



# APPLICATION NOTE

# BIOGAS ANALYSIS

## From Biogas to Biomethane

Biogas is the by-product of anaerobic digestion of organic material found in agricultural waste, municipal wastewater treatment and landfill waste. The biogas can be used to produce heat and electricity, but also can be upgraded to biomethane.

## CH<sub>4</sub> extraction

The cleaning and upgrading processes remove unwanted components such as CO<sub>2</sub>, H<sub>2</sub>O, H<sub>2</sub>S..., enrich its methane content and adjust its calorific value to meet natural gas standards defined by countries. Methane (CH<sub>4</sub>) concentration has to be from 96.5% to 99%.

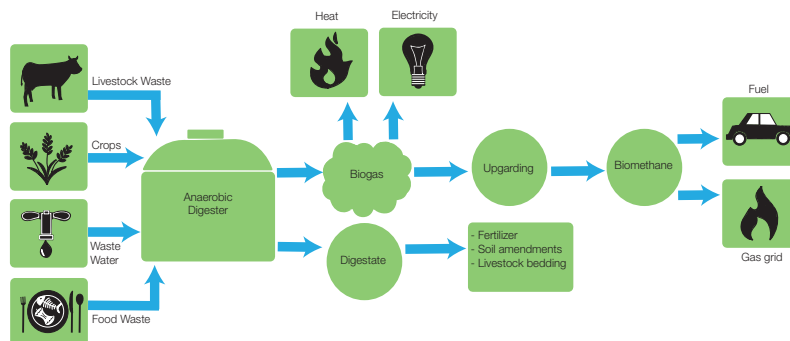


Figure 1 : Biogas process

## Adding a gas density meter increases responsiveness & security

Combining the Northdome® density meter with a WIKA pressure sensor allows to calculate the biogas mixture's molar mass & CH<sub>4</sub> concentration at the outlet of the upgrading process. It is used as a watchdog function thanks to its very high response time.

It does not replace the gas chromatograph but supplements the composition detection function for early warning of a problem as illustrated in the case study next page.

## CO<sub>2</sub> recovery

After cleaning process, CO<sub>2</sub> can be simply released into atmosphere. Nevertheless pure CO<sub>2</sub> has a high market value for several application such as green houses or food and beverages industries as this bio-CO<sub>2</sub> is carbone neutral.

The WIKA solution is also used to monitor the CO<sub>2</sub> concentration and ensure quality prior gas transportation.



Figure 2 shows composition data recorded at the biomethane injection point into an existing pipeline after the upgrading process.

The Northdome® sensor can detect sudden decrease in methane concentration allowing to stop the injection into the gas grid.

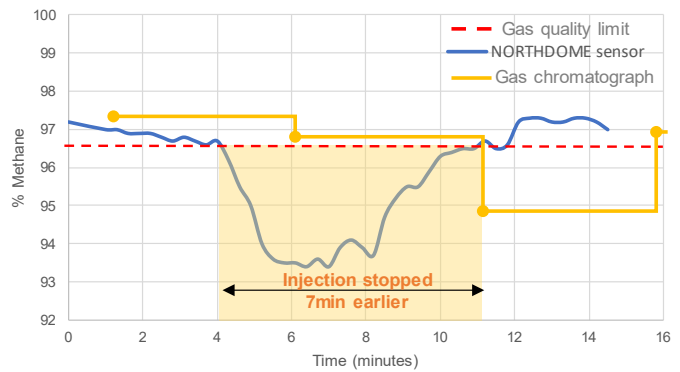


Figure 2 : Biomethane quality monitoring

### Added value and customer benefits

- ✓ High quality monitoring
- ✓ High response time
- ✓ Rugged design
- ✓ Cost effective solution

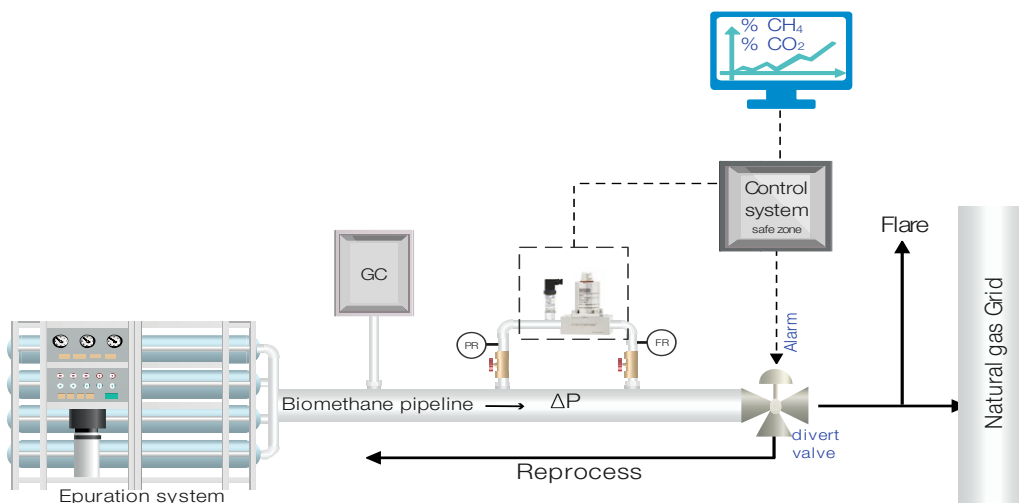
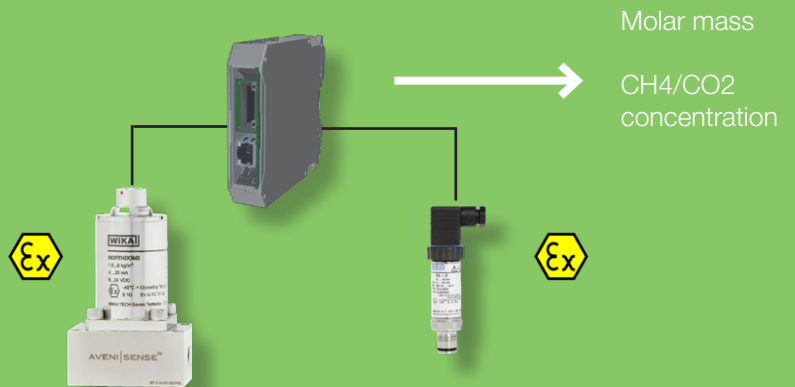


Figure 3 : Example of biomethane monitoring

Find more information about our NorthDome® sensor on our website : [www.avenisense.com](http://www.avenisense.com)