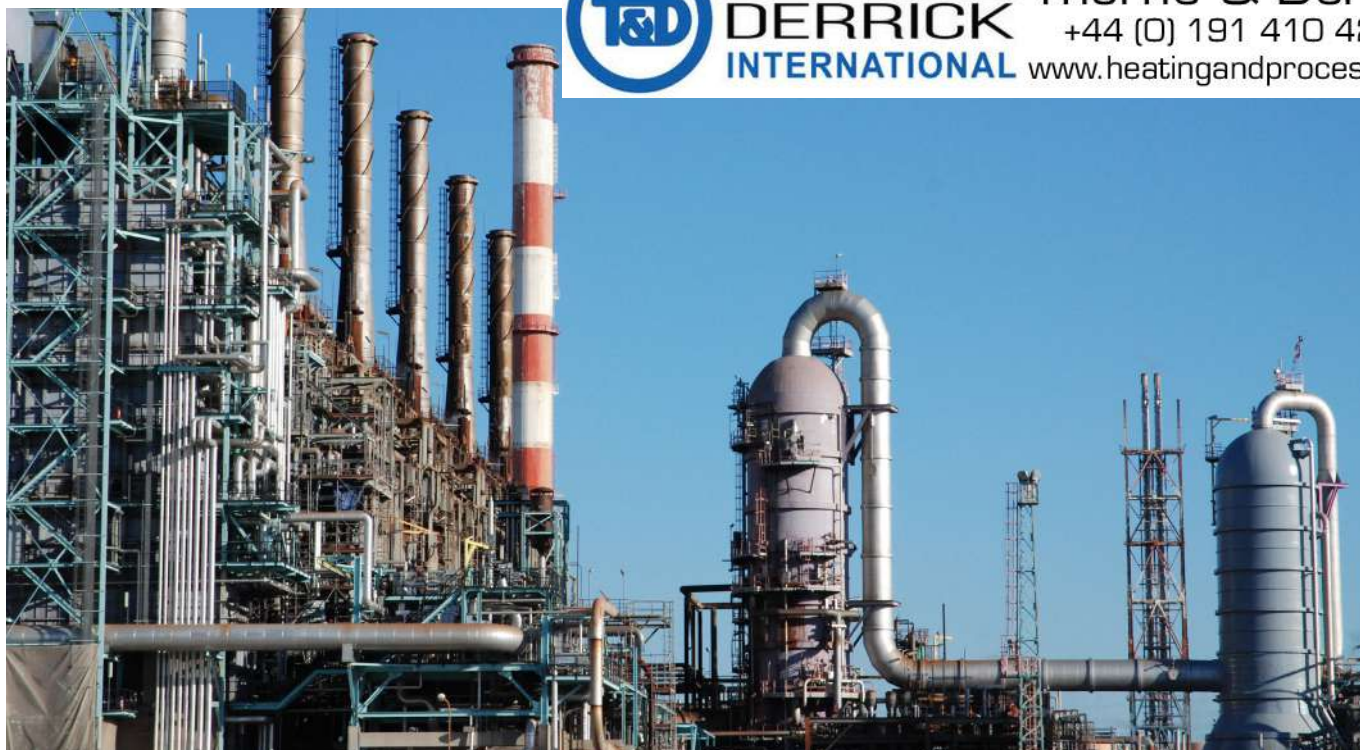




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APPLICATION NOTE

Oil & Gas

Custody transfer flow measurement of hydrogen

- Reliable and highly accurate measuring system
- Comprehensive solution in accordance with MID MI-002
- Self-monitoring of the measuring system for process optimisation

1. Background

The Berre Petrochemical Cluster is a complex covering almost 1000 hectares located 30 km / 18.6 miles from Marseille, France, on the Étang de Berre lagoon. The site consists of a steam cracker as well as large-scale polypropylene and polyethylene plants. The polyolefin plants produce polypropylene and polyethylene, the majority of which is used for consumer and industrial applications. Also located on the site are chemical plants and logistics facilities such as port facilities, pipelines, storage terminals and transshipment facilities.

2. Measurement requirements

One of the producers requires the continuous flow measurement of hydrogen. The customer was looking for custody transfer flow measurement that would be in line with the internal procedure followed in compliance with the Sarbanes-Oxley Act (SOX). The main objective of the act is to oblige the companies in question to develop and implement their own control procedures used to detect cases of fraud and/or errors in the financial management of the company. This ensures that the financial data disclosed by the company is both accurate and applicable, preventing false reports from influencing prices on the stock market.

It is important for the customer to accurately determine and invoice the hydrogen flow. The volume flow varies from 100...400 kg/h / 3.67...14.7 lb/min, the pressure from 9...15.7 bar / 130.5...227.6 psi and the temperature from 0...+20°C / +32...+68°F. The producer required a pressure and temperature-compensated flow measurement (standard volume flow measurement) in custody transfer as per MID MI-002 and in accordance with the internal SOX procedure. To this end, the customer was looking for a reliable and accurate comprehensive system that would comply with both the MID requirements and the company's own procedures (accuracy, control, approval, documentation, certifications etc.). These measurements allow the customer to invoice hydrogen consumption and guarantee income. Previously, the company had used an orifice plate (not MID-compliant). The MID MI-002 approved equipment must also comply with ATEX Ex d.

KROHNE

3. KROHNE solution

KROHNE provided a measuring system complete with the ALTOSONIC V12 ultrasonic gas flowmeter (DN100, ASME Cl 300 flange) and the SUMMIT 8800 flow computer.

The ultrasonic flowmeter was installed in a horizontal stainless steel pipe with straight inlet and outlet runs. The measuring system complies with MID MI-002.

In addition, KROHNE offered the "KROHNE Care" expert system, providing diagnostic functions for the ALTOSONIC V12 ultrasonic gas flowmeter. Based on diagnostic parameters, this system interprets the functionality and accuracy of the measuring device around the clock.

The 12-beam measuring device features a vertical diagnostic path that detects contamination on the bottom of the measuring tube. KROHNE also offered to commission the system and train personnel in the use of the two measuring devices. The system had to feature integrated pressure and temperature sensors for custody transfer measurements. KROHNE prepared the documents for custody transfer including calibration certificates, MID certificates, technical documentation etc.



Custody transfer flow measurement with the ALTOSONIC V12 ultrasonic gas flowmeter

4. Customer benefits

The reliable and accurate measurement in accordance with MID is a clear benefit for the customer. The customer can now create invoices covered by MID approval that also comply with the internal SOX procedure.

Thanks to the "KROHNE Care" diagnostic system and the diagnostic path to detect contamination, this reliable and accurate measuring system featuring self-monitoring made process optimisation possible. As a result, production increased and the producer recorded increased revenue.



ALTOSONIC V12 diagnostic analysis

5. Products used

ALTOSONIC V12

- Ultrasonic flowmeter for custody transfer (CT) measurement of gases
- 12-beam device for high measuring accuracy
- OIML R137 (class 0.5), MI-002, AGA9, ISO 17089 etc.

SUMMIT 8800

- Flow computer for custody transfer measurement
- For the flow measurement of all liquid hydrocarbons, gas and steam
- Complies with all major international standards including OIML, ISO, API, AGA, GOST



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