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Application note

Moisture measurement in natural gas processing

Benefits:

- Multiple measurements on a single electronics platform offer a lower cost per measurement point.
- Aluminium oxide sensors can measure at process pressure so no need of expensive pressure reduction equipment in the sample conditioning system.
- Wide dynamic range of sensor, can measure from ppbs right through to ppms.

Summary

Natural gas processing plants produce LNG, ethane and LPGs among other products. The natural gas feed to the processing plant is dried to remove moisture and then cryogenically cooled to extract the desired product. Too much moisture in the feed natural gas entering the cryogenic section of the plant can cause ice formation and blockages in the plant.

Application

There are different methods to dry natural gas. First stage drying of raw natural gas typically involves a separator drum to remove liquid water followed by a Triethylene Glycol (TEG) dryer, which is capable to dry the gas to typically <10 ppm. This is pipeline grade natural gas which also becomes the feed to the processing plant. The processing plant drying method uses molecular sieve dryers which are capable to dry the gas to <1 ppm, a requirement before the gas enters the cryogenic section of the processing plant. A moisture measurement is required on the outlet of the dryer unit to ensure the dryer is performing to specification. A moisture measurement is often made on the inlet gas to the plant also, to ensure wet gas is not entering the plant.

Challenge

There are generally multiple molecular sieve dryers in the plant, all requiring an online moisture measurement on each dryer bed outlet. Other moisture measurement technologies are typically configured as single channel instruments and many can only measure at low pressure.

Solution

The Panametrics multichannel moisture.IQ offers the perfect solution as up to six measurements can be carried out on a single analyzer platform. The aluminum oxide sensor can work up to 5000 psig so measurements can be made at process pressure while the wide dynamic range of the sensor allows measurement

down to ppb levels. For customers that prefer transmitter type solutions, the HygroPro is a great fit. The Aurora laser moisture analyzer is also an option for the plant inlet measurement point.

Application specifications

Typical moisture range molsieve outlet: 0-5 ppmV

Typical operating pressure: 800 - 1000 psig

Plant inlet typical moisture range: 5 - 50 ppmV

Per avere più informazioni
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Panametrics, a Baker Hughes business, provides solutions in the toughest applications and environments for moisture, oxygen, liquid and gas flow measurement.

Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water and Wastewater; Chemical Processing; Food & Beverage and many others.

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