EnSonic

Fast Wobbe index meter

Applications

Fast Wobbe measurement
Blending applications
Process control

Brief information

The EnSonic is a correlative energy meter that provides a fast and accurate determination of the heating value, density and CO_2 concentration of natural gas. For those applications where a fast response is required, a gas chromatograph is not an option since it needs a few minutes to obtain a new analysis result. Because the correlative measurement principle delivers an almost instantaneous determined analysis result, it is highly suitable for process control applications.

The correlative measurement principle of the EnSonic uses the measurement of the speed of sound at two different pressures together with the measurement of the CO_2 concentration by means of the infra-red absorption technique. At the same time, it measures the two pressures and the temperature at which the speed of sound is determined. Based on these input parameters a mathematical model in the EnSonic can determine the heating value and density. Traditionally, calorimeters have been and are still used to measure the Wobbe Index or heating value. Besides the fact that most calorimeters use an unpopular open flame principle these analysers require a lot of maintenance. In addition to this these instruments require expensive utilities, e.g. compressed air and in most cases even a climate-controlled environment. The EnSonic, however, does not require any of these! It can be placed outdoors in ambient temperatures of -20 to +40°C. The only requirements are power and natural gas with a known composition as reference/calibration gas. The EnSonic can be placed close to the pipeline and the sample gas with a minimum pressure of 35 barg and can be connected (without pressure reduction) to the inlet of the instrument.

Apart from a three-way valve for the calibration, the analyser has no moving parts. The gas simply flows in and out of the instrument and all measurements are static and continuous. The speed of sound measurement is based on the ultrasonic technology used in the Elster-Instromet UltraSonic meter. All of this results in a rugged and maintenance-friendly measurement system with extremely low running costs.

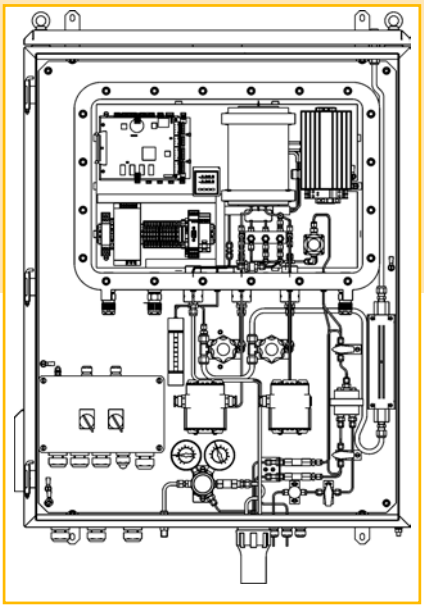
The EnSonic comes standard as a wall mounting cabinet but can be skid-mounted for free-standing placement in the field. The automatic calibration of the unit is performed with a single natural gas, which has a known composition. The unit provides two RS-232/485 Modbus communication ports. Optionally the model 2000 flow computer can be used as a display unit providing digital and analogue I/O signals.

Main features

- **Fast Response**
  T90 < 10 sec
- **No moving parts**
- **Low cost of ownership**
- **ATEX approval**
- **Single calibration gas**

ELSTER Instromet

EnSonic: Fast Wobbe index meter



Technical data

Measurement principle	Correlative measurement principle based on measurement of: 2 x SOS (speed of sound) measurement + pressure and temperature 1 x CO_2-concentration measurement using IR (Infra-Red) absorption technique
Parameters / ranges	Heating value Hs - For all generic natural gases Wobbe Index - For all generic natural gases CO_2 concentration - 0 to 10 % Density - For all generic natural gases
Measurement uncertainty	Heating value Hs: 0.3 % Wobbe Index: 0.3 % Density: 0.1 % CO_2 concentration: 0.2 % (absolute)
Reproducibility	Hs <0.05%, Wobbe Index<0.05%, d<0.05%, CO_2 <0.1% (absolute)
Response time T90	< 10 sec with high speed option, < 30 seconds (standard version)
Calibration gas	Natural gas > 35 bar (regulator included in EnSonic) calibration interval 2 weeks
Process gas pressure	Required inlet pressure > 35 bar, max. pressure 80 bar
Housing	Material: sheet steel cabinet with outdoor coating Dimensions 1034 x 800 x 400 (H x W X D in mm) Weight approx. 100 kg, 200 kg including Skid Protection class IP 55
Outdoor installation	Protection against direct sunlight required
Ambient conditions	-20 to +40°C
Mounting	Wall mounting, skid-mounted (option)
Dimensions skid	1900 x 800 x 800 (H x W x D) in mm
Power supply	24 VDC or 230 VAC or 110 VAC for the analyser part, 120 watt 230 VAC or 110 VAC for heat tracing and cabinet heater, 500 watt
ATEX approval	Ex II (2) G, E Ex d [ia] IIB T3
Data communication	2 x RS-232/485 communication ports with Modbus RTU/ASCII protocol
Optional display unit	Mode 2000 flow computer (communication via Modbus) 4 or 8 analogue outputs, 0 or 4 – 20 mA 12 digital status outputs
Software	Configuration: Ensonic set-up software Model 2000 configuration software: M2000 programmer SOS configuration and diagnostics: Uniform
Sample take-of	Using sample probe with membrane filter (type Genie GP or equivalent)

Your contacts

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