Case study

Enabling NGL field analysis for certification and Quality Assurance (QA) with process Raman spectroscopy

What is Raman spectroscopy

Raman spectroscopy is an optical analysis technique that measures the vibrational properties of molecules. Raman spectroscopy has improved process analysis with its high-resolution compositional data, linear response to concentration, non-destructive nature, ability to measure samples in real-time, without requiring a sampling system or carrier gasses.

Raman spectroscopy for natural gas analysis

The Oil & Gas industry has relied on analytical equipment such as gas chromatography to ensure product quality. A solid-state Raman spectroscopy system like the Thermo Scientific™ Ramina™ Process Analyzer can speed up analysis, offer flexibility by measuring liquids and gases, and relieve some of the wear and tear on lab equipment required by relevant ASTM standards. The Ramina Process Analyzer can also be taken to the point of need without recalibration as it has a small footprint and no moving parts.

Benefits of Raman spectroscopy	
	Raman spectroscopy
C1-C6+, CO_2, H_2 and N_2 analysis	Yes
Analysis time	15 seconds
Sample conditioning	None
Calibration	No; factory calibrated
Install time	15 minutes
Phases measured	Liquid, solid, gas
Cost of ownership	$
Consumables	None
Portability	Yes

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Monitoring NGL for certification and QA with Raman

A U.S.-based midstream company is using the Ramina Process Analyzer to analyze C1-C6+ in NGL exports from gas plants to verify quality and to detect impurities. By implementing the Ramina Process Analyzer, the customer can efficiently and effectively deliver on-spec products with reduced operating costs.

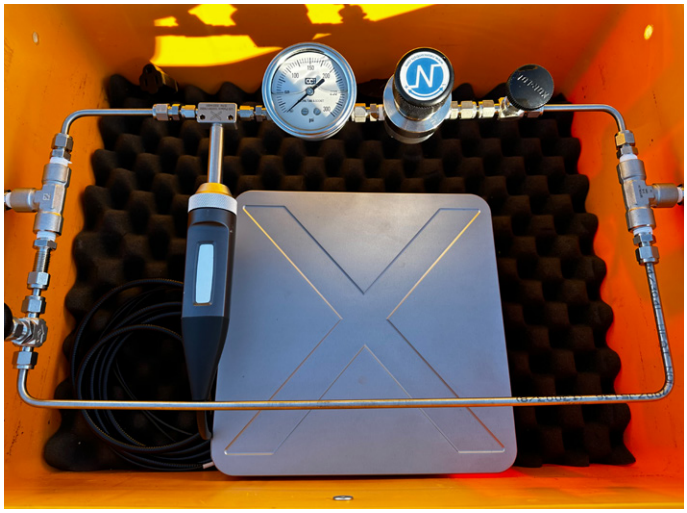
Requirements

- Reduce operating costs while providing the same level of precision and accuracy as traditional analytical methods
- Improve analysis cycle time to provide tighter process control and minimize costly downgraded product deliveries
- Models that can handle a wide range of NGL compositions to ensure coverage of different specified products

Results

Using the Ramina Process Analyzer and a FlowCell™ in a speed loop to measure the composition of NGL every 15 seconds, 30+ data points were collected.

The company is now able to detect impurities and off-spec product quicker, giving their operations team the ability to either divert off-spec product to a reprocessing tank or to provide a better measurement for the quantity of downgraded product being delivered.



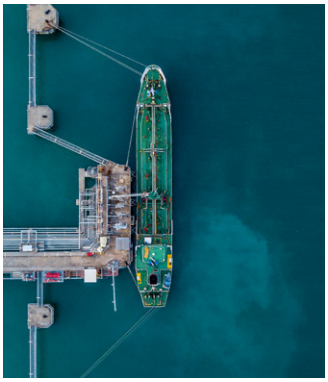
As a solid-state Raman spectroscopy system, the Ramina Process Analyzer produces identical and repeatable results from unit to unit, and common mathematical models can be applied across systems to produce consistent results.

Selected applications for midstream operations

LNG analysis

LPG blending and optimization

Aromatic and olefin monitoring



Custody transfer

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