Electromagnetic flowmeters are suitable for measuring the substrate in pipelines. The SITRANS F series of measuring instruments enable very accurate measurements in the biogas plant to be designed according to calibration requirements, for a measuring the supply of heat and gas phases.

Flow meters - SITRANS FM

- For liquids, sludge, paste and pulp
- Extensive diagnostic functions
- HART and PROFIBUS
- NOVOLAK cladding for extreme requirements

Electromagnetic: SITRANS FM

Ultrasonic – SITRANS FUE380

- Custody transfer approved for flow measurement in heat metering
- Compact or remote transmitter installation
- Built-in lengths in accordance with EN 1434
- One button operation
- Matched pair settings for energy heat meter

Sitrans FUE950 thermal energy metering

- OIML R75, EN 1434 and PTB approved
- Instantaneous values for energy and volume flow
- 24 month memory
- Error logging with date and time
- Battery back up of real time clock in the event of power failure
- Tariff functions

Gas analysis

To ensure that the fermentation process runs without any faults, some parameters must be monitored cyclically. The continuous measurement of the composition of gaseous components permits the monitoring and control of the fermentation process and the parameters of the biogas produced.

In order to be able to feed the purified biogas (biomethane) into the natural gas network, not only the gas composition but also the quality parameters, such as calorific value and density must be known. Our portfolio for gas analysis offers just the right solutions for this.

Continuous gas analysis – Ultramat 23

- Extremely economical as it measures CH4, CO2, O2 and H2S in one device
- High selectivity and stability
- Calibration by means of ambient air; no storage of calibration gases by the operator is required
- Easy to integrate into automated plants by means of isolated interfaces

Determination of calorific values – SITRANS CV

- Determination of calorific values and density for feeding into the natural gas network, approved by Bureau of Standards
- Low operating and installation costs
- Simple operation and low maintenance costs
- Maximum precision due to innovative technology
- Minimum cabling expense

For additional information, please visit:
www.siemens.com/sensors/chemicals
www.siemens.com/biogas

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Biogas plays a significant role within the renewable energy sector, with the particular emphasis being on the economics of biogas plants. By using tried and tested technologies, the efficiency of biogas production can be optimized. The automatic and design of the measurement and analysis systems make a long-term contribution to optimum gas production in biogas plants. Whether in small installations with the simplest measurement equipment, or large plants with gas purification and feed-in to the natural gas networks, it is always indispensable to have key information directly from the process.

Process instrumentation and analytics – solutions for biogas plants

The correct choice of instrumentation and analytical systems has a great influence on the efficiency of the plant. These systems must offer reliability, longevity and ease of operation, as well as the guarantee of a fast and efficient spare parts service.

Talk to the right supplier from the start

As a variety of approaches to the solution can all produce good results, the selection of the ideal measurement procedure is particularly important – not only to achieve reliable measurement, but also to keep operating costs as low as possible.

The planning phase therefore has to consider questions such as: which solutions are more economic than ultrasound? How reliable are the measured values obtained in this way? What are the advantages of each procedure? These and many other questions demonstrate the importance of a reliable partner and of early planning with the aid of appropriate process instrumentation expertise.

The Siemens portfolio of level meters offers a perfect solution for applications in biogas plants. Whether used to protect pumps from running dry or to prevent overfilling, the right instruments are available for every application. Siemens process instruments are all available for HART, PROFIBUS and other buses. The systems are therefore supplied with all the necessary approvals. Whether in small installations with the simplest measurement equipment, or large plants with gas purification and feed-in to the natural gas networks, it is always indispensable to have key information directly from the process.

Level meters

With the Siemens series of ultrasonic level meters, the entire plant can be controlled by the Siemens level range. The series is characterized by the fact that measurement systems are available for the widest range of applications: Ultrasonic MultiRanger and the Wide Range SITRANS. Various different measurement procedures are available for the widest range of applications: ultrasonic, radar, capacitive and hydrostatic measurement equipment.

Talk to the right supplier from the start

Ultrasonic MultiRanger

Features:
- Continuous measurement procedure
- Pointable transmitters (full compensation for bulk in components)
- Measuring range up to 20 m

For Level meters

Features:
- Continuous measurement procedure
- For level measurements
- For storage tanks

Approval:

- HART, PROFIBUS, Foundation Fieldbus
- For DIN Type B connection head
- Sensitivity adjustment
- Diagnostic LEDs (green/red/flashing)
- Galvanically isolated
- HART, PROFIBUS, Foundation Fieldbus
- Flush-mounted diaphragm
- For DIN Type B connection head
- Measuring range from point level devices
- Optional point level transmitters
- Integrated LED or PBT enclosure versions available
- Easy installation with validation by integral sight
- Can be integrated across the system – simply and accurately. The systems are therefore supplied with all the necessary approvals.

