Ultrasonic flowmeter for biogas

The OPTISONIC 7300 Biogas is a single or dual path ultrasonic gas flowmeter that measures the amount and the composition of biogas. The flowmeter is ideally suited to measure biogas with a high CO₂ content as well as small amounts of other media like hydrogen sulphide, nitrogen or condensate.

- Measurement of raw and purified biogas
- Integrated methane content measurement
- Measures starting from ambient pressure and zero flow
- Integrated flow computer for calculation to standard conditions
- Factory calibration for measurement results with 1% accuracy
- Full metal industrial construction, insensitive to corrosive components
- Integrated temperature measurement and optional integrated pressure sensor
Wide range and options

The OPTISONIC 7300 Biogas provides a wide measuring range (turndown ratio: 100:1). The biogas meter comes with hazardous area approvals and digital communication options.

Insensitive to other components in the gas

Historically, biogas flow measurement has presented challenges. This was due to the nature of the gas which appears at low pressure, is wet (saturated) and contains hydrogen sulphide, which can cause corrosion. The flow sensor of the OPTISONIC 7300 Biogas is designed in a way that it will operate at atmospheric pressure and water vapour or condensate will not interfere with the ultrasonic flow measurement.

Durable and reliable

Its corrosion resistant titanium transducers provide a strong ultrasonic signal into the gas. The signal processing of the meter allows better detection of small, strongly dampened acoustic signals. Its design does not create pressure drop and obstructions for condensate flowing through. The device provides exact measuring results with an accuracy of 1% without any maintenance or subsequent calibration. The extensive diagnostics allow for continuous monitoring of the status and proper functioning.

Highlights:

- Compact and remote version
- Diameter range DN50 / 2” up to DN200 / 8”
- Process connections according to DIN 2642 Form F / PN10 or ASME B16.5 150 lb RF ring flange
- Flow measurement over a wide dynamic range
- Insensitive to corrosive components in the gas
- High accuracy: ±1% error of measured value
- Design without moving parts, wear, and pressure drop
- No periodical maintenance needed

Measurement of methane content

Using the velocity of sound and the temperature, the methane content of the biogas can be calculated. This can be used to monitor the performance of the biogas installation.

Typical biogas composition

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>CO₂</td>
<td>35%</td>
</tr>
<tr>
<td>CH₄</td>
<td>65%</td>
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</tbody>
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Transducer design

The transducers are made of corrosion resistant titanium and hermetically sealed. Therefore they will not be affected by hydrogen sulphide.

Calculation to standard conditions

The built-in flow computer can provide calculation of gas volume to standard conditions. The signal converter has two analogue inputs for the measurement of pressure and temperature. This saves both costs and installation efforts for an external flow computer.

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