Lynx® Technology for Advanced PP Performance

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Abstract:

Engelhard's highly successful Lynx catalyst system technology for advanced polypropylene performance will be explained drawing upon specific examples of technical success in process and product superiority in both catalyst and donor technology. The crucial role of polymer science will be highlighted as we take a look at future direction and the fundamental role that catalyst and donor technology will play in the development of advanced PP capabilities. Specific example will be made of superior BOPP film development utilizing Lynx technology.

Ultra Deep Desulfurization of Diesel: How an Understanding of the Underlying Kinetics Can Reduce Investment Costs

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The refining industry needs to meet new, more stringent specifications for diesel fuel whilst producing more diesel product from lower quality feedstocks. The combination of these factors places a heavy burden on the refiner’s hydprocessing capabilities. New hydrotreating capacity and revamp of existing facilities will be needed to meet the future diesel specifications. The present emphasis is on the reduction of sulfur, but future requirements may include improvement of cetane number, reduction in polyaromatic content and reduction in density.

Each refiner needs to decide whether to revamp an existing unit to make ULSD or whether to build a new grassroots unit. A revamp requires lower investment but gives less flexibility towards possible changes in feedstock and required product properties.
To help the refiner make the most cost-effective decision, a thorough understanding of the kinetics for removal of the most refractive sulfur compounds is needed.

The kinetics of deep desulfurization is governed by the extent to which desulfurization occurs by direct sulfur extraction, or by prehydrogenation. The direct route is primarily inhibited by hydrogen sulfide and the prehydrogenation route by certain nitrogen-containing compounds. In this paper, we outline recent work that elucidates the effect of inhibitors on CoMo and NiMo-P catalysts. A method has been devised to remove and classify the nitrogen compounds present in diesels. Tests are described in which the effect of various classes of nitrogen compounds on the removal of the most refractive sulfur compounds are studied, giving insight into the inhibitory effects of the compounds, and into the differences between the two types of catalyst. It is demonstrated that the inhibition due to specific basic nitrogen compounds has a profound effect on HDS activity and the conversion of non-basic nitrogen compounds.

This knowledge may be used in the selection of the most suitable catalyst for a given service. A number of case studies are presented that illustrate how catalyst choice affects the required investment. The case studies also serve to illustrate what other changes in key product properties can be achieved.