

CASE STUDY

Unit-A Background

- In 2024 due to higher margins on alkylate, the customer wished to run at higher capacity but needed support from UOP to understand the how high can they go without adversely impacting the unit
- A 5-day high-capacity test run was planned in stages to achieve a higher throughput and understand the process limitations
- The other goal was to set limits to process KPI's at high-capacity operation

Results

- The test run resulted in a 19% increase in the alkylate yield which for a 10T/hr unit amounts to about **\$11.2 MM/yr*** of increased value generated. Further increase in feed was not done due to the several observed process limitations, even though the I/O was within the 'UOP safe limit'. Iso-stripper was not a constraint
- Foresighted I/O as limiting at higher throughput, but the acid settler turned out to be the constraint

- UOP determined the acid settler as the main constraint for increasing throughput. The A/H ratio dropped significantly due to the hydrocarbon carry under in the settler
- A combination of high oxygenates (DME) and decreased residence time was identified as the reason for improper phase separation between acid and Hydrocarbon in the settler
- The other constraint was the increased frequency of manually draining the regenerator bottoms due to increased throughput and the required higher drawing of acid for oxygenate removal. UOP proposed was upgrading to an ASO washer system which is a continuous operation
- Client had set the I/O as an artificially created constraint that reduced their ability to increase throughput
- Lack of frequent acid strength monitoring was a concern raised especially operating at a higher throughput ,an online analyzer was recommended by UOP

*Assuming \$750/MT of alkylate (2024) and 90% operational period

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