 percent for smaller plants). This means that if the measurement data gives wrong values compared to the actual amount of methane, the gas power plant can lose tens of thousands of euros in just a few months. Therefore, it is essential that the process works

Figure 1. Sauli Kopalainen monitoring the Ämmässuo Waste Treatment Centre.

optimally and the measurement is accurate and stable with minimal calibration and maintenance needs.

Solving challenges

Typically, operating the gas analyzers takes a significant amount of time. This is because the analyzers require sampling and extra work. They also need maintenance on a regular basis, which is costly. Vaisala's MGP261 multigas measurement instrument caught Kopalainen's interest, because it solved many of the problems that the team has dealt with before. Kopalainen took the instrument into use in order to make accurate measurements as well as to make the process control more effective in general.

"The small size of the instrument plays a big role, making it easy to install and to manage. The current

> "The current situation is ideal, since I don't even have to touch the instrument."
>
> *Sauli Kopalainen, HSY*

Figure 2. Vaisala CARBOCAP® MGP261 Multigas Probe for Methane, Carbon Dioxide and Humidity helps in improving the process and in protecting the Combined Heat and Power (CHP) engine.

situation is ideal, since I don't even have to touch the instrument", says Kopalainen. In addition, the long maintenance interval allows for the gathering of data without having to worry about maintenance breaks or surprises in the process.

Vaisala's Ex certified MGP261 transmits exact methane data directly from the biogas line along with carbon dioxide and humidity data. The humidity data enables drying of the gas when needed. Measuring carbon dioxide is also important: "Measuring CO_2 is useful from an environmental perspective in order to know the amount and it's also

necessary due to the environmental permit", says Kopalainen.

The goal for HSY is to provide responsible, effective, and evolving services for the needs of the growing population – for the benefit of both the residents and environment. This mission is well in line with Vaisala's objectives, especially when it comes to sensing the sustainable future by supporting the circular economy.

Read more about Vaisala's MGP261 multigas measurement instrument: www.vaisala.com/MGP261.

Vaisala MGP261 multigas measurement instrument

- *The world's first biogas measurement instrument that measures methane, carbon dioxide and humidity*

- *Ex certified to zones 0/1 enabling installation directly into the process line*

- *Optimized for processes such as anaerobic digestion of waste from agriculture, industries and municipalities, and the utilization of landfill gas*

- *The measurement utilizes Vaisala's patented CARBOCAP® infrared technology, which improves accuracy and minimizes calibration requirements compared to traditional analyzers*

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