



ExoSTM
Sulfur Extraction
Technology

Minimize Octane Loss In FCC Naptha Hydrotreating

Refiners meeting the 10 ppmw total sulfur limit in their gasoline blending pool are finding olefin saturation and octane destruction an expensive byproduct of the process. Our exclusive ExoS technology solves the problem. Generating an olefin-rich C6-C7 raffinate with less than 10 ppm Sulfur that bypasses the hydrotreater, ExoS is the environmentally friendly, low-waste generating method for meeting clean-fuel sulfur limits.



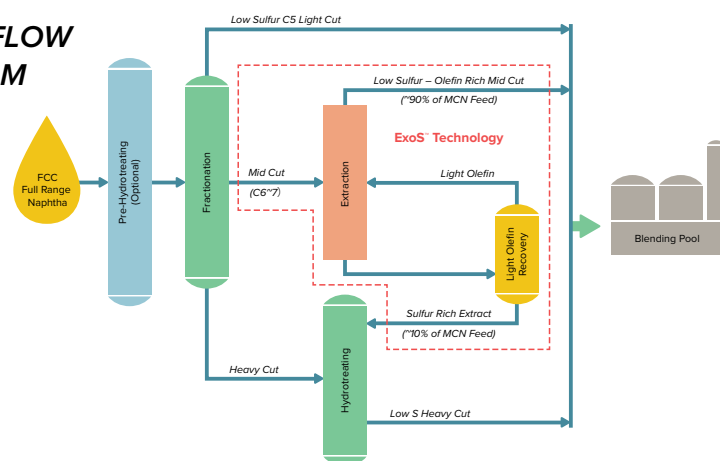
Benefits

- Reduced total FCC naphtha pool octane loss of <1 vs 2-4+ for conventional hydrotreating
- Decreased hydrotreater feed flow by up to 40% and H2 consumption by up to 50%
- Reduced size, CAPEX and OPEX of the hydrotreater
- Elimination or reduction of light FCC naphtha treatment (unit can accept C5s also)
- Ability to use the low-sulfur, olefin-rich raffinate stream directly in the gasoline blending pool or as feed to other processes
- Reduced energy consumption compared to the competitors' extractive distillation process due to our multi-step liquid/liquid extraction and distillation process

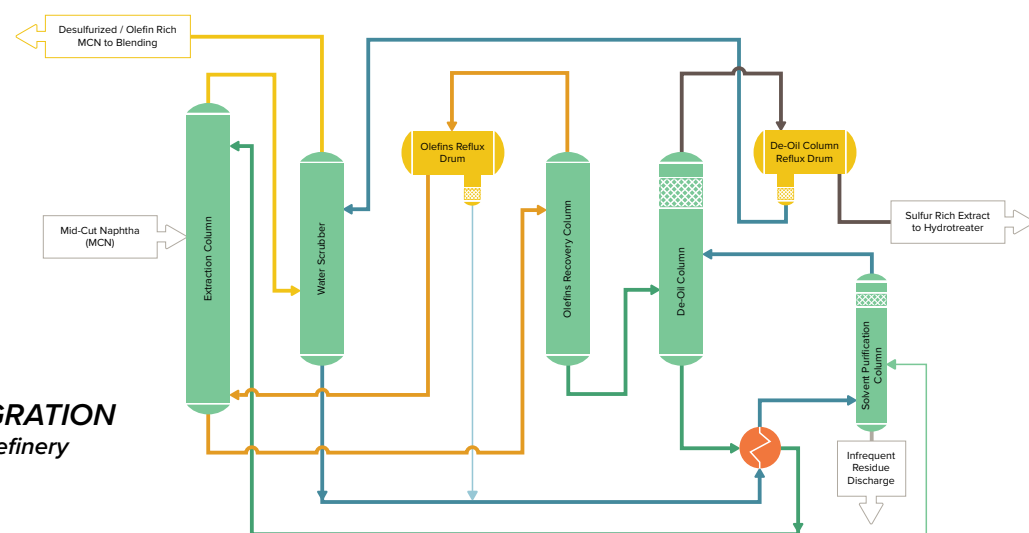
How It Works

ExoS segregates olefin-rich material from the FCC naphtha hydrotreater feed and sends it to a proprietary solvent-based extraction process. This process utilizes a proprietary solvent blend and customized fixed-tower internals to maximize extraction efficiency of sulfur species from the high-vapor pressure mid-cut naphtha, generating an olefin-rich raffinate that meets the Tier III sulfur mandate. The raffinate stream can be sent directly to the blending pool, and a sulfur-rich, olefin-lean extract that can be sent on to the naphtha hydrotreater, dramatically decreasing olefin saturation and minimizing octane loss.

EXOS PROCESS FLOW DIAGRAM



EXOS INTEGRATION with Your Refinery



ExoS, At-A-Glance

- Exclusive sulfur extraction technology for mid-cut FCC naphtha
- Proven in multiple successful field installations
- No specialized equipment or hydrogen required
- Generates an olefin-rich C6-C7 raffinate with less than 10 ppm Sulfur that bypasses the hydrotreater
- Can be installed with a new hydrotreater to reduce the size, CAPEX and OPEX of the hydrotreater
- Can be installed as a revamp to save octane and free up hydrotreater capacity

About Koch Technology Solutions (KTS)

KTS collaborates with industry leaders to license innovative technologies for refinery optimization and natural gas liquids processing. Leveraging the expertise of Koch Engineered Solutions companies such as Koch-Glitsch, Koch Projects Solutions, Optimized Process Designs and others, we offer our licensees project execution options ranging from Process Design Packages and Services to LSTK.

For more information, visit kochtechsolutions.com.