

Application Note

Accupoint 2™ and Natural Gas

Natural Gas Pipeline – Gas Transmission

When water combines with either CO₂ or H₂S, in the pipeline, corrosive acids can form causing an accelerated failure of the pipeline component.

Basic Application

High water content in a gas pipeline poses several problems to the pipeline owners. Most important is the maintenance of the pipeline. When water combines with either the CO₂ or H₂S in the pipeline, corrosive acids can form causing an accelerated failure of the pipeline components. Also as the gas passes through metering stations, there is typically an orifice plate which restricts the gas flow. As the gas emerges from the orifice plate, there is an expansion effect and along with the expansion, a cooling effect (Joule-Thompson) on the gas stream. If the moisture content is too high, you can actually condense the water and form hydrates or ice crystals. In sufficient quantities, an ice plug can develop and cut off the gas flow through the pipeline. One additional problem is the fact that water does not burn. If the water content is too high, the gas does not have the required energy (BTU) content to produce heat.

The gas pipeline companies in the United States write contracts with the gas producers based on the water content of the gas. Typical standard is 7 lbs/mmscf (pounds per million standard cubic feet). The conversion of lbs/mmscf to ppmV is 1 lb is equivalent to 21.5 ppmV. It is in the best interests of the producer to supply gas as close as possible to the contract requirement. There is cost associated with dehydrating the gas stream. If the moisture level is accurately measured and controlled at the contract requirement, the producer will save the added expense of unnecessary dehydration.

From the viewpoint of the pipeline owner, they do not want to contaminate their pipeline with moisture. In the United States, if the moisture level exceeds the contract point, the owner has the right to shut the valve from the producer and in effect “close him in.” Once the producer has corrected the problem, the valve can be opened and gas will flow.

Suitable Analyzers

Both a portable (WaterBoy 2) and a stationary (Accupoint 2) analyzer can be used for this application.

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MEECO Accupoint 2™

For continuous on-line moisture measurement, the MEECO Accupoint has been the unit of choice for virtually all of the major gas pipeline companies in the United States. The new Accupoint 2 is a full function, micro-processor based, 2-wire, 24vdc, 4-20 mA loop powered moisture transmitter with an integral digital display. It is designed to operate off the customers existing control system. The only requirement is 24 vdc power and the ability to read the 4-20 mA signal. The unit is also rated Factory Mutual Intrinsically Safe when used with an approved barrier for Class 1 Division 1 Group A, B, C and D locations. By placing an Accupoint 2 at each point where there is a feed into the major pipeline or at a point where ownership of the gas changes hands, the Accupoint 2 will provide an accurate indication of the moisture content of the gas.

Advantage:

The Accupoint 2 does not require, nor does it come with unnecessary electronics. If the customer can supply the 24 vdc power, the Accupoint 2 will provide a 4-20 mA signal along the those same two wires that provide the power. This eliminates the intermediate step that most standard analyzers require of processing the signal then re-transmitting it. The cost savings can be substantial , and in some cases approaching \$2,000 - 3,000.