

# Petroleum Refinery Reduces Repair Costs and Maintains Production Capacity through Oil Analysis

## RESULTS

- Ten times reduction in repair cost resulting from early detection
- Production capacity maintained for peak summer demand

## APPLICATION

Petroleum refinery producing gasoline, diesel, and petroleum coke for nitrogen fertilizer.

## CHALLENGE

US refineries are responding to volatility in the petroleum market and the resulting increased demand by looking for ways to maximize and guarantee production capacity. These forces combined with an increasing awareness of the consequences of particulate contamination and the benefits of early detection of machine wear led this petroleum refinery to look for ways to improve machinery health and safeguard production.



*“I’ve been pleased with the CSI 5200 and my supervisor was clearly impressed with the early saves. The plant manager knew about it almost before anyone else.”*

Refinery’s Oil Analyst

### SOLUTION

This refinery assigned the role of full-time oil analyst to an experienced machinist and purchased the CSI 5200 Machinery Health® Oil Analyzer. The CSI 5200 was chosen for its combination of particle counting and wear debris analysis capabilities. The refinery also used Emerson's PlantWeb® Services INSTALL to make sure they were using the technology to its full potential. Today the refinery program processes between 50-100 samples per month the CSI oil minilab. Diagnostics are viewed in AMS® Suite: Machinery Health Manager. AMS Machinery Manager prepares organized reports with the level of detail appropriate for the oil analyst.

Test results from the CSI 5200 were the first indication of incipient faults in two cooling tower gearboxes. There were two major benefits to this early detection. First, damage to the gearboxes was minimal. Had the fault been allowed to progress, repair charges could have approached ten times the cost actually paid by the refinery. More importantly, repairs were completed in time to maintain peak production capacity in the hydrogen process unit during the summer months — a time when gasoline prices and demand are traditionally at their peak.

This early success has been followed by expanded testing of oils such as R&O, turbine oils, and hydraulic fluids. The CSI 5200 is routinely used to measure the effectiveness of water removal and particulate filtration. As time permits, new oils in bulk storage are tested and there are plans to use Emerson's dilution procedure so that the refinery's polyglycols can be tested as well.

***“It was during the startup that we caught one of the gearboxes with wear metals in it and two weeks after I left, they caught another one. Those two saves paid for the technology in the first three weeks of use.”***

**Gerald Sellers**  
Emerson Asset Reliability Analyst

#### Emerson Process Management Asset Optimization Division

835 Innovation Drive  
Knoxville, TN 37932  
T (865) 675-2400  
F (865) 218-1401

[www.assetweb.com/mhm](http://www.assetweb.com/mhm)

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