Customer Success Story: Online Fuel Blending
for Increased Product Flexibility and Competitiveness

A Guided Wave NIR Process Analyzer System was fully implemented for real-time fuel blending measurement and control to optimize online gas blend quality, capacity, and product flexibility.

The Customer

The customer is a leading worldwide provider of flow equipment products, systems and services to oil, gas and process industries. Their equipment is used to measure, control, and direct flow of product into industrial applications such as pipelines, drilling, and unconventional production.

The Project

To accommodate international standards in South East Asia the customer established a terminal automation system and blending facility for high-speed diesel and marine fuel oil. The project was to upgrade a fuel terminal's storage capacity to 300,000 kiloliters with a dock capacity of LR 100,000 DWT.

This upgraded terminal includes a mogas [automobile fuel] blending facility that increases the flexibility of premium imported product of high-octane mogas [RON 92] and Naphtha.

This terminal also allows the company to play the role of both a storage and blending facility provider, as well as to be a mogas super terminal in order to support the national mogas /premium fuel stock for their oil trading business throughout South East Asia.

The Problem - Automatic Fuel Blending

The customer was looking for a packaged online analyzer system to be used in their fuel blending process. In an effort to increase their storage and production capacity, they decided to go with an automatic fuel blending system that could accommodate automotive fuel, MFO (marine fuel oil) and diesel fuel.

As part of this automatic fuel blending system, they used a dual-analyzer system to measure both the vapor pressure and RON (or Cetane) together for optimum blending, which allowed them to optimize their product offering and allowed the terminal to be multifunctional as intended.

The Challenge - RON Model Fine Tuning

The determination of fuel octane numbers (i.e. RON, MON) is a common application for online near-infrared (NIR) spectroscopic analyzers, such as Guided Wave's NIR-O. These analyzers offer many advantages over offline laboratory CFR engine octane determinations. NIR analyzers are faster, more precise, have lower operating costs, reduce safety issues, as well as provide real-time information to allow for blending control.

The customer's required specification for this project consisted of a very broad and unusual RON range for the feed stocks (RON of 70-100+). The goal was to blend expensive high octane feed stocks with less expensive low octane naphtha, while maintaining required octane levels and minimizing costs. Local sample collection was required to fine tune the starting calibration for this expanded range.

The Smart Choice

The customer came to Guided Wave due to our long history and expertise in process analyzers for fuel blending. Our Dual-Beam Grating (DG-NIR) technology provides long term stable readings offering laboratory grade results from a process analyzer:

- Extremely high signal-to-noise ratio; better detection of trace components

- Removes nearly all common mode drift problems

- NIST traceable wavelengths

- Ability to read multiple points and multiple streams; up to 12

- Meets ASTM 6122

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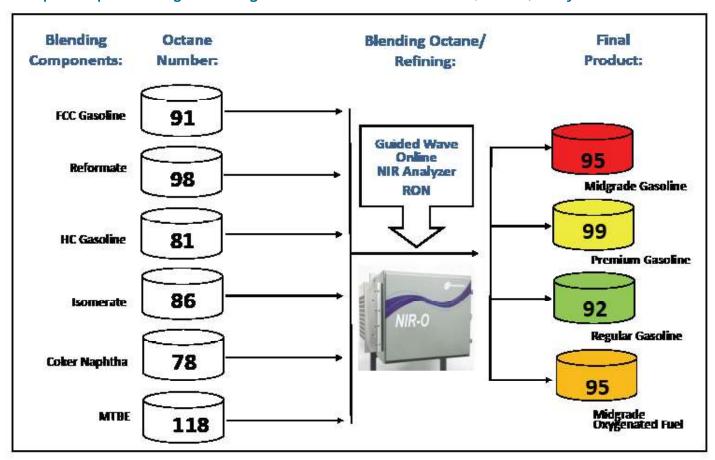
The Solution

Guided Wave provided a starting calibration that was general in nature for this purpose. The starting calibration could be easily tuned in the field by adding locally collected data from the site.

Once the Guided Wave analyzer system was installed and the local samples were collected for RON and distillation points, the calibration could be fine-tuned to these specifications using Unscrambler® software by CAMO. The final results exceeded their expectations, providing them with even greater manufacturing flexibility and a wider source of raw products to use. The complete system has been in operation for more than six months, with additional products to be added to this automated blending system.

Control You Can Measure

By partnering with Guided Wave, customers gain the advantage of 30+ years of experience in online process monitoring and stream sample analysis. We deliver a total solution that includes optically matched components and a well planned calibration approach leading to long-term success and savings. Our entire product line is designed and developed to provide real-time data of laboratory quality, while thriving in the most demanding processing plant environments - for control you can measure.

Example: Simple Blending Block Diagram with Guided Wave's NIR-O (DG-NIR) Analyzer

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