

EnSonic

Fast Wobbe index meter

This product is discontinued!

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 CO₂ 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 CO₂ concentration by means of the infrared 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.

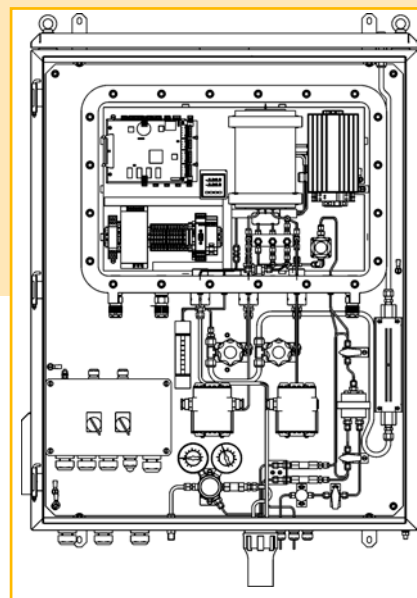
The EnSonic comes standard as a wall mounting cabinet but can be skid-mounted for free-standing placement in the field. The automatic calibration of the unit is performed with a single natural gas, which has a known composition. The unit provides two RS-232/485 Modbus communication ports. Optionally 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**

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) | |

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