Sustainability of mature process plant

Intelligence, experience and a methodical approach increase the safe working life of a process plant.

This facility was one where positive, world-class management of age-related deterioration was required.

The company needed a view on whether the plant would be able to run for the next 20 years, and what the necessary investment would be. Modifications had been made to the plant, including an increased production rate following a number of revamp projects. New equipment had been added, but most of the plant, including the main process trains, was as originally supplied.

Even in this environment of a well-run and maintained plant, the deterioration of particular equipment items continued through age and corrosion. Increasing production demands resulted in the possibility that other items could have been operating outside their design capability.

“I am very pleased with this study because it has given us exactly what we wanted. All too often when using consultants you get something you don’t want.”

Senior Manager, A.B.F

Solution

Working in alliance with Johnson Matthey, we:

- Carried out an Asset Lifetime Study (ALS) which combined a thorough understanding of the manufacturing process and technical knowledge and experience of potential deterioration mechanisms
- Covered the full ‘life cycle’. From specification, design, and construction through to commissioning, operations and maintenance, as well as decommissioning, demolition and reclamation
- Looked at infrastructure and utility supplies, identifying the particular plant items which needed to be replaced
- Used the ABB asset care process to provide an evaluation of the assets through criticality assessments which looked at production vulnerability as well as the potential to cause harm to health and safety

ALS’s work best when there is teamwork between those introducing it and a plant’s personnel. In this case, a plant turnaround was scheduled near the start of the study. Its approach adapted to logistical issues which concerned both the timing of the plant shutdown and key operating personnel availability.
Newly-gathered information from the shutdown was introduced into study reviews and provided the business with a useful review of the current equipment’s condition as it was at the time.

Throughout the process, we used our specially developed asset life database to gather data into a rapidly accessible format. This includes views on deterioration and predicted equipment life and it stores summarised histories and recommended actions for improvement. The completed database was supplied to the client at the end of the review. It provides an ideal tool for ongoing updates of the asset life plan as further data on rates of corrosion etc. become available.

In conclusion, our asset lifetime study provided a long-term view of the assets’ sustainability based on our industry experience of similar plants and processes operating greatly beyond their design lives.

Specifically, the study gave the client a coherent overview of:

- The current condition of all operating assets, static and rotating equipment, civil, control and electrical
- An integrated replacement strategy to ensure a further 20 years production
- An investment profile to sustain operations
- Improvements of maintenance and inspection programmes

The study facilitated the development of an asset life plan, a framework for operational care and maintenance policies, and a sound basis for planning future expenditure. By focusing on the long-term, it eased production of annual budgets to provide a cohesive view of a possible future.

Benefits
- Plant sustainability
- Integrated replacement strategy to ensure 20 more years production
- Investment needs identified
- Improved maintenance programmes
- Improved inspection programmes