

Energy integration of crude distillation unit

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This Project thoroughly discusses the revamping of an existing crude distillation unit. The main aim of is to increase the capacity of the existing unit whilst keeping the energy consumption to a minimum so that the furnace isn't bottlenecked. This was mainly done by optimizing and adjusting the network of heat exchangers to reach a higher level of energy integration using pinch analysis in this revamping process. The work was reinforced by powerful simulation software Aspen HYSYS, Aspen Energy Analyzer and Aspen Exchanger Design and Rating.

Objectives of retrofit projects in refineries include reducing energy consumption and increasing production capacity, in order to increase profit. The retrofit targets are preferably achieved by re-using the existing equipment more efficiently rather than installing new units and incurring greater capital investment

Main Project Outputs

1. Increasing the capacity from 130,000 bbl/day up to 150,000 bbl/day without facing diameter bottleneck or hydraulic constrains.
2. The aid of installing pre-flash before the furnace helped both increasing the capacity and decreasing energy consumption
3. The strong connection between the distillation column and the heat exchanger network
4. Pinch Technology was the best tool for energy optimization and getting closer to reaching the target heating and cooling values and decreasing the need for external utilities

Biography:

Menna Samir is graduated from faculty of engineering, Cairo University, Petroleum and petrochemicals department class 2016. Menna Samir cumulative GPA is 3.35. She is proud to work with Dr. Mamdouh Gadalla in that project. She have learned much from him and from my colleagues. She would be very pleased to have been given the opportunity to attend the conference.