CHEMICAL CASE STUDY - MAJOR LEADING CHEMICAL PRODUCER, EUROPE

Turnaround optimisation

Our client is one of the leading olefins and aromatics producers in Europe. As part of a corporate operations improvement initiative, they wished to improve their shutdown and turnarounds performance.

Their vision was to develop a ‘harmonised approach’ to turnaround preparation and execution on their olefins plants across a range of sites and global locations. They wanted the new approach to reduce shutdown costs by more than 15% across the business and increase available running time.

They selected the ABB approach to delivering successful turnarounds and engaged us to undertake an assessment of the turnaround methodology used at their Koln and Grangemouth Ethylene production sites.

Solution

The project has been delivered in 3 phases:

**Phase 1: Assessment of current practice**

ABB conducted a turnaround assessment at both facilities. The assessment compared current processes to best practices to identify any gaps and opportunities for improvement. The work identified a requirement for repeatable, high performance, low risk, in-house turnaround delivery capability. It uncovered key improvement opportunities:

- Developing and improved and standardised planning methodology and systems to improve efficiency and reduce costs
- Challenging the turnaround scopes using a structured worklist challenge process to remove unnecessary work
- Challenging the schedule to reduce the planned duration
- Improving resources and control of expenditure by integrated planning and control
- Improving forecasting of emergent work through risk and contingency planning to minimise additional work
- Growing organisational capability by raising the competency of turnaround managers and planners through effective training and coaching and by integrating other functional capability into the team

ABB provide an harmonised approach to turnarounds.
Potential savings of over £42M were identified and would be achieved by implementing a consistent and defined turnaround methodology, carrying out targeted development of turnaround tools and processes and employing an integrated approach to turnarounds on site 1.

Phase 2 - Turnaround improvement project team

To achieve the potential savings identified a turnaround improvement project was launched, focussed firstly on site 1. The scope and objectives for the project were devised and communicated across the site.

They were to:

- Highlight existing parts of the processes that are either missing or require improvement or revision
- Identify gaps in existing tools and documentation
- Establish ‘as is’ process maps for the key preparation processes, that could subsequently be used as the basis for further improvement
- Make and prioritise recommendations that will give rise to improvement resulting in substantial cost savings and other benefits

A TAR improvement project steering team was established, made up from personnel involved in turnarounds from the Olefins and Polyethylene businesses and from the central site teams. Existing processes were mapped and any issues and potential steps for improvement were identified by comparing them with best practice generic maps.

The maps are part of ABB’s model of TAR excellence and covered:

- TAR organisation
- TAR preparation
- TAR planning and scheduling
- Costs
- Logistics and materials
- Contractors
- Projects and modifications
- Process preparation
- TAR execution

Workshops reviewed the issues and recommendations were collected into a number of project charters, or task definitions, based on their potential benefits.

Phase 3 - Implementation

The client TAR project steering team owns the overall project for the implementation stage. They will act agree policy changes and provide the resources needed to implement the proposed solutions in full and hence fully realise the benefits.

The steering team, supported by ABB has created a methodology team to identify the specific tasks to be worked on. Each steering team member will lead 1 task team and feed back regularly to the TAR project team. The task teams will review each specific objective using the ABB improvement process to eliminate problems, look for opportunities for cost savings and efficiency improvement and develop potential solutions to improve processes and practices. The task teams will produce a detailed TAR methodology with guidance from ABB and generate the required documentation at each stage.

The revised process and practices will then be implemented on a future trial turnaround to assess the impact.

Benefits

ABB were able to apply their operational knowledge to identify a range of optimisation opportunities and huge cost savings at both sites:

- Site 1 - Potential total business savings of £24.7m of which:
  - Turnaround costs reduced by £2m
  - Duration reduced by 6 days

- Site 2 - Potential total business savings of £18m of which:
  - Turnaround costs reduced by £1m
  - Duration reduced by 2 days

Other benefits identified were:

- A structured approach to allow ongoing improvement
- Introduction of best practice on top of existing good working practices
- Better alignment and utilisation of resources available
- Reduced management resources