

Application News

Turbine Flow Meter Improves Accuracy During Ethanol Blending

Industry: Industrial

Service: Flow Rate/Total

Fluid: Ethanol

Overview

Ethanol, or gasoline containing ethanol, cannot be moved practically through today's petroleum pipeline systems, because it tends to get pulled into the water that usually exists in pipelines and tanks. Instead, ethanol is blended into gasoline at wholesale terminals located near end users. This method is preferable to "splash blending," in which bio fuels are added directly to a tanker truck or underground storage tank along with the base gasoline. Splash blending is highly inaccurate and can result in ethanol content in the gasoline above 10%, which may cause fuel pumps and other engine components in a vehicle to fail.

Situation

A supplier to the petroleum industry manufactures a computer-controlled blending system for adding ethanol to gasoline at the U.S. Government (FDA) approved 10% rate prior to the final product being delivered to consumers. Precision flow measurement is critical during the automated blending process. Terminal operators require accurate data indicating the percentage of ethanol added to the gasoline base.

According to U.S. federal regulations, terminals must produce an unfinished blend with RVP of 7.3 that, when combined with 10 percent ethanol, creates a finished gasoline with RVP of 8.8 psi (7.8 psi plus 1 psi water). This unfinished conventional gasoline base is sometimes called a conventional gasoline blendstock for oxygenate blending, or CBOB.

Solution

After considering various flow measurement technologies for use in the ethanol process, the blending system manufacturer decided upon Flow Technology's FT Series turbine flow meter. The FT Series meter provides exceptionally accurate and reliable digital outputs. Because of its versatility, this flow meter is ideal for a wide range of liquid and gas flow measurement applications.

System Description

The FT Series turbine flow meter offered an accurate, compact and economical solution for ethanol splash blending. The meter was easily incorporated into the blending stand equipment. In this application, it was paired with the two-wire, loop-powered TWA flow transmitter. The TWA provides a 4-20 mA analog process signal which is proportional to the flow rate. It is calibrated with zero and span adjustments to correlate with the input frequency generated by the flow meter.

Technical Information

Flow Meters (Model Number): FT4-8NENS-LEA-5
Electronics (Model Number): TWA-C-9
Flow Rate: 0.03 - 3 GPM
Fluid: Ethanol



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