



South American Refinery Recoups Projected Costs Before Project Completion

Turnaround program guides a refinery to move towards operational excellence

Key Benefits

- USD 250 million/year potential savings
- USD 160 million savings received

Background

- South American NOC refinery
- Required total transformation

KBC Solution & Results

Petro-SIM Digital Twin

- Evaluate process improvements
- Operator training

Process Improvement

- Developed over 15 work processes and 1,800 procedures
- 20 million incident free man hours

Workforce Capability

- Over 5,300 training hours and 2,900 coaching hours
- Trained 150 newly hired engineers

Client Challenge

A large South American national oil company refinery facility was suffering production losses, difficulty meeting local gasoline demand, and rising imports of foreign products. This was due in part to decreased refinery safety, reliability, and operational capabilities. The refinery needed a complete transformation.

The operator approached KBC for help in guiding them through this major turnaround project to modernize their facility and implement industry best practices.

The Solution

Using a holistic approach, KBC consultants prepared a road map. The solution consisted of five major focus areas: profit improvement, workforce capability, business process improvement, organizational restructuring, and change management and communications.

Profit Improvement focused on identifying process optimization opportunities that required little or no capital expenditures. KBC went beyond the traditional process evaluation and initiated a safety and reliability improvement program to ensure continuity and reliable operations.

More than USD 250 million/year in potential economic improvements were identified by KBC Consultants. They used Petro-SIM® software to build a digital twin of the refinery. This made it possible to evaluate the overall impact of proposed process improvements. The digital



twin also allowed the local process engineers to get acquainted with optimizing the unit's operation and driving profit improvement activities.

Workforce Capability focused on training activities. The requirements were diverse and included technical and operational training, coaching, refinery/market economics, Petro-SIM software, and maintenance. KBC also trained a group of 150 new engineers to provide long-term workforce capabilities and ensure knowledge transfer from a mature employee population.

For the Business Process Improvement area, KBC deployed a multidisciplinary team to develop Best Practices for work processes, associated tools, and procedures for the refinery. This

also included the implementation strategy for all the deliverables produced by this team.

The Organizational Restructuring work stream merged the industry's best practices with cultural and local aspects to design a functional organization that would operate a production-centered business with safety as its number one priority.

To ease transition, a team of communications and change management experts aligned employees with the business vision. They worked with the project teams and refinery management to engage employees and highlight project achievements.

Results

In less than four years and before project completion, the refinery received a complete return on the investment on the projected project cost. The economic results were measured strictly in the area of profit improvement.

The benefits of a strengthened technological infrastructure, the employee training program, and a new organizational structure with processes and procedures in place will provide long-term sustainable benefits for the local oil industry.

By implementing a selection of the opportunities identified in the profit improvement program, the refinery obtained more than USD 160 million in savings. As the employees started implementing more opportunities, the rate of accumulation in USD/year continued to increase.

Employees created a strong safety culture. The refinery started a planned turn around that included revamping the FCC Unit. With KBC's support the project was completed on time with a track record of 20 million incident-free man hours.

More than 15 work process and 1,800 procedures were developed. These work processes and procedures have increased the refinery profitability, safety, and consistency across the different areas.

Availability of the process units has increased substantially due to improvements in equipment reliability and reduction of unplanned shutdowns. For example, the crude unit throughput increased from 80% to 100% of design.

The results show the commitment of the refinery to steadily move towards Operational Excellence to meet the current and future challenges of the industry and country fuel demands.



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