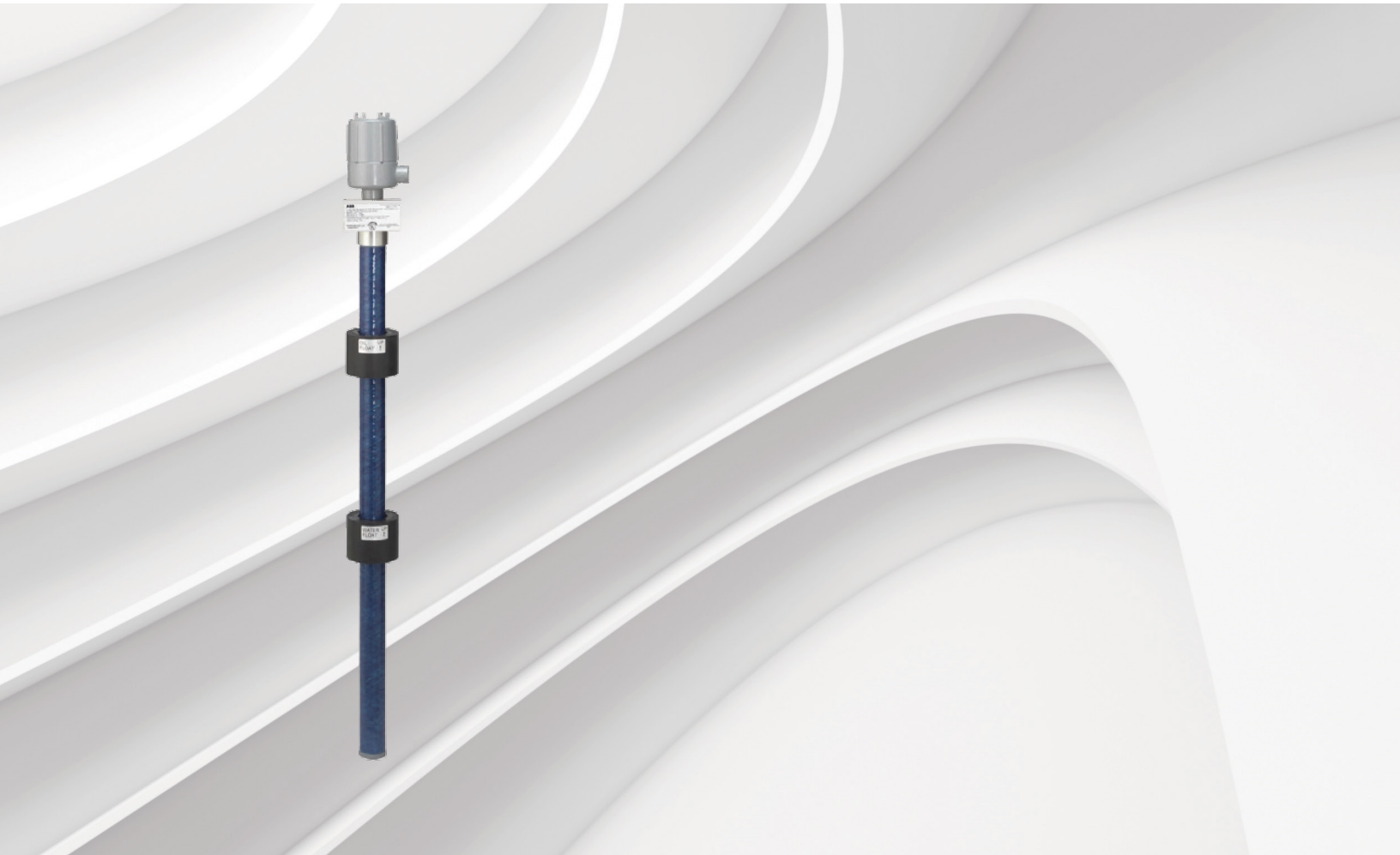
ABB MEASUREMENT & ANALYTICS | DATA SHEET

Liquid custody transfer

Level sensor products



Introduction

The LevelMaster Intelligent Digital Level Sensor is deployed in oil and gas industry as a custody transfer device. For custody transfer applications, the measurement reliability, life cycle and no-drift accuracy of the sensor is unsurpassed by competing technologies.

The LevelMaster allows for two floats to be used on the same sensor assembly to measure the levels of two different density fluids in the same tank. Each float can accurately measure the level of its respective fluid over the full vertical range of the sensor. The standard RTD measures the temperature of the fluid at the load line for custody transfer applications.

