

The Roxar Watercut Meter Enables Process Efficiency in a Large Refinery in Tianjin, China

Results

- Continuous real-time measurement and insight into crude analysis
- Unmatched sensitivity and long-term stability using Roxar™ Watercut Meter
- Increased profits due to optimized production and reduced corrosion damaged to equipment



Application

Monitoring and analyzing crude and water content to desalter together with the microwave resonance technology.

Customer

A large refinery in Tianjin, China.

Challenge

The refinery had limited crude tank storage available, and the purchased crude was transferred from the supplier's storage tank directly into the desalting unit by pipeline, which was the key challenge for this refinery. This setup had been problematic for decades. In the past there was no meter check at the site, which meant they could only rely on the supplier's metering data on the quantity and quality of the crude being transferred. There were times when this process cast doubt on what and how much was transferred.

A challenge in this business was the crude variability, and the fact that the refinery had to deal with a wide range of frequently changing crude compositions and water content, which are usually fundamental and critical parameters to monitor. Manual sampling methods have limitations. Other methods tested by the refinery were: other in-line measurement technologies such as capacitive, infrared and microwave absorption, with results that were not satisfactory in meeting their high accuracy and reliability performance requirements because of significant errors, unstable readings and unreliable measurements due to compensation issues.

Solution

Installing a mass and watercut metering system at the refinery site in Tianjin solved the customer's problem of being able to measure, monitor and analyze the crude variability to overcome the challenges described above. This metering system utilizes two top-notch technologies that are the key drivers in delivering the superior performance of the system; the Roxar Watercut Meter and the Micro Motion™ Coriolis Meter. One 20" full bore and In-Line Roxar Watercut Meter unit for high accuracy and sensitivity of water in oil measurement was the meter used in this case.

Being the first in Asia-Pacific to have this solution implemented successfully, we have high confidence and trust in the technology, expertise and experience that Emerson has in helping refineries to solve their problems.



Main component and setup of the Mass and Watercut Metering skid

Microwave resonance technology is one of the key technology differentiators for this success. The unique and patented technology from Roxar in the Watercut Meter is capable of measuring the permittivity of an oil/water mixture with an extremely high level of accuracy and sensitivity, which helped the customer achieve their desired goals. With the microwave resonance technology, Roxar Watercut Meters are able to achieve the highest accuracy in the market at +/- 0.05% (absolute for 0-1% water) for low cut and high cut measurement, and with a sensitivity of 0.005% (equates to 50ppm) which can detect small changes which is required for very low-cut measurement.

The customer saved millions of dollars in crude because of highly sensitive measurement. With the solutions Emerson provided, the refinery now has full visibility into the quality of incoming crudes, which improves reliability for their processes as well as reliability and integrity of their mechanical equipment.

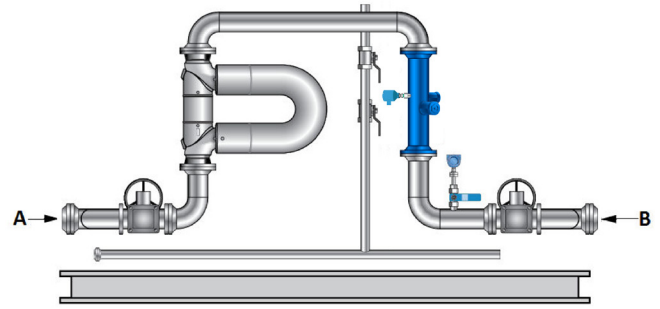
Resources

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Roxar Watercut Meter

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Roxar Watercut Meter and Micro Motion Coriolis Metering System installation schematics

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