Application Note: Verax™ Fuel Gas

Fuel Gas Measurement

Introduction

Fuel gas has become a very common fuel to power large compressors, industrial heaters and furnaces, power generation plants, and other large rotating equipment due to its competitive price and widespread availability. Fuel gas is used in industries from oil and gas, to power generation, specialty metals, and refining.

Untreated fuel gas often manifests varying compositions and heating values. Depending on the use, unmanaged fluctuations in BTU content and variation of hydrocarbon ratios can damage the mechanical integrity of fired heaters, damage compressors and turbines, and negatively affect the quality and purity of various industrial products. Condensation in fuel gas results in premature combustion, component distress, and affects the reliability and availability for all types of combustion systems. All of which can severely impact rotating equipment performance and manufacturer warranties.

Fuel gas should be monitored as quality excursions can happen quickly while lasting only for short periods of time. Process analytical devices need to operate in real time to capture events, excursions, and spikes to protect equipment, processes, and products. Speed and uptime are of the utmost importance. Current technologies are typically limited in response time and require extensive maintenance to achieve acceptable reliability.

Solutions

The solution for monitoring fuel gas quality is real time analysis with 99+% uptime. Utilizing Near Infrared (NIR) spectroscopic technology, JP3 Verax is uniquely suited to assist operators in the monitoring and control of fuel gas variations. The Verax real time response catches upsets, and its ability to deliver composition, BTU, and other properties in seconds allows operations to identify and deal with common causes of fuel gas excursions.

The Verax operates at line pressure (0-1750 PSI) and process temperature (-10 to 225 F) with no sampling system or sample lines required. Since the Verax determines BTU directly from the process spectroscopic signature, no compressibility or Z factor calculations are required. Verax requires no consumables such as carrier gas, columns, filters, or rebuild kits which means a dramatic increase in reliability and marked reduction in maintenance time and costs. The control unit requires no environmentally controlled enclosure and is designed to operate outside with no environmental shelter.

The Verax can be easily configured to report different combinations of measurements depending on application requirements. BTU, specific gravity, and C1 to C6+ component analysis can all be delivered in seconds. As requirements change, the Verax can be easily reconfigured with minimal cost and downtime.

Gas Pipeline Compressor

Furnace Towers

Power Plant

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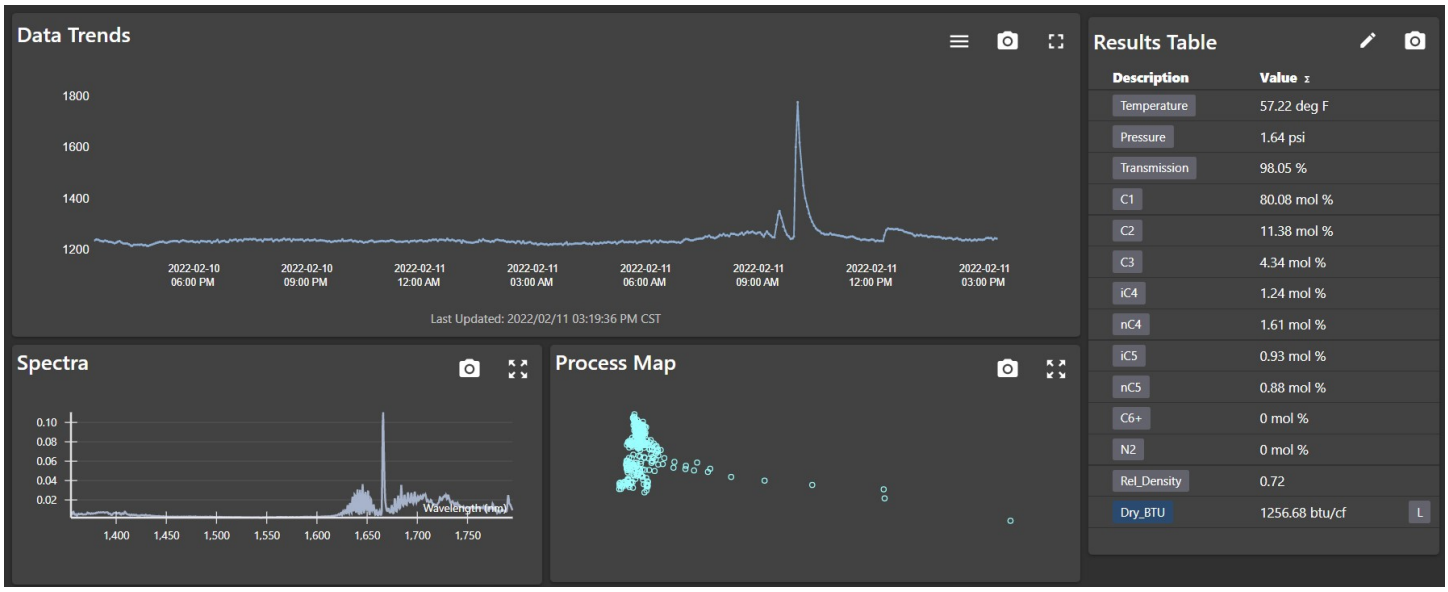
Expert Service and Support, Tailored to Your Needs

