

Fixed and Ebullating Bed Resid Hydro-conversion

Reduced availability of light and sweet crudes and the consequential increase in cost of such feedstocks makes it more and more attractive for the refiner to take in heavier and more sour feeds. At the same time the market for fuel oils is diminishing and the sulphur specifications for lighter product fuels is tightening. We feel these trends will only continue in the years coming, and it is clear that upgrading of the bottom of the barrel is not only a tough challenge, but will increasingly contribute to (or determine) the profitability of the refinery.

Criterion Catalysts & Technologies has demonstrated leadership in the development of catalyst systems for resid hydro-conversion processes. Dependent on the quality of the residual feed, the integration of the refinery and the specifications required for the products, there are different processes available and different catalytic solutions possible. Criterion has the right solution to optimize the performance of the operation whether the goal is to prepare high quality feed for the Fluid Catalyst Cracking Unit, to maximize the yield in transportation fuels or to upgrade bitumen into synthetic crude.

The main challenge in fixed bed residue hydroprocessing is to meet product specifications with a reasonable catalyst life. Meeting this challenge requires a catalyst system that will resist deactivation by metals and coke at severe operating conditions. The HDM (hydrodemetalization) catalysts offered by Criterion for the front end of a fixed bed resid unit have the unique combination of outstanding activities with extremely high metal capacities.

This combination yields the perfect protection against metal deactivation of the downstream transition and hydrodesulphurization catalysts. Our transition catalysts are designed to reduce the metals in the product further while having a higher desulphurization activity.

The desulphurization catalysts offered by Criterion combine a high hydrogenation activity with high stability when operated at the severe conditions (high temperature, low hydrogen partial pressure) in the outlet of the unit. The optimum combination of these catalysts depends on the needs and objectives of the refiner. Selection and design of the proposed system is based on Criterion's decades of commercial experience, pilot plant tests and state of the art simulation programs but can only be successful if done in close cooperation with the refiner.

Criterion's development program for ebullating bed catalysts, which started in the early days of the process development and consistently continued over the years, has resulted in a catalyst portfolio with outstanding performance.

Criterion's ebullating bed catalysts provide:

- High product stability (sediment control) at high pitch conversion
- Low required catalyst addition rate
- Improved stability during unit upsets
- High CCR removal activity.

Both for fixed bed as for ebullating bed applications, Criterion has state of the art catalysts available and is eager to cooperate to optimize the system to meet the changing needs and requirements of the individual refiner.

Important:

All information contained in this document is considered accurate at the time of the testing, based on the equipment, and specific conditions and other limitations during the testing process. It is being furnished upon the express condition that the user will make its own assessment to determine the accuracy and applicability for the user's particular purpose.

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