Question 19: What range of sulfur targets for hydrotreated FCC gasoline do you anticipate for Tier 3 operation?

JEFF BRAY (Honeywell UOP)

The sulfur target for hydrotreated FCC gasoline is very site dependent. But where possible, it is desirable to hydrotreat all other gasoline streams fully so that the FCC naphtha can be treated as mildly as possible. Deeper desulfurization for FCC naphtha results in increased olefin saturation with the resultant octane loss. Since the other gasoline streams can be hydrotreated without this reduction in stream value, hydrotreating of FCC naphtha should be done to the lowest level possible.

Within the structure of the Tier 3 rules, the flexibility to manage the yearly average sulfur provides some flexibility for operating the FCC hydrotreating at a constant degree of desulfurization needed to drive the yearly average to 10 ppm while also ensuring that the batch limit of 80 ppm is met. In practicality, it is probably better to target a sulfur level, as long as the conditions required to achieve that do not become too severe. Target levels will vary depending on the amount of FCC naphtha in gasoline and the sulfur levels of other blend streams, but these sulfur levels are expected to be in the range of 15to 35 pp.

The reduction of the sulfur target can require different strategies for the hydrotreating of the FCC streams. Many sites separate the lighter, higher olefin FCC gasoline from the heavier, more aromatic cut. The heavier cut goes through a more intensive hydrotreating, while the lighter stream is either blended or processed with technologies like extractive Merox™ treating to avoid olefin saturation. This treatment may not be sufficient to meet Tier 3specifications in all cases. If not, further processing of the light material will be required, resulting in more olefin saturation. This saturation, in turn, may drive the need for higher octane generation in other gasoline streamsto replace the octane loss from FCC naphtha hydrotreating.

Tags

Aromatics

Catalysts

Naphtha Hydrotreating

Octane

Operations

Reforming

Tier III

Year

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