

Customer Success Story: NIR Process Analyzer System Saves Money in Unexpected Way

Guided Wave's dual-beam NIR Process Analyzer System was fully incorporated to measure Research Octane Number (RON) of reformat from the plants's catalytic reformer. Accurate real-time measurement saved the company money in additional, unexpected ways.

The Customer

A major U.S. petroleum refining company with operations in several states across the country as well as international exportation. Products include gasoline, fuel oil (including diesel fuel and home heating oil), and aviation fuel.



The "Unknown" Problem

The customer used Guided Wave's NIR Analyzer to measure Research Octane Number (RON) of reformat from the plant's catalytic reformer. Process operators soon discovered that the real-time RON values provided by the Dual Beam NIR analyzer system did not match expected RON values, especially at high severity. Further investigation revealed that the feed/effluent heat exchanger was leaking, allowing some of the feed to bypass the reactors.

The refining company staff said they had suspected a leak before. But, they said, until acquiring such a real-time analyzer, they had no way of measuring on-line RON. According to the engineer in charge of the reformer's control system, "We were assured by the plant inspection people that there was no chance of a leak in the heat exchangers, each of which has welded seals. Yet that's where the defect occurred. Without the NIR analyzer, we wouldn't have looked there, and the leak would have gone undetected indefinitely."

"Having a Guided Wave NIR analyzer is like using cockpit navigation equipment when flying. It tells you exactly where you are so you don't have to keep calling the tower (the QC lab)."

~ Plant Operator

The Solution

The Dual Beam NIR Refinery Process Monitor is an integrated system for in-plant, on-line measurement of hydrocarbon properties. The system consists of four components: a high-precision, dual beam near-infrared (NIR) spectrometer, one or more optical probes, fiber optic cables, and an operator interface.

A single Dual Beam NIR-O can monitor up to twelve process streams simultaneously. For each stream, the system can measure one or more parameters (e.g. RON, percent aromatics, density). Each of the Dual Beam NIR-O system is customized to meet the customer needs. Therefore, numerous hardware, software, and service options are available.

To learn more about The Dual Beam NIR-O request our technical data sheet#1052 and #1057.

"Real-time measurements of RON can be made with the Guided Wave analyzer in a matter of seconds. Compare that with a knock engine test, which takes 2-4 hours. By minimizing the need for knock tests, we give our QC department the time to look at more crucial issues."

~ Process Control Chemist

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The Smart Choice - Dual Beam NIR-O Analyzer

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

The Conclusion

In an effort to accurately measure the RON number, the company realized the added benefit of catching and repairing a leak which saved them product and money in an additional unexpected way.

The engineer in charge of the reformer's control system stated, *"By repairing the leak," we were able to reduce the severity at which we operate the reformer. That lowers our utility costs and extends the life of the catalyst, saving us many thousands of dollars. It also allows us to give our blenders a more consistent product."*

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.

Block Diagram of Typical Guided Wave NIR Analyzer

