

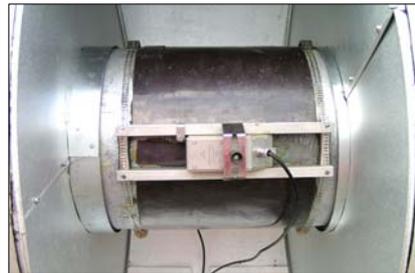
Flow Measurement of Natural Gas at a Compressor Station

Non-invasive measurement, thus no wear by the aggressive medium (H₂S). Uncomplicated upgrade during operation, without work on the piping, and without risk of leaks. No approval procedures and material certificates required.

| Measuring task | | Method | Medium | |
|---|------------------|--|---|------------------------|
|  | Flow measurement |  Ultrasound |  | Natural gas (sour gas) |

Features

- Medium: natural gas (sour gas)
- Pipes : 12" or 14"
- Material: 1.4571 steel
- Pressure: approx. 80 bar
- Flow rate: up to 250 000 Nm³/h
- ATEX zones 1 and 2



The clamp-on ultrasonic transducers are simply attached to the outside of the pipe.



The integrated flow calculator of the transmitter makes it possible to process external temperature and pressure measurements, and to convert the measured actual volumetric flow to standard volume/mass flow.

Measuring task.....?

In natural gas extraction, the flow pressure of the gas varies depending on the degree of reservoir depletion. High-pressure turbines compress the extracted gas to a pressure of approx. 80 bar for further transportation in pipelines. If the extracted gas contains hydrogen sulphide, it is called "sour gas". Hydrogen sulphide (H₂S) is toxic. Sour gas has to be desulphurised in processing plants.

The turbocompressors contain orifice plates for flow measurements. Depending upon the actual delivery rate, it can happen that some gas has to be recirculated via a bypass in order to ensure optimal operation of the compressor. In this case, the flow measured by the orifice plates no longer corresponds to the effective rate of the gas being tapped.

Solution.....!

Non-invasive flow measurement using the clamp-on technique is an elegant solution for this measuring task. Contrary to upgrades using wetted measuring devices, which require long approval procedures and system downtimes of several weeks, clamp-on ultrasonic transducers are installed without interrupting operation. No changes need to be made to the piping. Since the transducers do not come in contact with the medium, they are not subject to wear caused by the corrosive hydrogen sulphide. No special materials and no special material certificates are necessary.

Advantages.....+

- Reliable, non-invasive measurement
- No risk of leakage of dangerous media (H₂S)
- High measurement dynamics
- Integrated conversion to standard volume flow or standard mass flow according to ISO 12213-1
- Uncomplicated upgrade without cutting into the pipe or interrupting the process
- Measurements involve no contact with the medium, therefore no material certificates are necessary.

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