

Application Note

Trace Moisture and Carbon Dioxide in Natural Gas

Key Features

- *Avoids damage to the sensor from other components in the stream*
- *Virtually maintenance free operation with no routine service needed*
- *Responds quickly to process changes: no wet-up or dry-down times*
- *See product datasheet for more details*

Today, **pipelines** are the vehicle of choice for transporting natural gas from production points to the market. They are installed underground, sub-sea, and occasionally on the surface.

In spite of their practicalities, pipelines are often made of carbon steel, meaning impurities in natural gas can produce highly corrosive substances. Additionally, the geologic formations through which they travel can cause electrolysis that reduces pipe wall integrity. Efforts to remove or minimize corrosive impurities are wisely taken to avoid excessive internal corrosion. Scrubbers are used to remove Sulfurous compounds and Carbon Dioxide while dehydrators remove moisture.

Our Solution

SpectraSensors has built a large spectroscopy technique. We have a CO₂ application and that can be added to moisture. We offer an advanced and reliable method to monitor moisture and CO₂ using Tunable Diode Laser (TDL) gas sensors from SpectraSensors, Inc. The **SpectraSensors SS2000** provides continuous measurement of both moisture and CO₂ on one channel. Additionally, SpectraSensors TDL technology includes a CO₂ analyzer that can accompany the SS Moisture analyzer. The **SpectraSensors SS3000** offers two channels for moisture or CO₂, which provides extra options for methods of measurement.

Your Available Options:



Moisture Concentration (H₂O):
10-422 ppmv, NIST Traceable



SS3000: Moisture or CO₂; Switch
measurements for either side!



Carbon Dioxide Concentration
(CO₂): 0-10%



SS1000 Portable Gas Analyzer



Figure 1: Pipelines are used today for transporting natural gas.

Because the laser system never comes into contact with the contaminants present in the regenerator off-gas, the TDL-based gas analyzer practically eliminates maintenance and operational costs.

For this application, the main challenge is that natural gas is often saturated with water. Because water contains CO₂, wet natural gas is corrosive. Fortunately, there have been a number of "self-cleaning" probes developed over the years specifically for this application. Ultimately, monitoring corrosion using the best technology possible yields long-term savings for both the probes and pipelines.