Process Insights™
Premium Insights Into Process

APPLICATION NOTE

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

Our GUIDED WAVE™ NIR Process Analyzer System was deployed to measure Research Octane Number (RON) of reformate from the plants' catalytic reformer. Accurate real-time measurement saved the company money in additional unexpected ways.

The Customer

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

The "Unknown" Problem

The customer used our GUIDED WAVE online NIR Analyzer to measure Research Octane Number (RON) of reformate from the plant's catalytic reformer. Process operators soon discovered that the real-time RON values provided by the Dual Beam NIR anaylzer 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 previously. 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 have 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."

Block Diagram of a Typical GUIDED WAVE NIR Analyzer

PONA
Density

RON
MON
Aromatics
BTX

**GUIDED WAVE
NIR Analyzer System**
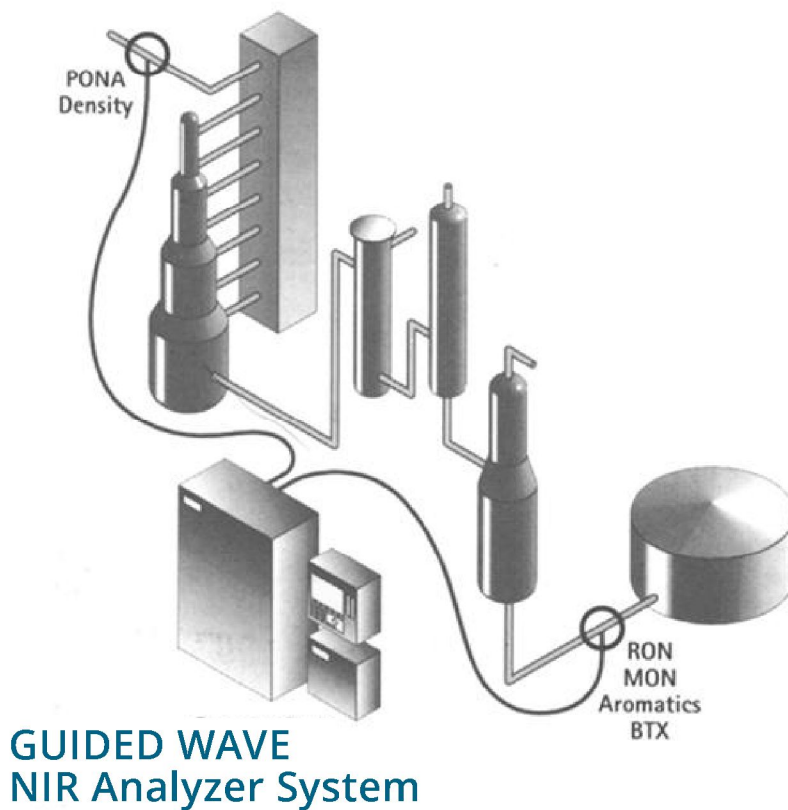
The Solution

The dual beam NIR refinery process analyzer is an integrated system for in-plant, online 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™ analyzer can monitor up to twelve process streams simultaneously. For each stream, the system can measure multiple parameters (e.g. RON, percent aromatics, density). Each dual beam NIR-O system is customized to meet customer needs.

"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

"Having a GUIDED WAVE NIR anayzer 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 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 analyzer technology provides long term stable readings offering laboratory grade results from a process analyzer:

- Extremely high signal-to-noise ratio; better detection of minor components
- Removes nearly all common mode drift problems
- NIST traceable wavelength standards
- Ability to read multiple sample points and multiple streams: up to 12
- Compliant with ASTM D6122

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 Process Insights customers gain the advantage of over 3 decades 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. For more inforamtion on this application or the NIR-O Process Analyzer contact a Process Insights sales ore technical representative.

GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights manufactures and delivers premium sensors, monitors, detectors, analyzers, instrumentation, and software that are mission-critical to keep your operations, personnel, and the environment safe – every day across the globe.

Get the most reliable, precision analytical technologies available on the market today. We will work to match your needs and budget, and provide the optimal, and most stable process analysis solution for your application.

CENTERS OF EXCELLENCE | PROVIDING PROVEN SOLUTIONS

Process Insights is committed to solving our customers' most complex analytical, process, and measurement challenges everyday.

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REVOLUTIONIZING MEASUREMENT

EVERYWHERE