



APPLICATION NOTE Oil & Gas

Clamp-on measurement of calibration fluid in cooling lines

- 3 calibration loops with cooling units at large test and calibration centre
- Monitoring the volume flow of calibration liquid to be cooled
- Ultrasonic flow measurement of water and oil liquids with different viscosities

1. Background

A very large test and calibration centre for the oil and gas industry located in Rotterdam, the Netherlands, comprises various independent oil rigs for several oil types as well as high pressure gas loops. The purpose of this highly sophisticated calibration and R & D test site is to provide a high capacity as well as highly accurate measuring values for the testing and calibration of flow measuring devices.

Recently, three new calibration rigs for liquids with different viscosities were built. The liquids used for calibration are all hydrocarbons with viscosities ranging from 1 cSt to 10 and 100 cSt. In order to ensure stable temperature conditions during the calibration process, these liquids need permanent cooling.

2. Measurement requirements

All three calibration loops have a cooling unit. The calibration loops are connected to the cooling station through 3 cooling lines. These cooling lines are DN 200 / 8" carbon steel pipes. During every calibration process a certain amount of the calibration liquid is required to run through these cooling lines to keep the temperature stable. That's why the customer was looking for a cost effective measuring instrument to measure the volume of the calibration fluid to monitor the amount of liquid running through these cooling units.



Cooling unit at calibration rig

3. KROHNE solution

The customer decided in favour of 3 complete OPTISONIC 6300 field systems with large sensors. Each ultrasonic clamp-on flowmeter system consists of two rails with one transducer. In order to control the amount of calibration fluid that runs through the coolers, the readings are provided in a control room via a 4...20 mA current output.



Clamp-on flowmeters mounted on DN 200 / 8" carbon steel pipes



OPTISONIC 6300 with connection box and field housing

4. Customer benefits

The Clamp-on devices allow the customer to maintain a stable calibration process. The accuracy of the OPTISONIC 6300 is more than sufficient for this application. In using the OPTISONIC 6300 the customer always knows if the amount of calibration liquid running through the cooling line is correct or if it needs adjusting.

The solution provided by KROHNE addressed all of the customer's requirements. There was no need to adjust the process or even open the pipe work due to the highly flexible clamp-on technology. The OPTISONIC 6300 turned out to be the most cost effective flowmeter for the customer. It can be used on virtually any nominal size without the cost rising when mounted on pipes with larger diameters.

5. Product used

OPTISONIC 6300 F

- Ultrasonic clamp-on flowmeter for liquids
- For monitoring flow at any location
- Ideal for permanent or check metering without process interruption
- No internal moving parts
- For tube diameters from DN 15 / 1/2" to DN 4000 / 160"



Contact

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