HAASE Energietechnik AG, Neumünster

Process monitoring and energy balancing made easy

Proline Prosonic Flow B 200
For reliable biogas flow measurement without compromise

- Innovative measurement – industry-optimized ultrasonic flowmeter for measuring wet biogas, landfill or digester gas without pressure loss
- Reliable maintenance-free operation to minimize ownership cost and maximize process availability
- Broad range of applications – ideally suited for fluctuating process conditions, low pressure and wet or contaminated gases
- Easy and transparent energy balancing:
  - Direct measurement of the methane content \( (\text{CH}_4) \) in the pipe
  - Calculation of additional characteristic values such as corrected volume, calorific value or Wobbe index
- Traceable measurement results – each device is tested on accredited calibration rigs (ISO/IEC 17025)
- Worldwide sales and service network with highly competent application consultants

Look for our link emblem inside to access more information about Endress+Hauser and our products
Measure biogas without limitations

The biogas market is growing rapidly. No wonder, as the gas obtained from fermentation of energy crops, organic waste, liquid manure, sewage sludge or leftover plant materials can be used in a variety of beneficial ways – including fueling vehicles or generating heat and electricity in combined heat and power plants.

For biogas plants to work properly, various process parameters have to be monitored around the clock: gas composition, pressure, temperature, and above all the produced gas quantity. Prosonic Flow B 200 is an industry-optimized ultrasonic flowmeter that measures the volume flow of biogas, landfill or digester gas reliably and with high accuracy, even under greatly fluctuating operating conditions.

Ultrasonic measurement has numerous benefits compared to conventional methods:

- Reliable measurement – high accuracy (±1.5%) and a wide operable flow range (30:1)
- Energy saving – no pressure losses
- Maintenance-free – no moving parts
- Space-saving – short inlet and outlet runs
- Wide range of uses – independent of the composition and the moisture of a gas
- Measurement possible even with minimum operating pressure

Consistent and uniform
Proline is a uniform, tried-and-tested product, designed to increase the reliability and efficiency of your operation.

Optimal application solutions
Proline incorporates all modern flow measuring technologies, using them to optimize plant availability – true to our motto: “The right measuring device for your application”.

Ingeniously simple
Proline is user-friendly through and through, ensuring that you can control your processes confidently and securely with minimal operator training.
Easy operation
- Fast commissioning due to the uniform Endress+Hauser operating concept
- Menu-guided parameter configuration – supported by explanatory texts (“Tool tips”) in 16 languages
- Optimum process control due to simultaneous display of important characteristic variables (e.g. volume flow, calorific value, methane content, energy flow, temperature, etc.)

Service-friendly data logging (HistoROM™)
- High plant availability through automatic data backup:
  – Quick restoration of measuring device data in case of failure
  – Easy replacement of electronics without recalibration
  – No data handling by the user
- Display module backup function, e.g. for the accurate transfer of configuration data to other measuring points

Proven sensor technology
- Robust sensor – suitable for wet, dirty or corrosive gases
- Versatile mounting by means of lap-joint flanges
- Continuous measurement of the methane content (CH₄) enables quick reaction to problems in the process
- High measuring accuracy
  – Independent of the gas composition
  – Over the entire measuring range from 4 to 20 mA
- Trusted measurement results
  – Each measuring device is tested on accredited calibration rigs (ISO/IEC 17025)
  – All calibration facilities are completely traceable to national and international standards

Maximum operational safety
- Fulfills all requirements of the biogas industry
- Continuous self-diagnosis and error monitoring
- Clear and precise categorization of device or process errors
- Internationally recognized Hazardous Area (Ex) approvals

Seamless system integration
- Genuine two-wire, loop powered device integrates easily into existing process control systems
- Cost-effective life cycle management by means of the tried-and-tested W@M information system for planning, maintenance and service
  www.us.endress.com/wam
- Full compatibility between field device and process control system after a failure, since older device software can be ordered at any time

Attractive two-wire concept (Ex ia)
Two-wire measurement technology – i.e. loop powered design – offers important advantages over four-wire technology:
- High operational safety in the hazardous area due to intrinsically safe design (Ex ia)
- Easy and cost-effective installation
- Seamless system integration into existing infrastructures
Reliable process control due to direct methane content measurement

Fermentation processes are not always uniform. The operating conditions, which in some cases fluctuate greatly, result in different levels of methane content (CH₄) in the biogas, which have to be monitored constantly. With the Prosonic Flow B 200, it is now possible – using precisely measured sound velocity and an integrated temperature sensor – to simultaneously measure the methane content directly in the pipe, without the need for additional devices. This is a worldwide one-of-a-kind feature and opens up completely new perspectives:

- Continuous, around-the-clock monitoring of gas quantity and quality
- Fast and targeted reaction in case of interference in the fermentation process
- Efficient process control and energy balancing by calculating additional characteristic values such as:
  - Corrected volume
  - Calorific value
  - Wobbe index (indicates the quality of fuel gas)
Technical data

**Prosonic Flow 200 (transmitter)**

- **Display**
  4-line, with push buttons (optical keys in preparation)
- **Operation**
  - Via the local display
  - Via an instrument configuration software, e.g. “FieldCare” from Endress+Hauser
- **Power supply**
  18 to 30 V DC
- **Ambient temperature**
  –40 to +140°F (–40 to +60°C)
- **Degree of protection**
  NEMA 4X (IP 66 and IP 67)
- **Design**
  Compact (aluminum or stainless steel housing)
- **Galvanic isolation**
  All circuits for outputs and power supply are galvanically isolated from each other
- **Outputs**
  Current output (4–20 mA, HART™)
  Pulse, frequency and status output (in preparation)
- **Communication**
  HART™
- **Ex approvals**
  ATEX, IEC, cCSAus
- **Ignition protection type**
  Intrinsically safe (Ex ia), Explosion proof (Ex d)

**Prosonic Flow B (sensor)**

- **Nominal diameters**
  2 to 8” (DN 50 to 200)
- **Process connections**
  Lap joint flange: ASME, EN
- **Process pressure**
  145 psi (10 bar)
- **Process temperature**
  32 to 176°F (0 to 80°C)
- **Degree of protection**
  NEMA 4X (IP 67)
- **Measured error**
  – Volume flow: ±1.5% o.r. (from 9.84 to 98.4 ft/s or 3 to 30 m/s)
  – Methane content: ±2% o.f.s.
- **Measuring dynamic**
  30:1
- **Materials**
  1.4404/316L (stainless steel)
- **Pressure loss**
  Negligible
- **Approvals**
  PED (Pressure Equipment Directive)
  cCSAus Class 1 Division 1

Subject to modification

The Prosonic Flow B 200 measuring system fulfills the EMC requirements according to IEC/EN 61326 and NAMUR NE21. It also conforms to the requirements of the EU and ACMA directives and thus carries the CE and B mark.