



Photo: © Contank S. A.

APPLICATION REPORT Oil & Gas

Custody transfer flow measurement of AdBlue® from road tankers

- Legal fiscal metering of diesel exhaust fluid (DEF)
- Complete solution with all components incl. Coriolis mass flowmeter, flow computer, valve etc.
- Certified according to MID MI-005, accuracy class 0.5
- Complete scope of supply from one source: from engineering, manufacturing and supply to documentation and support during the accreditation process



1. Background

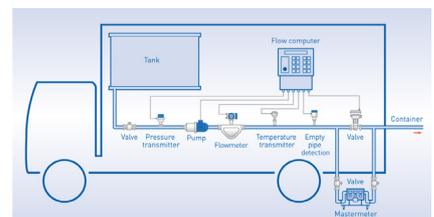
Spanish Contank S. A. is specialised in services for the transportation of dangerous (ADR) liquids as well as other goods like AdBlue®. The company also manufactures and maintains the tanks of their own fleet as well as fitting them with the equipment necessary for commercial supply purposes.

2. Measurement requirements

For the distribution of AdBlue® to service stations of big oil companies, the trucks are equipped with measuring systems. The systems require legal approval for use in custody transfer (CT) operations. Contank had so far based its measuring systems on an electromagnetic flowmeter for CT measurement. Billing AdBlue® quantities requires the systems to be certified as per European Measuring Directive (MID). Due to the scope of the updated MID 2014/32/EU for custody transfer measurement of liquids other than water (MI-005), the old measuring systems no longer met the requirements for (un)loading tankers and had to be replaced.

MI-005 stipulates that a truck-based system for custody transfer be equipped with a comprehensive solution consisting of a flowmeter, a flow computer as well as additional equipment guaranteeing recording and storage, printing, and reporting. The whole system must fulfil the accuracy requirements according to class 0.5 and be certified by a metrological authority prior to operation. Contank was therefore in need of a certified metering system to make delivery and commercial billing of AdBlue® future-proof.

| | |
|-----------------|------------------------|
| Measured medium | AdBlue® |
| Density | 1097 kg/m ³ |
| Pressure | 2 barg / 29 psig |
| Viscosity | 0.988 cp |



Schematic of a CT metering system for trucks



3. KROHNE solution

As a long-standing partner and solution provider with a track record in truck-based CT applications, KROHNE engineered, manufactured, and supplied a complete AdBlue® CT flow metering system for Contank. This CT system comprises a compact unit equipped with the OPTIMASS 6400 Coriolis mass flowmeter, a flow computer, a ball valve with pneumatic actuator, a printer, a data repository, and a GSM module.

The measuring system was designed in accordance with all MI-005 requirements. KROHNE provided the European type certificate (Module B) for all approved components as well as software used. The on-site compliance and conformity of the measuring system with the relevant MI-005 requirements was then double-checked and verified by the notified body Centro Español de Metrología (CEM), the Spanish Centre of Metrology. This involved a reference measurement on site. The KROHNE system performed well below the required error limits in terms of repeatability and accuracy and received verification and certification of conformity (Module F).

Contank subsequently equipped 19 trucks with the KROHNE AdBlue® measurement system. The system is connected to the truck's tank by a hose and powered by the truck's battery. The pneumatic supply is provided by the compressed air supply of the truck. The discharge flow rate is measured by the OPTIMASS 6400 mass flowmeter and the readings are monitored and processed by the flow computer. When the required delivery quantity of AdBlue® has been transferred, the control valve is activated and the supply stops. The flow computer records the delivered total volume, which is then printed out as well as transferred wirelessly to the control system of the service station operator via GSM.



Photo: © Contank S. A.
Fiscal discharge of AdBlue® to an IBC



Photo: © Contank S. A.
Compact box of CT metering system for AdBlue®

4. Customer benefits

The KROHNE measuring system allows Contank to continue with the legal fiscal discharge of AdBlue® from their trucks to service stations. The certified MI-005 system enables complete transparency over all quantities supplied, including data storing and transfer. The customer benefited from the application and engineering expertise of KROHNE in CT metering systems. From consulting, design, and documentation to the manufacture and supply of the system to on-site support during the whole accreditation procedure with the notified body: KROHNE covered the complete scope of supply. This comprehensive solution from one source convinced Contank to decide on KROHNE.

5. Solution and product used

Custody transfer metering systems for crude oil and refined products

- Metering solution for liquids, e.g. AdBlue®
- From large skids to compact units (e.g.) for truck (un)loading



OPTIMASS 6400

- Coriolis mass flowmeter for advanced process applications
- CT: OIML R117, R137, MI-005, MI-002; API, AGA



Contact

Would you like further information about these or other applications?
Do you require technical advice for your application?
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Please visit our website for a current list of all KROHNE contacts and addresses.

