

#### **THE PROBLEM**

A customer requested help in measuring petroleum products being loaded into ocean going barges for transportation. The traditional method required measuring the level in the barges or storage tanks. This volume was then corrected to the theoretical volume at 60°F using a conversion factor from the American Petroleum Institute. This procedure was not only time consuming, but inaccurate as well. A transit-time clamp-on ultrasonic flow meter was a practical way to measure the flow, but this flow rate had to be corrected "on the fly" based on the temperature of the fluid. The totalizing with the temperature correction was impossible using standard flow meters.

#### **THE SOLUTION**

A Badger Series 2300 with modified software was used to create a temperature compensating flow meter. One RTD temperature sensor was connected to a Series 2300 temperature input card. A specific resistor was wired across the T2 terminals. A Series 2000

optional analog input card was used to receive the 4-20mA signal from the flow meter. "BBL/Min" & "Barrels" were programmed by the customer as units of measure. Twelve calibration points were entered using the API temperature adjustment multiplier to create a custom flow curve.

As the petroleum product is pumped into the barge, the ultrasonic flow meter monitors the flow, the Badger Meter Series 2300 corrects the flow to the standard temperature 60°F and provides corrected totals to the operator. Both relay and analog outputs reflect this temperature compensated signal.

The Badger Meter Series 2000 flow controllers are both flexible and economical. Do you have similar flow measurement or control problems? Consult a Badger Meter application engineer for an economical solution.

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