PROJECT REPORT (PR-038)

RFCC UNIT – MAIN FRACTIONATOR REVAMP

Plant Location: Major Refinery in Asia

Project: Main Fractionator Revamp in RFCC Unit

Date of Revamp: 2001

PROJECT BACKGROUND AND OBJECTIVES

In the subject RFCC Unit, a mixture of hot products from the reaction section is fed into the Main Fractionator, which is designed to recover the heat and separate the mixture into several products. A typical column in this service is designed with 30 trays including 3 pumparound sections to recover heat. There are about 6-8 baffles in the bottom section to wash catalyst in the feed mixture.

Due to the expansion of the refinery, the RFCC Unit should be revamped to process additional residue from the Atmospheric Crude Column. The Plant would also like to simultaneously decrease the pressure drop of the Main Fractionator to ultimately increase the inlet pressure of the Wet Compressor.

The targeted objectives of the revamp of the Main Fractionator are:

1. To increase the handling capacity by 30%; and
2. To decrease total column pressure drop to less than 30 Kpa.

PERFORMANCE BEFORE AND AFTER REVAMP

Before Revamp:
The Main Fractionator (4600 mm ID) was originally equiped with (30) conventional valve trays and 8 baffle trays in the bottom section. The operating capacity before revamp was limited to approximately 0.8 Mton/year. The total pressure drop of the column was about 40Kpa.

After Revamp:
The Main Fractionator was revamped with a combination of ADV® Pinnacle Performance Trays and high efficiency structured packing. Two (2) beds of structured packing were designed to replace (8) trays between the gasoline and light diesel fractionation section. The remaining (22) conventional valve trays were replaced with ADV Trays on a one-to-one basis, while reusing the existing tray supports. The 8 baffle trays in the bottom section were determined to be adequate for the target performance and thus reused.

After revamp, the operating capacity of the Main Fractionator was increased to 1.3 Mton/year, or approximately 60% greater than before revamp and 25% higher than the original target capacity. Additionally, the total pressure drop of the column was successfully decreased to about 30Kpa.

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