Features

- Low cost
- Super low power
- Ultra high accuracy
- Single or dual level capability
- Standard RTD for fluid temperature sensed at the load lime
- 2' to 25' lengths (.6 to 7.6 meters)
- Simple to install
- Simple one-time site calibration – SET IT AND FORGET IT
- Up to 10 measurement factors to develop a strapping table

Oil transfer run tickets can be automatically generated by combining a LevelMaster with a BS&W monitor and a densitometer. The main advantage of this sales method is the use of a proprietary algorithm in the Totalflow RTU filters out normal production “waves” and automatically senses an actual drop in level. With proximity switches indicating the position of sales, divert, and water draw off valves, the RTU can determine when a sales, theft, or significant leak has occurred, for how long and how much product and water was removed.

Traditional tank sales

Trending both fluid levels and the temperature at the load line provided by the LevelMaster achieves superior measurement when compared to the standard gauging methods usually employed. The LevelMaster accuracy (see general LevelMaster datasheet) far surpasses the ¼" requirement for API Chapter 18, Section 1 “Measurement Procedures for Crude Oil Gathered From Small Tanks by Truck”. Small Tanks are defined as tanks with 1,000 barrels capacity or less. API Chapter 18, Section 1, states the temperature is to be gathered in 3 sections of the tank, with a stabilization time of between 10 and 80 minutes, depending on API gravity. This is due to temperature stratification within the tank. By sensing the temperature throughout the entire sales cycle at the load line, a true flowing temperature of the sales is achieved, again exceeding general practice and the API standard.

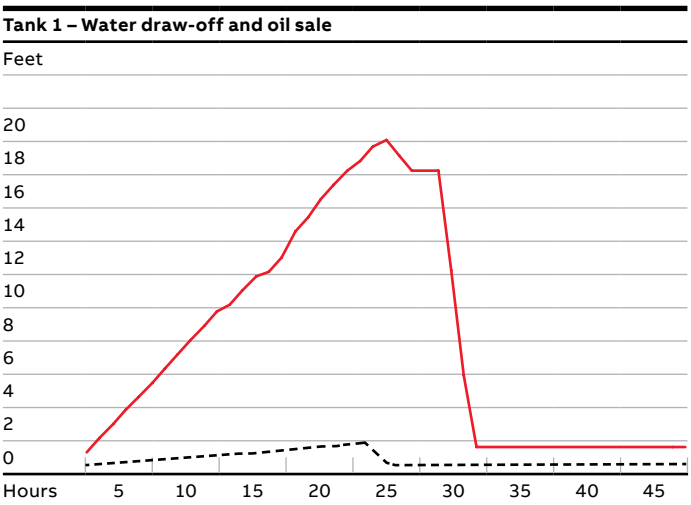
Trending both fluid levels allows detection of water haulers pulling oil with the water disposal, causing a loss of valuable product, potential harm to the salt water disposal well, and a loss of revenue by paying or removal of water that was actually a sellable product. By use of the standard strapping tables built in to the Totalflow flow computers and RTU, these devices can trend the oil and water volumes, and even the ullage (the remaining empty volume left in the tank).

Typical oil sale

The pumper checks gravity and BS&W of product, then notifies gauger of need for sale. He then leaves these readings and the oil level from the display or output of flow computer/RTU in the “mailbox” at the lease. Gauger works the tank, agreeing with readings or noting difference. Oil is loaded and run ticket is left in “mailbox”. The pumper, having nether witnessed the gauging or sales checks the run ticket readings versus the trend files from the Totalflow later at his doghouse. This verification can just as easily be performed at a production office or corporate office by other staff by remotely collecting the trend data and acquiring the run ticket data.

Additional parts required

- LevelMaster
- Totalflow flow computer or RTU
- PCCU32 software
- For remote collection of data if desired, WinCCU32 software



Specifications

- Manpower savings. No need to tie pumper up witnessing sales and gauging tanks.
- Improved accuracy. LevelMaster is at least 2 to 5 times more accurate obtaining the level than API Chapter 18, Section 1 requires. LevelMaster samples the fluid temperature at least 30 to 45 times, while the standard requires normally 3 samples. In practice, the temperature is typically sampled only when manually gauged.
- Continuous monitoring. With LevelMaster being the “pumper’s eyes” 24/7, oil theft and oil loss can be monitored, and documented, with time stamped occurrences noted.
- Safety. Keeping gaugers and pumpers off the tanks reduces climbing accidents and avoids exposure to H2S, Benzene, and other poisons, carcinogens, and harmful chemicals.
- Low power. The densitometer and BS & W monitor consume less power than the sales pump.
- Cost savings. No monthly PD calibrations, requiring expensive equipment and manpower to witness.
- Remote access of data available by many types of remote communication channels including radio, land and cell lines, CD-PD, and satellite. The following types of information are available both locally and remotely.
- Continuous monitoring. Sales, theft, and leak detection indicators.
- Real time data in the form of current status, exception based alarms and control settings.
- Historical Trends of levels, temperatures, volumes, alarms and general purpose IO data.
- Electronic run ticket stored in the Totalflow RTU or flow computer, or transferred to central computer system using WinCCU.

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