



Integrated Refinery and Aromatic Complex Increases Revenue By 5% Yearly

Digital twin identifies profit improvement opportunities with quick payback

Key Benefits

- Increased yearly revenue by 5%
- Identified improvements that provided additional 48 and 20 cents per barrel

Background

- Integrated refinery and aromatic complex in India
- Processing capacity of 15 million metric tons
- Looking for project improvement programs with quick wins

KBC Solution and Results

- Petro-SIM digital twin
- Flow sheet of entire complex
- Profit improvement study

Client Challenge

An integrated refinery and aromatic complex in southern India has a processing capacity of 15 million metric tons per year. The refinery predominantly processes imported crudes with a mix of low sulfur crudes.

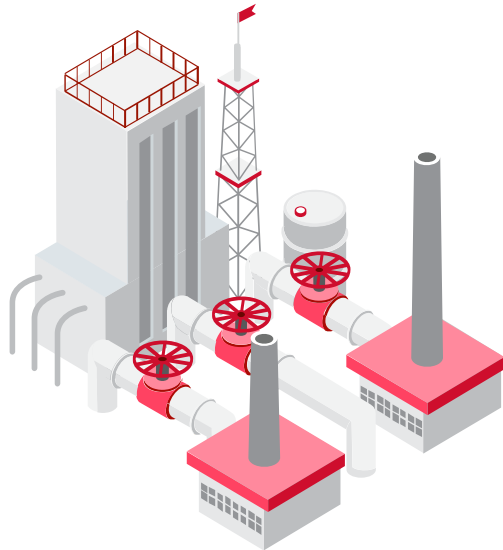
They had previously worked with a consulting organization for profit improvement recommendations with disappointing results. The projects the consultants suggested would take too long to implement before realizing any benefits.

Another concern was that the continuous dynamic nature of the refining business could dilute any benefits they received. The operator wanted solutions that did not require any CAPEX investment and were quick wins with immediate benefits.

So, they sent out another tender. Although there was tough competition, the operator chose KBC to recommend and implement a Profit Improvement Program (PIP) for them. The KBC flow sheeting methodology which builds a representation of a refinery within our Petro-SIM® process simulation software impressed them.

The Solution

The scope of work included flow sheeting of the entire complex and delivering the final study within a deadline of five months.



The project team consisted of consultants with field expertise and simulation technology knowledge. This was key to implementing the solutions and completing the project on time. KBC undertook a detailed screening of opportunities, focusing on PIPs that were practical to implement and would have a quick return.

Using Petro-SIM simulation software, KBC created a digital twin of the complex which was used to evaluate various case scenarios. For example, the team

used the flow sheet to convince the operator to swap the naphtha streams between the refinery and aromatics complex. This resulted in a boost of 12 cents per barrel to margins.

This combined with other profit improvement solutions KBC identified and implemented, the operator saw an immediate increase of 48 cents per barrel.

In addition, KBC consultants recommended modifications and changes to unit operation philosophy.

Results

KBC exceeded the customers' expectations. The team completed a PIP study for the refinery that focused on improving their operations that provided immediate pay back. By implementing the identified improvements, the operator saw an increase of 48 cents per barrel.

An additional profit improvement opportunity that KBC identified would add another 20 cents per barrel and was an action that the client could implement themselves. Altogether, these savings increased the operator's revenue to about 5% yearly.

The operator was impressed by the unique combination of consultants with both field expertise and simulation technology knowledge. They were looking for a consulting team that was equally strong in technical refinery functioning. We did not disappoint them.



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