



APPLICATION REPORT Oil & Gas

Custody transfer flow measurement for a bidirectional natural gas border metering station

- Upgrade from unidirectional to bi-directional flow measurement improves flexibility of gas network
- Twin DN500 (20") metering runs with two ultrasonic flow meters per section
- High measuring stability and plant availability thanks to a web based diagnostic system
- Flow capacity of up to 25 billion Sm³ or 16 billion SCFM per year at a line pressure of 60 bar / 870.2 psi



1. Background

The Transitgas Pipeline is a 293 km / 182 mi long natural gas pipeline in Switzerland which connects the Trans Europa Natural Gas Pipeline (TENP) from Wallbach at the German border with the French gas network in Rodersdorf/Oltingue and the Italian gas network in Gries Pass. Transitgas AG constructed, maintains and operates this transport system that features a compressor station, valve stations and the Wallbach metering station.

2. Measurement requirements

In 2016, Transitgas upgraded their Wallbach metering station from a unidirectional configuration to bidirectional. This meant that the existing meter infrastructure had to be updated. The existing turbine and ultrasonic flowmeters had been in place since the late 1990s for redundant measurement. Due to the growing importance of the Transitgas Pipeline and the new north/south bidirectional cross-border gas flows, increased demands were placed on the field instrumentation. Thus, the customer opted to use two ultrasonic gas flowmeters for each pipeline: one for custody transfer (CT) and another for check metering.

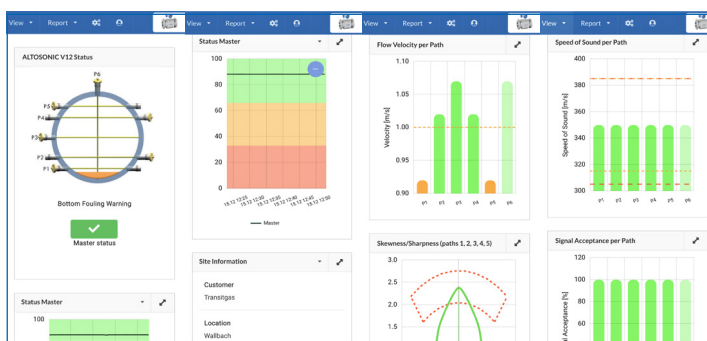
Full compliance with the legal metrological requirements in accordance with Measuring Instruments Directive (MID) MI-002 and extensive diagnostic and data storage options were specified. In addition, the latest generation flow computers, fully compatible with the meters while also meeting the highest accuracy demands were also to be supplied from a single source, with specific focus set on flexibility in application programming.



3. KROHNE solution

The operator equipped the measuring station with four ALTOSONIC V12 ultrasonic flowmeters in DN500 (20"). The KROHNE device is designed for CT measurement of natural gas and offers the best possible measurement accuracy – not only under ideal calibration conditions, but also under less favourable conditions in the field. To this end, the proven gas flowmeter has 5 horizontal measuring paths and one vertical path for additional diagnostics, e.g. for detecting deposits and dirt. Additional filters previously required for protecting the turbine meters, are not necessary for the ultrasonic flowmeter and were therefore dispensable. For operational reasons, however, the old filters have not been removed, but the inlet section (north to south) of the ultrasonic gas flowmeters was connected directly to the header.

As requested by the operator, the ALTOSONIC V12 also features KROHNE Care, a web based diagnostic expert system with comprehensive diagnostic functions. It runs 24/7 inside the ALTOSONIC V12 electronics unit to evaluate and monitor meter health and accuracy around the clock. The diagnostic system allows error tracking for more than a year on the basis of hourly values. In 2021, KROHNE Care was upgraded with the latest HTML interface to meet the highest security standards. It is easy to operate via a common internet browser on a laptop, tablet or mobile phone. As part of an overall package, KROHNE also supplied the SUMMIT 8800, a digital flow computer for CT measurement. It processes all measured values and provides the natural gas volume flow corrected to standard conditions in real time. Billing is on an hourly basis.



Mobile phone screenshots of the HMI of the KROHNE Care diagnostic system

4. Customer benefits

With the help of the ultrasonic gas flowmeters, the upgrade of the metering station to bidirectional gas transport has been successful. Now, the gas transit pipeline can be operated flexibly and with an increased security of supply in mind. The customer benefits from reliable and highly accurate custody transfer flow measurement of transit gas volumes while the KROHNE Care diagnostic system ensures high plant uptime and continuous monitoring of the measurement performance. It allows the ALTOSONIC V12 to perform extended self-monitoring, providing the customer with information for enhanced process monitoring and optimisation via a web browser, e.g. in case of deposit in the piping. Continuous service support from KROHNE guarantees low downtime.

5. Products used

ALRTOSONIC V12

- Ultrasonic flowmeter for custody transfer (CT) measurement of gases
- With KROHNE Care diagnostic expert system for enhanced meter diagnostics

SUMMIT 8800

- Flow computer for custody transfer (CT) measurement (acc. to OIML, ISO, API, AGA etc.)



Contact

Would you like further information about these or other applications?
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