CHEMICALS CASE STUDY - MAJOR CHEMICAL MANUFACTURER, NORTH EAST ENGLAND, UK

Pipework remediation management

ABB help to remediate 10km of pipework safely and cost effectively.

The client operates a number of petrochemical plants on their sites in the NE of England that were built in the mid seventies. The pipework on the plants is operating beyond its original expected life and much of it had suffered breakdown of the original protective coatings. The threat that corrosion could cause unplanned losses of containment was increasing.

To improve the integrity of their assets, the client initiated a programme to register more piping systems, requiring an increasing inspection workload. The inspections succeeded in uncovering a number of corrosion defects that could not be handled effectively by the existing plant maintenance teams.

In order to meet corporate business objectives for the plants to operate for a further 20 years, it was clear that action had to be taken to reverse the deterioration in the condition of the pipework.

The scale of the remediation required, meant that it was necessary to complete the vast majority of the work with the plant on-line, requiring the development of procedures to allow pipework to be safely lifted, grit blasted and painted whilst the pipework was still in operation.

With ever increasing demands on their own time, the client sought assistance from ABB in developing a project to manage these challenges.

Solution
ABB worked with the client to develop the optimum strategy for remediating the plant pipework. Based on the history of pipework inspections and the desired operating life of the plants, it was determined that a remediation led approach would be taken. Within this approach inspection is used on-line to determine where remediation can safely be completed. This differs from an inspection led approach, where selective inspection is used to decide which sections of pipe require remediation.

ABB completed a risk based review of plant pipework, taking into account the likelihood of a failure versus the severity of the consequence of failure. This produced a prioritised list of areas of plant pipework to be remediated and ensured that the risk from pipework failure was reduced as quickly as possible. The risk assessment process developed by ABB allows the client to quantify and demonstrate the risk reduction achieved, as the remediation work progress.
ABB provided project and design resource to assist them in defining and managing their programme of pipework remediation, and provided technical support throughout the project.

The project definition stage involved the development of procedures to allow on-line remediation of pipework to be carried out safely and effectively. The procedures detailed how the lifting of pipework would be authorised and executed, to minimise the risk of developing a leak. Processes were established for the identification of pipework and fitness for purpose assessment. Acceptance criteria for the remaining wall thickness that could be grit-blasted were also set.

ABB worked seamlessly with the client’s maintenance partners throughout the project, which to date has safely and cost effectively remediated more than 10km of plant pipework.

Benefits
- Pipework life extended to allow plant to operate for a further 20 years
- Improved plant safety and reliability through minimisation of unplanned releases from pipework
- No loss of production as the majority of corrective repairs carried out online