

The refinery wanted to investigate the feasibility of increasing profits by extending the time between turnarounds for a Fluid Cat Cracker from every 3 years to 4 years.



BENEFITS

Following ProAIM's work, the results were implemented and annualized average profitability of the refinery was increased by \$2.5M USD per year, the annual maintenance costs was reduced by 17% per year for the FCC, and the proposed plans for retrofits to increase availability justified a shorter ROI than expected by one year.

OBJECTIVES

- ▲ Study the feasibility & risks of extending the turnaround by one year, in terms of the reliability and availability of the static and rotating equipment
- ▲ Review the current and planned maintenance schedule to ensure the plant could run for four years between shutdowns
- ▲ Review the planned retrofits, in terms of the economic impact on the availability of the process
- ▲ Create KPIs for assessing ongoing RAM performance
- ▲ Create a failure data bank specific for the FCC unit
- ▲ Optimize the spare parts inventory to ensure asset availability and utilization

METHODOLOGY

The first step in the project was to identify all the critical equipment that would affect the FCC's availability. 300 individual items were reviewed, from which 78 static and 50 rotating pieces of equipment were identified as critical to the processes availability.

Following this, all of the historical maintenance records for this equipment were collected from the DCS

historian and the CMMS. This data was then screened and regressed to quantify failure modes to enable future performance to be predicted.

Using RAM-int, this information was then used to create simulation models to enable the proposed maintenance strategies to be evaluated, in terms of reliability, availability, and costs. The simulations included many of the key operational conditions to simulate reliability performance. These models also enabled ProAIM to economically assess the impact of various maintenance strategies to assess their costs and the effect on reliability.

Numerous process retrofit options were independently assessed to quantify the economics and the impact on process availability. Finally, the spare parts for the critical equipment were optimized to eliminate unplanned shutdowns due to a lack of spare parts.

ABOUT PROAIM

A reliability-engineering consultancy company based in the UK, with operations across the globe.

Providing specialist bespoke consultancy with integrated RAM technology and training solutions in the area of reliability and maintenance engineering.

We enable our clients in asset-centric process industries to achieve the safety, production output and costs targets for their business.

ProAIM is one of the leading companies able to quantify the true life-cycle costs from design to decommissioning by combining RAM and Process Synthesis with ProAIM's patented RAM-int.

