



**CASE HISTORY**

**Online heat exchangers gain improved performance and recover \$60,000 in lost production per day for a US refinery through utilizing FQE® Solvent-H+**



**Results Achieved**

Increased crude input by 15,000 bbls/day

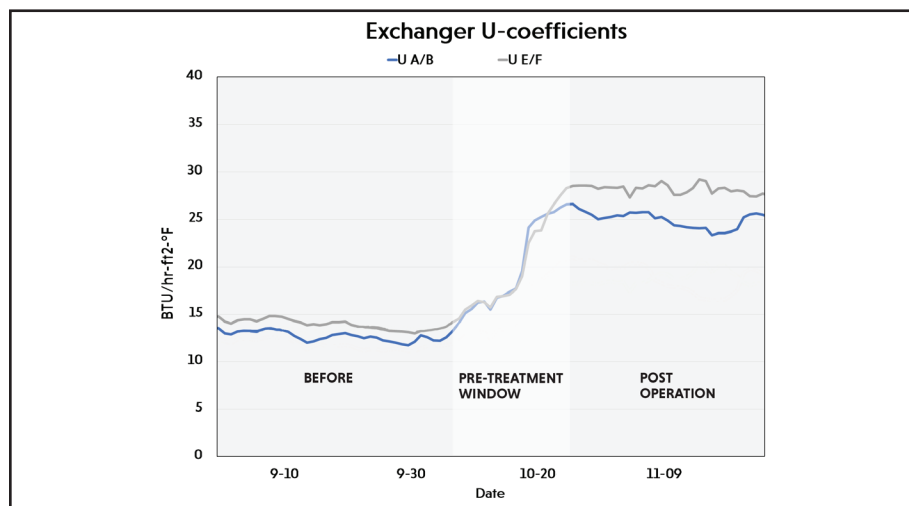
Recover \$60,000 in lost production per day

Zero downtime in application

**Chemicals Utilized**

**FQE Solvent-H+**  
PATENTED

During a fall outage, a large refinery in the western United States sought out a solution to remove asphaltene fouling and improve the performance of eight online heat exchangers in their crude unit pre-heat train.



The graph above (provided by the client) shows the effectiveness of FQE Solvent-H+ at increasing the efficiency of the online crude unit heat exchangers.

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To dissolve and disperse the heavy hydrocarbons and asphaltenes responsible for efficiency reductions, an online treatment program utilizing FQE Solvent-H+ was applied.

Optimizing the surface interactions of the chemical required adequate surface contact time to ensure an effective treatment. The online high-intensity chemical injection program was completed over 48-hours, with operating temperatures ranging from 400°F (204°C) to a maximum of 700°F (371°C).

Following the online high-intensity treatment injection in late September, the u-coefficients of each exchanger witnessed increases of up to 120% over the following 30 days. These values leveled off over the next 30 days. Though post-injection u-coefficients typically remained at least 50% higher than the pre-injection values.

Following the online high-intensity application process, the client was able to confirm several key benefits:

**1. Increased System Flow:** The client was able to increase crude input by 15,000 bbls/day.

**2. Millions of Dollars in Recovered Revenue:** Due to the increased efficiency and flow and conservatively estimating a \$40/bbl market price, the client was able to recover \$60,000 in additional revenue per day. Which equates to over \$18 million in an average month.

**3. Ease of Application and Reliability:** FQE Solvent-H+ created no solid by-products as the organic solids remain liquefied, unable to precipitate from the mixture as latent solids. Any potential scaling or blockage issues tied to solids were avoided. As a result, the client was able to improve the reliable operation of the refinery, without shutting down, while effectively addressing their fouling concerns.

As a result of the successful online high-intensity treatment to remove the built-up asphaltene deposits in our client's facility, we have increased equipment efficiency and production volumes, lowered operating costs and increased reliability through the ease of application.

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