

**Abstract Title:** First Integrated Hydrocracker-DHT Unit in ME - Its Design, Challenges and Benefits

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Hydrocracking unit (HCR) is one of the most versatile and profitable units in a Refinery which converts heavier oil fractions from Vacuum Column or other secondary processing unit like Coker to valuable distillate products. Diesel Hydrotreating unit (DHT) is necessary for any Refinery to produce a low sulfur product to meet market requirements. Both these units have considerable capital expenditure. ORPIC has recently commissioned an integrated unit having both Hydrocracker and DHT sections within the same unit.

This unit is one of the few of its kind in the world and the first in the GCC, designed by Chevron Lummus Global (CLG, a Joint venture of Chevron and CB&I). The two-stage HCR and DHT share common recycle gas, fractionation, light ends recovery (LER), liquefied petroleum gas (LPG) treating, fuel gas treating, and make-up hydrogen sections.

The unit is designed to maximize Mid Distillates while processing straight run Vacuum Gas Oil from Vacuum Distillation (VDU) unit and Cracked feedstock from the Delayed Coker Unit (DCU). Hydrocracker operates at about 60 wt% conversion with unconverted oil feeding to downstream RFCC and overall Diesel product from the unit meets Euro V specifications.

This paper describes the benefits in the capital and operating cost with this design, challenges faced during the commissioning and initial operation of the unit and actions taken to mitigate them.

The unit completed a successful test run and is currently running smooth. Technical Support is provided by Advanced Refining Technologies (ART, a Joint venture of Chevron and Grace) to maximize the profitability of the unit with regular unit data reviews and other support.