Truck-mounted Meters from Micro Motion® Measure Crude Oil during Tanker Loading

BENEFITS

- Reduced risk of personal injury, accidents, and H_2S exposure
- Improved efficiency of truck loading
- Lower operations cost associated with meter proving and tank strapping

Real-time data improves process, optimizes resource utilization, and reduces risk

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PROCESS

A large oil transportation company in the Midwest (USA) loads crude oil into tanker trucks to move oil from lease tanks to pipeline facilities. This custody transfer application requires a statement of the volume of oil loaded, which is traditionally calculated from measurements of the tank level, obtained by manual sampling, and temperature and gravity data. The manual sampling procedure through the tank hatch opening requires the driver to climb to the top of the tank, risking exposure to H_2S or injury from falling.

CHALLENGE

The company wanted to replace the manual sampling method with an automated system that provides real-time data, to minimize safety hazards and increase measurement accuracy. At the same time, they wanted to ensure that the new solution did not have a negative effect on truck and resource utilization.

SOLUTION

A Micro Motion® CMF300 and an RFT9739 transmitter were installed on each tanker, along with a flow computer mounted inside the cab. The system provides gross volume of the load, average temperature, and average gravity, plus a flow-weighted sample for sediment and water determination. With real-time data, trucks can be filled more precisely while reducing operator exposure to hazardous environments or field operations. Accurate volume measurement minimizes the risk of overfilling and spilling, while mass measurement allows

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each tank load to be optimized without exceeding the highway weight restrictions established by the Department of Transportation.

After installation, random spot checks were performed to meet regulatory requirements and to compare the accuracy of the truck-mounted meter to the tank gauging method. The accuracy and repeatability of the meter data resulted in approval to reduce truck meter provings from once per month to once every three months, and also resulted in a reduction in the tank strapping frequency at each loading site.