PERFORMANCE EVALUATION OF CRUDE DISTILLATION UNIT’S FRACTIONATION COLUMN AT VARIOUS OVER CAPACITIES OPERATION WITH HYSYS SIMULATION

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ABSTRACT

One solution which probably overcomes the demand of fuel nowadays without building any new plant is optimalizing the existing plants by increasing the production capacity which is processing more feed. In a refinery industry, the objection of Crude Distillation Unit (CDU) is to process the crude oil and separate it into its mass fractions such as gas, Straight Run Top, naphta, Light Kerosene Distillate (LKD), Light Cold Test (LCT) and residue.

There are 4 fractionation columns at crude distillation unit. All of them operates at atmospheric temperature using valve tray type. This unit normally operates at feed capacity of 1700 ton/day. However, if the crude distillation unit will be operated above the normal capacity, there has to be further study and simulation before it could be applied in real condition, which is performance evaluation of the utilities attached in the unit and also the quality evaluation of each products.

Based on the simulation that has been done and the simulation’s data results, according to the flooding percentage from each column, it’s still possible to increase the feed capacity until 120%. The qualities of the products (from True Boiling Point and cold properties) were also showing that no extreme difference from the plant test. Therefore, crude distillation unit which has been simulated is still performing nicely both at 110% and 120% capacities.

Key words: Simulation, CDU, fractionation column, TBP, cold properties, flooding.