

Natural gas processor improves LPG quality analysis using gas chromatographs

RESULTS

- Reduced cost while improving employee safety by replacing slow and costly grab-sample lab analysis
- Optimized operation of propane and butane separation unit with reliable online gas analysis
- Improved product blending and ensured quality validation at the distribution terminal



APPLICATION

Liquefied petroleum gas (LPG) quality analysis at a natural gas processing and distribution facility.

CUSTOMER

Sharjah National Oil Corporation (SNOC), Sharjah, UAE.

CHALLENGE

Large portions of the world lack consumer-level natural gas distribution, so the use of LPG for a variety of purposes is part of daily life. SNOC is a major natural gas processor, part of which involves separating propane, butane, and other natural gas liquids (NGLs) from the raw natural gas stream. These are further processed for domestic use and export distribution. When market conditions are favorable, the site can also unload tankers, blending imported LPG with product produced on-site.

For SNOC, gas chromatographs (GCs) perform routine analysis tasks at the NGL fractionation column (depropanizer, debutanizer) and import/delivery terminal. These are critical to maintaining production, blending, and final analysis at the outgoing custody transfer point. Thus, the need for accurate product analysis at multiple points calls for analyzers able to perform reliably on a continuous basis.

Unfortunately, SNOC struggled to make these measurements, experiencing frequent GC outages and threatening effectiveness of the gas separation process, and possible out-of-spec shipments. Operators had to take grab-samples to a lab to verify content, losing time and delaying discovery of a problem while the process continued to produce unacceptable product. Heavier

Condensation problems plagued the previous gas analyzer installation. Maintaining reliable measurements and high availability called for Emerson's application expertise to specify the right gas analyzer fit for the demanding operating environment.



The measurement reliability of the Rosemount 370XA Gas Chromatograph enabled SNOC to take back control of the process and ensure on-spec LPG.

hydrocarbons present in the feedstock caused frequent condensation episodes, carrying liquid into the GCs and interfering with the operation.

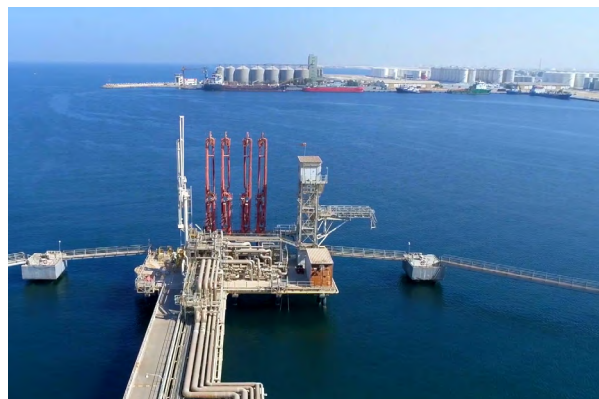
SOLUTION

SNOC involved Emerson engineers to diagnose the problem and suggest solutions, including new GC analyzers. Since dewpoint readings were not normally needed for specific components beyond C6+, a more costly and complex GC was not necessary. When required, dewpoints of heavier hydrocarbons could be inferred from the C6+ value. Based on the specific analytical requirements, Emerson recommended the Rosemount™ 370XA Gas Chromatograph.

Emerson also recommended that the analyzer measuring LPG be placed in a heated enclosure to maintain a minimum temperature of 40 C (104 F) and avoid any possibility of condensation. Condensation problems had plagued the previous installations due to unheated analyzer shelters. The right combination of problematic feedstock components and ambient temperatures caused condensation, fouling the previous GCs.

The ultimate solution package included three Rosemount 370XA Gas Chromatographs, each with a pressure regulator for the sample lines. Two were deployed at the fractionator column and housed in a heated enclosure suited for Zone 1 area. They provided continuous monitoring of the propane and butane outputs, delivering data to operators. The third monitors the gas quality of the feedstock.

Since the installation, SNOC has used the Rosemount 370XA to compile a track record that exceeds 97% availability, delivering more optimized control of the gas separation column and a constant stream of on-spec product for its customers. The Rosemount 370XA has also ensured measurement reliability with a range of embedded automation capabilities, including automated validation routines and performance diagnostics, enabling access to process insights and higher quality decision making.



Accurate online gas composition analysis helps SNOC validate product quality.

RESOURCES

Hydrocarbon Engineering: Improved Solutions for Natural Gas Quality Analysis

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Rosemount 370XA Gas Chromatograph

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