APPLICATION NOTE

Oil & Gas

Flow measurement of LPG for dispensers

- Accurately billing LPG in dispenser systems for vehicular gas
- Equipping 700 LPG dispensers with Coriolis mass flowmeters
- Flow measurement unaffected by temperature fluctuations

1. Background

A distributor of Liquefied Petroleum Gas (LPG) operates numerous liquefied gas stations across the Caribbean and elsewhere, selling around eight million gallons (30.3 million litres) of liquid propane gas per month.

2. Measurement requirements

To date, most dispenser applications have determined the quantity of LPG volumetrically. The volume of liquefied gas, however, varies widely under different temperatures. This can cause the actual dispensed volume to no longer match the volume (gallon) charged. This creates a potential cause of conflict in terms of billing.

To mitigate the effect of changing product properties on billing procedures, upcoming regulations specify that vehicular gas must be sold on the basis of mass rather than volume. The mass of LPG remains relatively constant, even in the event of pressure and temperature fluctuations.

To prepare for the implementation of those new regulations and to guarantee consumer transparency and accurate billing at all times, the company has decided to equip their dispensers with mass flow instruments.

Application Data	
Medium	Liquefied Petroleum Gas (LPG)
Measuring range	15...20 kg/min / 33...44 lb/h
Pressure	12 barg / 174 psig
Density	0.5 kg/l
Temperature	20°C / 68°F

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3. KROHNE solution

The distributor retrofitted around 700 LPG dispensers with the OPTIGAS 4010, a Coriolis mass flowmeter dedicated to LPG measurement in gas dispensing systems (up to 70 kg/min or 155 lb/min). It offers high accuracy and a wide dynamic measuring range.

The OPTIGAS 4010 consists of a measuring sensor with integrated Modbus direct data communication output. There is no need for a separate converter. This makes the flowmeter a space-saving device that fits well into the confined space of the LPG dispensers.

By way of its Modbus interface the flowmeter integrates easily into the existing controller system. If required by the customer in the future, the Coriolis meter could also be supplied with an EtherNet/IP™ interface box offering a full-featured secure web-interface for remote configuration, maintenance and diagnostics.

Installation and commissioning of OPTIGAS 4010 Coriolis mass flowmeters for LPG

4. Customer benefits

The LPG distributor now benefits from a much more accurate LPG measurement for their dispensers. This is particularly well received by their customers, who stand to gain from the fact that temperature and pressure fluctuations no longer have any significant effect on the billed LPG quantity. The company confirmed that since commissioning of the OPTIGAS 4010, the number of complaints about inaccurate billings had dropped drastically.

5. Product used

OPTIGAS 4010

- Coriolis mass flowmeter for gas dispenser applications
- High accuracy for CNG and LPG up to 70 kg/min / 155 lb/min
- Excellent low flow stability, accuracy and repeatability
- Thread: ¾ NPT (female), various adaptor options; up to 350 bar / 5075 psi
- Integrated Modbus, no separate converter needed
- EtherNet/IP™ interface available for configuration, diagnostics and maintenance

Contact

Do you have questions or are you interested in this or other applications?
Would you like advice or a quotation?
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