Almost all optical-based systems will require chemometric models, which are developed by chemometricians using process samples. Most other optical analyzer manufacturers rely on the end user to create, develop and maintain these calibration models. JP3's in-house team of project managers and Ph.D. chemometricians offer a full range of support options: from hardware-only sales to full-service model development and support.

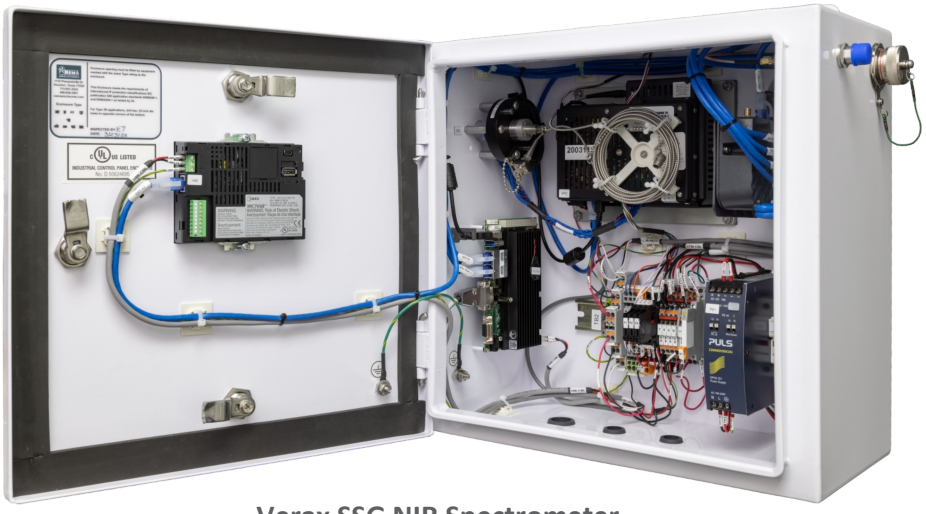
Designed for Speed and Reliability

The highly reliable Verax analyzer provides analysis for up to four process streams in less than fifteen seconds per stream. Utilizing a highly stable and repeatable laser optical source, and packaged to operate in harsh environments with no shelter, the Verax operates in-line at process pressure and temperature. The VeraSight™ flow cells are mounted at the process points of measurement with fiber optic cable connections back to the control unit. All material is returned to the pipe, resulting in emissions-free operation. This means sample conditioning and transport systems are minimal and simple, which improves response time and safety.



Real-time web-based monitoring software: JP3 Viper

JP3 Verax Gas Analyzer Product Info Links: Verax SSG, Verax CTX, Verax ISX/IMX



Verax SSG NIR Spectrometer

For more information:

sales@jp3.com

512-537-8450

4109 Todd Ln. Ste. 200
Austin, TX 78744

JP3.com