



VORTEX TECHNOLOGY IMPROVES FLUIDIZED CATALYTIC CRACKER UNIT PROFITS AND PERFORMANCE

Customer

An oil refinery in North America

Application

- Fluidized Catalytic Cracker Unit (FCCU)
- Hot oil purge line replacement

Challenge

This oil refinery had been experiencing plugged impulse lines with very hot and viscous black slurry oil with catalyst fines in their DP orifice plates at the fractionator bottoms. In order to prevent this plugging, a higher grade flushing oil is used to purge the impulse lines of any catalyst fines before they can cause plugging. Plugged impulse lines result in inaccurate measurement and loss of accurate measurements, creating inefficiencies and poor mass balances on the system. Plugged impulse lines also result in increased maintenance costs due to the time and effort required to clear the impulse lines and bring the system back online.

In addition, the origin of the purge oil may change several times throughout the year, resulting in changes in specific gravity depending on the grade of fluid used in the purge process. These changes in specific gravity can also cause significant errors in the material balance of the process.

Results

- Saved maintenance cost of \$245,280 annually
- Increased process uptime with fewer shutdowns
- Eliminated harmful emissions with all-welded design
- Improved measurement reliability material balance to within 1%



Image 1. Installed Rosemount 8800 Vortex Flow Meter

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Solution

This particular refinery installed a Rosemount™ 8800 Vortex Flow meter to measure the fractionator bottoms, and two Vortex Flow meters on the reflux pumparound circuit. The higher temperature capability of the Rosemount Vortex Flow meter combined with the non-clog design eliminated the need for the flush oil purge process typically used to prevent plugging of impulse lines, with yearly flush oil cost savings of \$245,280 (.04 gal / min / impulse line flush oil flowrate).

In addition, the customer was able to bring the material balance within 1% on a 90,000 bbl/day FCCU, giving them the ability to control the process more tightly, resulting in higher product yields and reduced raw material costs.

An additional benefit of using the Rosemount 8800 were decreased unscheduled shutdowns as the process no longer needed to be shutdown to deal with plugged impulse piping. The Rosemount 8800 Vortex Flow meter has also reduced the fugitive emissions potential with the all-welded design.

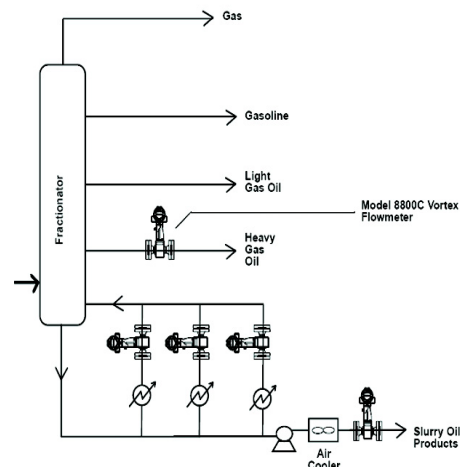


Figure 1. General diagram of fractionator for separation of hydrocarbons

For more information, visit
[Emerson.com/Vortex](https://www.emerson.com/Vortex)

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