

## Nexus Assists with HDN Recycle Compressor Improvements at Major U.S. Refinery



High-Pressure Separator

Our client, a major global petroleum producer, sells 50 million gallons of fuel to more than 7,200 retail locations across the U.S. This midwest refinery can process up to 160,000 barrels of crude oil each day. Since 2016, the refinery has completed its largest maintenance turnaround in 40 years, along with the largest

facility building project in its entire history. Both have helped the refinery improve safety and become more efficient in its use of energy.

### challenge

The objective of the project was to replace the aging and inefficient HDN Recycle Compressor with the least amount of deconstruction to its existing location. The compressor was located in a very tight and limiting area behind structural elements and operating pipes and tubing. With narrow openings and obstructive elements, the engineers at Nexus were challenged with replacing a very large piece of equipment into a very small footprint in the current Isocracker HPS area.

### solution

Through experienced project management capability, design, and construction build consulting, the Nexus engineering team assigned to this project was able to replace the High Pressure Separator (HPS) in a limited space based on a new horizontal position rather than vertical. Nexus engineers utilized state-of-the-art CAD animations to convince the client this could be done successfully and cost-effectively. In addition, three custom forgings were fabricated, instead of utilizing a rolled plate shell body, to create the new drum shell which resulted in a more robust design.

### results

Working with the client, Nexus saved the refinery more than \$100,000 utilizing its experienced staff, latest software, local presence, and domestic suppliers. The plant is on schedule to be more productive though results in initial testing and startup.

### client name

Major Petroleum Refinery

### location

Midwest US

### services

- Design Engineering
- Project Management
- Procurement Services

### specifications

- HPS (High Pressure Separator)  
Design: 1,995 PSIG @ 250°F
  - 6" thick walls
  - 10'-6" ID x 30' T/T
  - Stainless Steel Separation Internals
- ASME Section VIII Div. 2
  - Professional Engineer Stamp Required
- Carbon Steel Substrate with 347 Stainless Steel Separation Internals

### results

Seamless execution, cost savings, time savings, and local support with domestic suppliers.

### customer quote

*"Nexus was able to help solve our problem and save us money utilizing their local engineers and refinery expertise."*

*-Refinery Plant Manager*