

PROCESS DESCRIPTION:

CRITERION*
FCC Pretreat, VGO Mild Hydrocracking (MHC)

The objectives of FCC Pretreat, VGO Mild Hydrocracking (MHC) are the following:

1. Reduction of the feed sulphur to meet cat cracker SO_x emissions and reduce the sulphur content of cat cracker gasoline and cycle oils.
2. Reduction of the feed nitrogen and saturation of the polynuclear aromatics to improve cat cracker yields.
3. Reduction of metals and Conradson carbon residue (CCR) of the feed. Metals removal from cat cracker feed would result in significant reduction in cat cracker catalyst consumption.

The feedstock is generally vacuum gas oil and coker gas oils. Atmospheric tower bottoms or deasphalted oil are sometimes mixed with the feed in proportions of up to 30%V. Typical operating conditions are:

H₂ partial pressure = 42-103 bar (600-1500 psi)
LHSV = 0.5-2 v/v/h
H₂/oil rate = 200-500 Nm³/m³ (1200-3000 SCF/bbl)

The optimum catalyst for the CFH/Gas Oil Hydrotreating Unit depends on feed properties/origin, unit operating conditions and product targets. CRITERION offers a number of catalysts and catalyst systems with high activity and stable performance during the life cycle.

For feedstocks with metals (Ni+V) content exceeding 3 ppmw, a top layer of high activity demetallisation catalyst is recommended. The demetallisation catalyst reduces metals slip to the more active and less metal tolerance catalyst loaded in the rest of the reactor and reduces metals in cat cracker feed. The rest of the reactor can be loaded with either a NiMo promoted catalyst for maximum HDN and polynuclear aromatic saturation or a CoMo promoted catalyst for maximum HDS.

CRITERION offers a patented stacked bed system comprising all NiMo catalysts or NiMo on CoMo catalysts in order to optimise catalyst activity and stability. The all NiMo stacked system offers maximum N reduction and polynuclear aromatic saturation with good HDS activity. The NiMo on CoMo stacked system exhibits higher HDS activity but somewhat lower HDN and aromatic saturation activity than the all NiMo stacked system. A stacked bed system is recommended for low pressure units to maximise catalyst cycle life.

ADDITIONAL INFORMATION

All catalyst information supplied by CRITERION is considered accurate but is furnished with the express understanding that the customer receiving such information shall make its own assessments to determine suitability of such information for customer's particular purpose. All purchases of catalyst from CRITERION are subject to CRITERION's standard terms and conditions of sale (including CRITERION's product warranties) set forth in a sales proposal, sales contract, order acknowledgement, and/or bill of lading.

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