CoriolisMaster FCB300 with heat tracing for critical fluids in truck loading station

High precision truck loading and online quality control via density measurement online. Maintenance and calibration-free measurement.

Measurement made easy

Introduction

Previously, truck loading stations were generally equipped with volume flow measuring instruments for dosing loads. If the density of the medium is changed during the load process, the filling of the truck is incorrect. As a consequence, the transport vehicle can often be overfilled or underfilled, which is undesirable and ineffective in both cases.

Instrumentation

However, if a Coriolis mass flowmeter is used for this application, the transport vehicle can always be filled correctly regardless of the density of the measured fluid. The CoriolisMaster type FCB 350 does not require maintenance, has no moving parts and does not require recalibration. Thanks to the small dimensions of the device, the CoriolisMaster can be integrated easily into any existing loading station. Pipe elbows have no effect on the measuring accuracy, as no straight inlet and outlet sections are required. In some cases, the flowmeter must be used in conjunction with a heat tracing pipe to avoid blockages in the piping. The impressive geometry of the CoriolisMaster FCB350 makes the installation of a heat tracing pipe a simple process requiring no special effort.
In order to ensure as little deviation as possible at the truck weighing station (weight calculation platform), a measuring accuracy of 0.1 % of the measured value is used. Depending on the loading time and medium, the nominal diameters used are typically DN 50 to DN 100.
When measuring naphthalene, a filter is fitted in front of the flowmeter to ensure that the loaded product is 100 % clean. The installation is performed vertically and an additional valve flap is located directly beneath the measuring device to ensure that the device is always filled with the measuring medium, thereby ensuring that correct zero point adjustment is achieved. This ensures a high level of measuring accuracy even when dealing with very low flow rates. A dosing valve completes the measuring setup and is controlled via a dosing station.

The pulse output of the flowmeter is wired on the input of the dosing station. As a result, the totalizer in the CoriolisMaster and the totalizer in the dosing station are synchronized and display the same values. If the current output was used, the totalizer would display different values. The filter has to be changed after a certain period of time. When doing so, the entire measuring section must be blown out. In such instances, the loading station starts with emptied lines: The CoriolisMaster first empties by running backwards and the pump attached pumps a medium-air mix through the system. This process can last up to 30 seconds including the refilling of the lines.

The software used for this process suppresses the error messages for sensors A and B while the medium-air mix is being pumped through the system and attempts to perform measurements even under the most difficult of conditions. In this manner, excellent loading is achieved with partially filled piping at the beginning of dosing, meaning that every loading attains a level of accuracy of 0.15 %.

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**Product in use**

**Coriolis mass flowmeter CoriolisMaster FCB350**

- Compact design
- Nominal diameter: DN 50
- Measuring accuracy: 0.1 % of measured value
- Measuring medium: naphthalene
- Measuring medium temperature: 80 to 90 °C
- Heat tracing fitted by customer: 120 °C steam
- Measuring range: 60,000 kg/h