

SwirlMaster FSS430, FSS450

Metering gas in biogas plants



Metering gas in renewable energy plants with Swirl flowmeter FSS430, FSS450

Measurement made easy

SwirlMaster FSS430
SwirlMaster FSS450

Introduction

This document outlines the basics of metering system designs that energy provider typically proposes to fit to all their Landfill Gas (LFG), Coal Mine Methane (CMM) or Biogas fuelled power generating sites.

A description of the metering systems installation and operation, details of the equipment utilized and supporting information for ruling on the accuracy of the system has been included.

Additional Information

Additional documentation on SwirlMaster FSS430, FSS450 is available for download free of charge at www.abb.com/flow.

Alternatively simply scan this code:



Design Description

For a direct energy metering the design has to consist of a methane analyzer to measure the volumetric methane content of the gas and a flow meter installed in the line to the engines to measure volumetric flow rate in standard volume units, e.g. standard cubic meter or standard cubic feet.

For that pressure and temperature of the gas need to be compensated, either in the flow device directly or in a flow computer.

Simple systems could consist of a flow meter with integrated temperature and pressure compensation by using a remote pressure transmitter to measure and totalize volume flow only.



Product Description

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01 SwirlMaster FSS430,
FSS450

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02 VortexMaster FSV430,
FSV450

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03 Absolute pressure
transmitter 261AS

The ABB SwirlMaster can be selected to measure the quantity of gas flowing to the gas engines. This flowmeter measures actual volume flow rate of the fuel gas independent of the gas composition at an accuracy of $\pm 0.5\%$.

This unique measuring principle is ideal to meet not only the accuracy and flow range requirements of the application, but also due to its lack of sensitivity to long up- and downstream sections, it can be installed almost at every installation place.

The volume flow rate can be communicated to the flow computer via a pulsed signal output, Modbus or simple 4 to 20 mA analogue output. The FSS450 provides specific operation modes for net methane measurement and totalization and can read in analog signals from a gas analyzer directly.

Application and requirements

- Low pressure volumetric flow measurement of biogas, landfill gas or coal mine gas
- Very limited straight up and downstream pipe sections
- Accuracy and repeatability at all flow rates, across the total flow range
- Required accuracy for instruments $< 1\%$ of measurement— IEC Ex (zone 1) certification – flameproof Ex d and Ex ia— Polluted, wet gas with changing composition

Specified Products



- 01
- SwirlMaster FSS430, FSS450 in various sizes DN 50 to 200 (2 to 8 in)



- 02
- Alternatively: VortexMaster FSV430, FSV450 in various sizes DN 40 to DN 150 (1.5 to 6 in)



- 03
- Pressure transmitters ABB 261AS or 266ASH for absolute pressure

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