Temperature measuring instruments

In various locations in a biogas plant the temperature must be measured – whether in the fermenter or in the heat flow volume produced by the CHP. At various locations in a biogas plant the temperature must be monitored, and the wide range of diagnostic options help to determine maintenance requirements at an early stage.

压力测量仪器

Pressure measuring instruments

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Weighing technology

Our SIWAREX weighing and batching systems make weighing tasks an easy task and customers of our SIWAREX load cells and weighings electronics are convinced of their reliability and efficiency.

Communication

The process instruments in a biogas plant supply their measurement data to the higher-level controller. The data can be transmitted from the control system via the SIMATIC or SIMATIC P7 process control system. The higher-level controller can then control the process instruments in the plant. The measurement range can be set up to 2001.

Weighing electronics

- A wide range of options for SIMATIC or SIMATIC P7 load cells
- Incl. HART, PROFIBUS, Foundation Fieldbus
- Diagnostic LEDs (green/red/flashing)
- Galvanically isolated with moving parts
- Various versions available

Pressure transmitters

- HART, PROFIBUS, Foundation Fieldbus
- For DIN Type B connection head
- Measuring range
- Easy calibration
- Diagnostic LEDs (green/red/flashing)
- Galvanically isolated
- HART, PROFIBUS, Foundation Fieldbus
- High accuracy

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Whether in small installations with the simplest measurement equipment, or large plants with gas purification and feed in to the natural gas networks, it is always indispensable to have key information directly from the process.

For this reason, in particular in the field of instrumentation and analytics, a process and instrumentation expertise partner and of early planning with the aid of appropriate solutions is particularly important – not only to achieve the advantages of each procedure? These and many other questions demonstrate the importance of a reliable and feed-in to the natural gas network. In order to determine the correct choice of instrumentation and analytical systems, there is a vast range of applications: ultrasonic, radar, capacitive and hydrostatic measurement systems has a great influence on the efficiency of the plant. These systems must offer reliability, longevity and ease of operation, as well as the guarantee of a fast and efficient spare parts service.

Talk to the right supplier from the start

As a variety of approaches to the solution can all produce good results, the selection of the ideal measurement procedure is particularly important – not only to achieve measurable, but also to keep operating costs at an acceptable level. The planning phase therefore has to consider questions such as:

- Does the economy also make it useful?
- How reliable are the measured values obtained in this way?
- What are the advantages of each procedure? These and many other questions demonstrate the importance of a reliable supplier and of early planning with the aid of appropriate products.

Level meters

With the SITRANS L series of devices for continuous level measurement, Siemens offers a broad portfolio of devices for various applications.

Various different measurement procedures are available for the widest range of applications: ultrasonic, radar, capacitive and hydrostatic measurement.

Table: SITRANS L series

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<tr>
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<tbody>
<tr>
<td>Ultrasonic MultiRanger</td>
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Point level switch

On various locations in a biogas plant the temperature must be monitored to ensure safety and to comply with regulations. Siemens offers an extensive range of sensors, transmitters and the wide range of diagnostic options to help determine maintenance requirements in many stages.

Table: SITRANS CLS 100

<table>
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<tbody>
<tr>
<td>Easy installation with validation by integral scale</td>
</tr>
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<td>Capable of calibration</td>
</tr>
<tr>
<td>High accuracy</td>
</tr>
<tr>
<td>Digital input for back-up level override</td>
</tr>
<tr>
<td>Test sockets for multimeters</td>
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</table>

Temperature measuring instruments

At various locations in a biogas plant it is required to measure the temperature, for example in the CHP plant. Siemens offers an extensive range of sensors, transmitters and the wide range of diagnostic options to help determine temperature requirements in any stage.

Table: SITRANS P300 pressure transmitter

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Weighing technology

Our SIWAREX weighing and batching systems enable weighing tasks to be carried out with high accuracy, high precision and with current approvals.

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Communication

The process instruments in a biogas plant supply their measurement data to the higher-level system. The data is transmitted via a ring network as a 4-20 mA signal. The digital signals for the higher-level systems are transmitted via a ring network as a 4-20 mA signal. The digital signals are transmitted between the process instruments. These are available for HART, PROFIBUS and other buses.

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Pressure measuring instruments

Regardless of the location in a biogas plant it is crucial to measure the pressure to ensure safety and to comply with regulations. In order to determine the correct choice of instrumentation and analytical systems, there is a vast range of applications and conditions. Measurement precision, ruggedness, reliability and ease of use are the key characteristics for each application.

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Approvals

Various regulations apply in a plant. These define the required approvals of the process instruments. Around the ferments, for example, there is specified sweet area where only devices are allowed for this purpose may be used. Siemens’ process instruments are therefore supplied with all the necessary approvals.

