

**Abstract Title: Pilot Plant Study for Hydrocracker Catalyst Selection**

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Historically in KNPC Hydrocracker catalyst was procured based on competitive bidding. The selection of successful bid was based on catalyst manufacturer's predicted yield and catalyst life estimate. However, this approach has certain limitations. Often, operating companies face surprises and constraints with selected catalysts not meeting assured performances. There could be a huge financial risk to the companies if new catalysts are not delivering expected conversion and selectivity. It will be not be an easy process and too late to rectify the situation. Hence, KNPC decided to test all shortlisted catalysts in independent third-party pilot plant testing facilities under similar process environment.

Hydrocracking catalyst shall be balanced in attributes like activity, selectivity and minimize over cracking. Third party pilot plant evaluation for all catalyst systems brings clarity to catalyst deactivation profile. Some catalysts can be very active in SOR and deactivate faster leading to a loss in product yields prematurely. Pilot plant testing avoids companies to become a trial ground for new catalysts. It will help in analyzing the effect of changes in feedstock qualities. Prior information on catalyst selectivity through pilot plant testing will improve the short and long-term planning of the companies. Pilot plant test results will make Catalyst evaluation an easy and objective process with minimal uncertainties.

Because of better selectivity of the winner catalyst, selected through pilot plant testing, mid-distillates production increased by ~5.5 %. This paper discusses in detail the pilot plant methodology, protocol, and actual commercial unit improved performance with the selected catalyst.