Micro Motion® Reduces Hydrate Formation in Wet Natural Gas Lines

RESULTS

- High accuracy over a wide range of injection rates
- Lower total installed cost
- Lower cost of ownership
- Improved production capacity and availability
- Reduced calibration costs
- Improved reliability

APPLICATION

During natural gas production, hydrates (ice-like solids) may be formed by the combination of water and other elements that are found in the natural gas stream (e.g., carbon dioxide, methane, ethane). Hydrate formation is a significant operational and safety concern, as hydrates can reduce production rates, plug transmission pipelines and form "solid projectiles" that damage downstream instruments and processes.

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The formation of hydrates can be combated in a number of ways:

- Avoid operational conditions that might cause the formation of hydrates
- Pipeline insulation
- The application of heat
- Dehydration - removing water from the stream
- Addition of kinetic inhibitors or anti-agglomerators
- The use of inhibitors

A natural gas production company in Australia uses glycol injection as the hydrate inhibition method on their offshore platform. To be effective, glycol must be injected in proportion to the quantity of natural gas flowing through the pipeline and the water content in the natural gas stream.

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CHALLENGE

To ensure the correct quantity of inhibitor, the company must accurately measure both the volume of glycol in relation to the natural gas flow, which varies widely, and the real-time density of the glycol feedstock, which varies between 90 and 97%.

Due to the high cost of maintenance and calibration on offshore platforms, other requirements include mechanical reliability and stability. This also helps address environmental and safety concerns associated with glycol handling during maintenance and calibration procedures.

SOLUTION

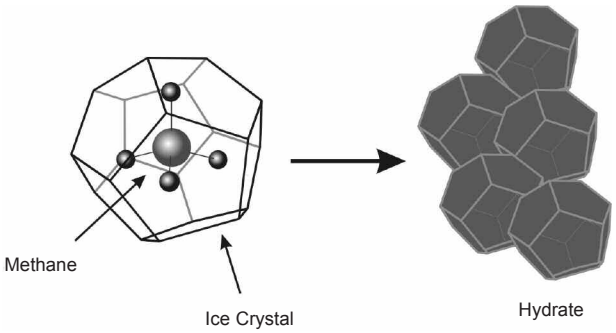
A Micro Motion® ELITE® meter was installed to measure the volume of glycol injection into the process. This provided the customer with accurate metering over a 13:1 turndown in injection flow rates. The accurate density measurement not only contributed to an accurate volume determination (mass divided by density), it provided the data for accurate correction of injection rates in relation to changing glycol feedstock concentrations.

The use of Coriolis technology eliminated the need to install auxiliary temperature transmitters for volume correction or general process monitoring.

Because the volume is derived from direct mass and density measurements under process conditions, temperature compensation for volume was not required. The customer configured the meter to report temperature, as measured by the internal RTD sensor, via HART protocol, then installed a HART® Tri-Loop™ signal converter. This provided a cost-effective means to monitor glycol temperature at an accuracy sufficient for the process.

Because the Micro Motion meter has no moving parts, it is virtually maintenance-free, thus minimizing the cost of operation and the cost of ownership. Because maintenance does not involve disassembling the meter, safety and environmental hazards are avoided.

Finally, calibration is performed on an as-needed basis rather than on a regular schedule. The need for calibration is determined by comparing the density measured by the Micro Motion meter against the known density of the glycol. The result is fewer calibrations and less downtime.



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