UOP OFFERINGS FOR ETHYLENE PLANTS

Process equipment, technology and adsorbents for enhancing ethylene plant profitability

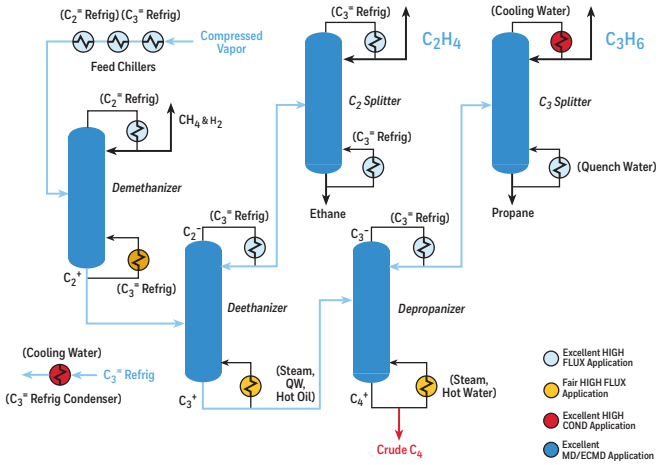
Optimize capital and operating costs, remove potentially damaging contaminants and recover valuable by-products using UOP process technology.



TUBES AND TRAYS

UOP offers its High Flux™ tubes and MD™ (Multiple Downcomer) trays to achieve lower capital and operating costs in a steam cracker. Figure 1 shows the applications of UOP process equipment.

Figure 1 - Condensing Performance



UOP MD trays, ECMD™ trays and High Flux tubing have been used extensively in ethylene plants to:

- Reduce CAPEX by 15-30% by reducing equipment size
- Lower utility use by 20-30%
- Reduce installation time by ~25%

Figure 2 - MD/ECMD Tray Experience

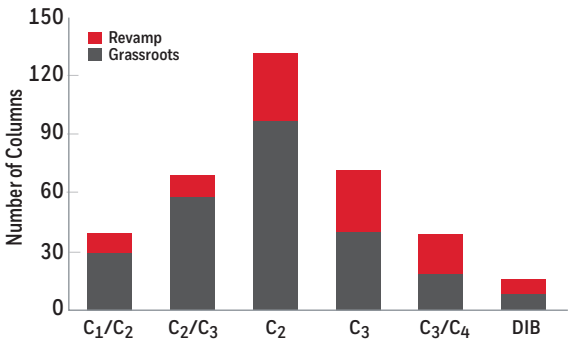
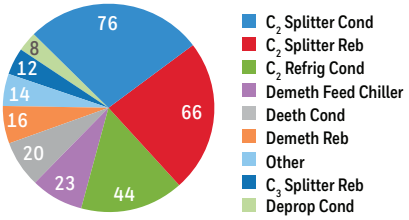


Figure 3 - High Flux Tube Experience



PRODUCTS

UOP also offers a wide range of adsorbents for dehydration and contaminant removal in ethylene and polymer plants. plants for both vapor and liquid phase streams.

UOP Molsiv™ Adsorbents – Dehydration and removal of ammonia, mercury, and polar contaminants

Hybrid Aluminas – Removes a broad range of contaminants

Metal Oxides/Sulfides – Capture mercury, arsine, oxygen and sulfur compounds using our non-regenerative GB products

Promoted Aluminas – Best for carbon dioxide, hydrogen sulfide and carbonyl sulfide removal

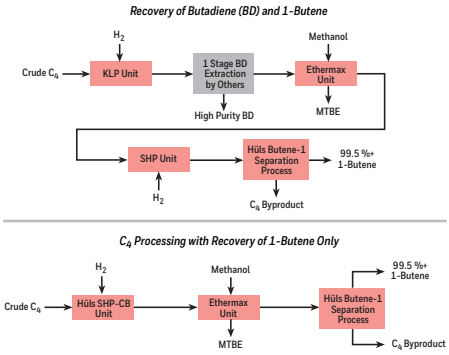
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DOWNSTREAM PROCESSING

UOP offers process technology for purifying and recovering valuable C_4 products as well as ethylene and propylene. Crude C_4 can be refined to produce high purity butadiene (BD) and high purity butene-1 using a combination of processes, all of which are licensed by UOP except for the single stage extraction:

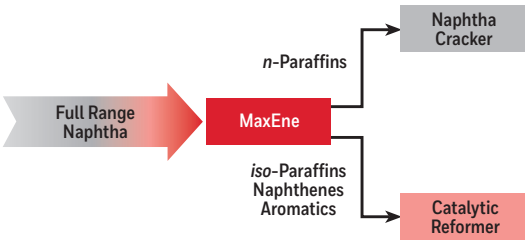
- UOP KLP™ process
- UOP Ethermax™ process (MTBE)
- Hüls Selective Hydrogenation and B-1 recovery processes

Figure 4 - UOP Solutions for Crude C_4 Processing



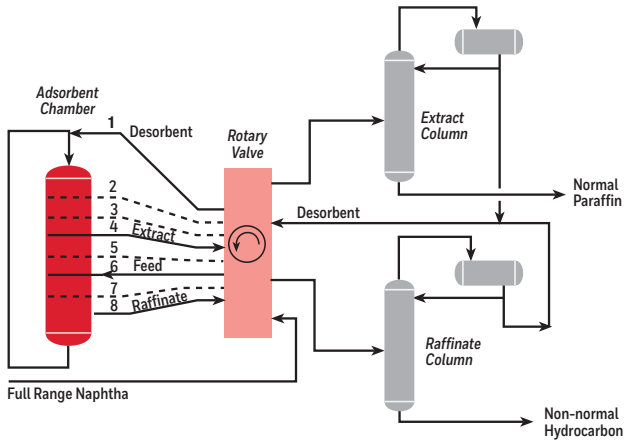
FEED OPTIMIZATION

The UOP MaxEne™ process is designed to integrate a refinery and a petrochemical complex by separating n-paraffins from straight run naphtha (SRN). The n-paraffins are sent as feed to a naphtha cracker, increasing ethylene yield by 30% or more, compared with SRN, while maintaining propylene yield. The remaining SRN is fed to a catalytic reformer. The optimized reformer feed results in a yield increase of up to 5% in octane barrels compared with conventional feed.



The MaxEne process is based on the well proven UOP Sorbex™ technology. The first MaxEne commercial unit came onstream at the end of 2012.

Figure 6 - Sorbex Applications - MaxEne Technology



Adsorptive separation

- The adsorbent has greater affinity for *n*-paraffins

Simulates a moving bed

- The process influent and effluent points move, but the actual mechanical connections do not
- The solid adsorbent is in fixed, non-moving beds
- The liquid feed flows countercurrently relative to the simulted movement of the solid

For more information
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