



APPLICATION REPORT

Chemicals

Mass flow measurement
at a bitumen loading station in Angola



- Storing the bitumen in a heated tank farm
- Automatic loading of tanker
- Low pump capacity

1. Background

Sociedade de Angolana Betumes in Lobito is the only company in Angola (South West Africa) licensed by the Angolan Ministry of Oil for the import and sale of bitumen. There is a national programme for the immediate restoration of approx. 8000 kilometres of road and, in the long term, for the restoration of approx. 70000 km of road. Ships deliver the bitumen to the port of the loading station. It is then stored in a heated tank farm. The tankers are filled here and the bitumen is then transported to the road building sites. The capacity of the loading station is approximately 10000 tonnes per month.

2. Measurement requirements

Bitumen is stored in a tank farm at approx. 150 °C. When loading into the tankers, the temperature must be approx. 135 °C for the bitumen to remain in liquid form. The tankers are partially thermally insulated and they transport the bitumen directly to the road building sites. The various parts of the system communicate with one another via a modbus interface.

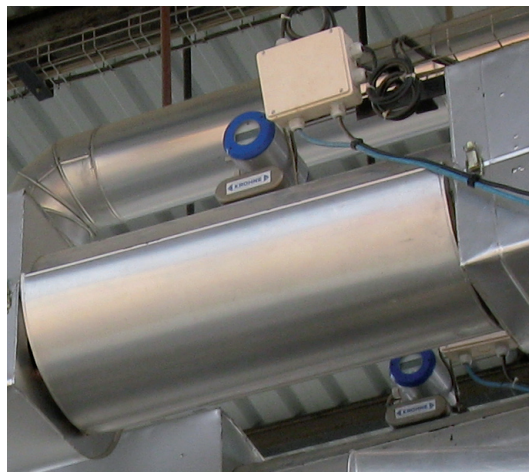


Filling station for 4 tankers

KROHNE

3. KROHNE solution

For this application, KROHNE supplied four mass flowmeters with a single straight measuring tube: OPTIFLUX 7000 F, size T50. The devices are thermally insulated so the bitumen remains in liquid form. The four BM 110 batching masters that were also supplied control the metering of the bitumen automatically and independently. The loading station can fill up to four tankers at the same time. The mass flowmeters forward the data about the quantity filled directly to the batching master devices, which control the batch process. The batching masters must use a modbus interface to forward the dosing values to a printer multiplexer PCC 3008 in order to use the printer to document the quantity of bitumen filled.



Mass flowmeter with thermal insulation

4. Customer advantages

Since this version of mass flowmeter features a single straight measuring tube, only very minimal additional pressure loss occurs with the devices. That means that the loading station manages with minimal pump capacity when filling the tankers. The tankers are loaded at a flow rate of 42000 kg/h. The filling time is thus very short, cutting down substantially on costs. The reliability and accuracy of the KROHNE devices are what impressed the customers.



Batching master for automatic metering

5. Products used

OPTIMASS 7300

- Only mass flowmeter with a single straight measuring tube available in Stainless Steel, Hastelloy®, Titanium and Tantalum
- Minimal pressure loss
- Reliable measurement of mass and volume flow, density, temperature, concentration and solid content



Batching Master BM 110 i

- All information displayed for reliable and automatic filling
- Inputs and outputs for analogue and digital data transmission
- Modbus interface
- Flow control (mass or volume) during metering



Contact

Please visit our website for a current list of all KROHNE contacts and addresses.



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