

Poster title: Real-time Determination of Gas Quality Parameters with Clamp-on Ultrasonic Flowmeter Systems

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Content

The diversification of the sources of supply for natural gas, e.g. through the increasing share of LNG as well as through the prospective growing input of renewable gas such as biogas and hydrogen, presents enormous challenges for the network operators. Different gas compositions mean different compressibility factors and varying energy contents. Gas chromatographs for the precise determination of composition are only available to a limited extent for organisational and economic reasons. Many non-fiscal gas flow measurement points will therefore lack real-time data to determine the standard volume flow.

Clamp-on ultrasonic meters are widely used for non-fiscal flow measurement applications in the European transmission system. Flexim designed an algorithm based on AGA 10 and GERG 2008 sound speed tables to calculate within the ultrasonic flow meter the molecular mass, the compression factor, and the density of the natural gas stream in real-time. This enables the flowmeter to compensate its readings in case of changes in the gas composition without any time delay. As the calculated values are also available as meter outputs, this function can also be used to improve the coverage of quality information in any, even remote, part of a gas transportation and distribution system.

The poster will highlight first test result on natural gas and natural gas mixes with renewable gases.