

ULTRASONIC METERS CONQUER THE WORLD OF GAS

Elster-Instromet world market leader

Since the first ultrasonic meter was approved by the PTB in 1995, the demand has steadily grown. The ultrasonic meter (USM) was originally designed to be used for custody transfer in high-pressure transmission networks and was favored due to its high accuracy and the fact that there is no pressure loss. In the meantime, USMs are now also in operation in the field of gas exploration (pressure rates up to 450 bar / 6500 psi) and in gas distribution systems.

The advantages of a USM compared with a conventional gas meter can be found in the fact that there is no pressure loss, it is highly accurate, can cope with a large volume of gas, it is maintenance free and, if required, it can be bi-directional. A diagnostic unit which can be read out remotely ensures the highest degree of operating safety. However, it is not only when compared to traditional metering principles that the Elster-Instromet USM shines through. On account of the patented arrangement of the ultrasonic paths and the robustness and accuracy that arises from this, Elster-Instromet has gained over 70% of the ultrasonic market for custody transfer. The USMs are in operation throughout the world. In the following, we will describe two examples of applications, one a USM of the smallest diameter and the other a USM with the largest.



Fig. 2: New U-shaped metering platform for the use of a 4" Q.Sonic USM

metered at a pressure of 4 bar / 60 psi. The natural gas is supplied by the gas transport organisation GASCO. The expected future energy consumption requires an accurate measurement over a large measuring range. For this reason, the existing turbine meter was replaced by an ultrasonic meter. After carefully evaluating the possibilities, EISF chose to use a Q.Sonic type USM including a flow straightener and a flow computer. The metering system was supplied in a record time of only 10 weeks and has successfully been in operation since the end of 2004.

... up to 48", 70 bar / 1000psi

In December, 2004, an ultrasonic meter with a diameter of 48" was ordered. This multi-path meter is required for a gas pipeline in the south of Iran, between Assaluye and Shiraz.



Fig. 1: The new USM generation

With a diameter of 48" it is the largest ultrasonic gas flow meter ever manufactured in the world. Before that, the biggest meters had been two with diameters of 44" which were delivered to a petrochemical complex in Assaluye in 2003.

The 48" meters are located at the outlet pipe of the compressor and are used to optimise the performance. The orifice plate measurement which had been used previously resulted in a pressure



Fig. 3: Multi-path 48" Q.Sonic performs Factory Acceptance Test (FAT)

loss and by using the USMs there has been a saving in operating costs amounting to around 300,000 Euros. After the CIS states Iran has the second largest reserves of natural gas in the world and has an extensive gas transportation network with hundreds of compressor stations. Even when conditions are made extremely difficult with regard to pulsations, the USM can easily be installed directly in the vicinity of the compressor.

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