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Process instrumentation and analytics – solutions for biogas plants

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Whether in small installations with the simplest measurement equipment, or large plants with gas purification and feed-in to the natural gas network, it is always indispensable to have key information directly from the process.

For this reason, particularly in the field of instrumentation and analysis, a practical design should be prepared at an early stage that will make a lasting contribution to the economic success of a plant.

A host of measurement solutions are necessary when operating a biogas plant: the delivery of the supply, the control, the safety technology, the measurement technology and feed-in to the natural gas network. In order to determine the process states in the plant, there is a continuous need for information about temperatures, flows, levels, pressures and gas composition.

The correct choice of instrumentation and analytical systems has a great influence on the efficiency of the plant. These systems must offer reliability, longevity and ease of operation, as well as the guarantee of a fast and efficient spare parts service.

Talk to the right supplier from the start

As a safety of approaches to the solutions we can produce good results, the selection of the ideal measurement procedure is particularly important: not only to achieve reliable measurement, but also to keep operating costs to a minimum.

The planning phase therefore demands to consider questions such as:

- Which is the more economic than ultrasonic? How reliable are the measured values obtained in this way?
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SITRANS L series of devices for continuous level measurement, with the SIWAREX PS200 and PS400 series for point level measurement, are the measured values obtained in this way? What are the advantages of each procedure? These and many other questions demonstrate the importance of a reliable partner and of early planning with the aid of appropriate planning tools.

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Flow meters

Electromagnetic flowmeters are suitable for measuring the substrate in pipelines. They do not use pressure drops and are therefore particularly suitable for the measurement of flows in biogas plants. The SITRANS series of measuring instruments enable all current flow measurements in the design plant to be designed according to calibration requirements, for example by means of synchronized alternative field circuits. The SITRANS F series of measuring instruments also enable all current flow measurements in the biogas plant to be designed accordingly. A heat flow measurement system, complying with mandatory calibration requirements, is available for measuring the supply of heat from a CHP plant.

- **Electromagnetic - SITRANS FM**
  - For liquids, sludge, paste and pulp
  - Extensive diagnostic functions
  - HART and PROFIBUS
  - NOVOLAK cladding for extreme requirements

Ultrasonic – SITRANS FUE380

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Gas analysis

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In order to be able to feed the purified biogas (biomethane) into the natural gas network, not only the gas composition but also the quality parameters, such as calorific value and density, must correspond to published guidelines and must be known. Our portfolio for gas analysis offers just the right solutions for this.

- **Continuous gas analysis – Ultraport 22**
  - Extremely economical as it measures CH4, CO2, O2 and H2S in one device
  - High selectivity and stability
  - Calibration by means of ambient air; no storage of calibration gases by the operator is required
  - Low maintenance requirements
  - Easy to integrate into automated plants by means of isolated interfaces

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For additional information, please visit:

- www.siemens.com/sensors/chemicals
- www.siemens.com/biogas
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Siemens AG

Industry Sector

Sensors and Communication

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GERMANY

For optimal use of renewable energy with the right process instrumentation and analytics

www.siemens.com/biogas
Flow meters

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Continuous gas analysis – Ultramat 23

• Extremely economical as it measures CH₄, CO₂, O₂ and H₂S in one device
• High selectivity and stability
• Calibration by means of ambient air; no storage of calibration gases by the operator is required
• Low maintenance requirements
• Easy to integrate into automated plants by means of standard interfaces

Ultrasonic – SITRANS FUE380

• Custody transfer approved for flow measurement in heat metering
• Compact or remote transmitter installation
• Built-in lengths in accordance with EN 1434
• One button operation
• Matched pair settings for energy heat meter

Gas analysis

To ensure that the fermentation process runs without any faults, some parameters must be monitored cyclically. The continuous measurement of the composition of gaseous components permits the monitoring and control of the fermentation process and thus permits quality monitoring of the biogas produced.

In order to be able to feed the purified biogas (biomethane) into the natural gas network, not only the gas composition but also the quality parameters, such as calorific value and density, must correspond to published guidelines and must be known. Our portfolio for gas analysis offers just the right solutions for this.

Determination of calorific values – SITRANS CV

• Determination of calorific values and density for feeding into the natural gas network, approved by Bureau of Standards
• Low operating and installation costs
• Simple operation and low maintenance costs
• Maximum precision due to innovative technology
• Minimum cabling expense

For additional information, please visit:
www.siemens.com/siemens/chemicals
www.siemens.com/biogas

The information provided in this brochure contains merely general descriptions or performance characteristics which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the desired performance features shall only exist if expressly agreed in the terms of contract.

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