FOOD AND BEVERAGE CASE STUDY - MAJOR FOOD MANUFACTURER

Vulnerability and plant life assessment

ABB perform vulnerability and plant life assessment to help support reliable production beyond the original design life.

A well known food manufacturer operates two fermentation plants on their raw material production site. The plants are now approximately 20 years old, originally with a design life of 25 years. The production capacity of the plants has been significantly increased, beyond the original flowsheet capacity and there is a requirement to continue reliable production beyond the original design life.

The client wanted to ensure that the assets were capable of achieving reliable production over the required extended life to meet future business needs. Business continuity risks were to be identified and recommendations generated to mitigate any vulnerabilities.

ABB were selected to perform the work due to their excellent reputation, experienced technical experts and their proven work processes and assessment tools.

Solution

The plant life assessment methodology was used to gain a better understanding of the condition of the equipment installed on the site and to identify any activities required to keep operating for a further 20 years. The plant life assessment considered the physical condition of the assets and the role of asset care in sustaining asset life.

The plant life assessment is designed to quickly assess the key issues affecting asset life extension, for each system. The review also included a vulnerability assessment of the equipment to potential ageing and life limiting issues, such as deterioration mechanisms and obsolescence. The assessments were based on existing information held by the client and relevant discussions with site personnel.

The vulnerability assessment was conducted in a workshop where members from the site team and discipline specialists from ABB, held open discussions in order to provide a collective view of the vulnerability aspects of the manufacturing process and to determine the criticality of the equipment based on failure against SHE and production loss criteria.
On completion of the vulnerability workshop, each discipline specialist conducted a tour of the site, accompanied by a specialist from the site team, concentrating on those areas highlighted as being vulnerable to failure. The workshop information combined with detailed discussions with key site personnel enabled assessments to be made about life extension to identify any areas for replacement, repair or additional maintenance needs to extend the operating life.

The study used a proprietary pRIME database which holds all the information gathered and presents it in an accessible format to produce standardised reports for each item reviewed.

The results from the assessments were presented as a list of systems with assigned ‘vulnerabilities’ to ageing, ‘SHE’ and ‘production criticality’ rankings which were colour coded to provide a more visual representation of the findings. A detailed report containing the evidence gathered, the findings and a list of actions required to keep the plant operating for the next 20 years was compiled and issued for record purposes. The actions were summarised in an Excel spreadsheet which was used to develop an expected expenditure profile and for future action tracking.

**Benefits**
- Reduced risk of unplanned downtime due to a better understanding of where vulnerabilities exist
- Actions required to maintain continued integrity to prevent unexpected failures
- Improved budgetary control: future expenditure and information can be included into maintenance and shutdown planning to prevent unnecessary surprises