Extending the safe and reliable operating life of a gas terminal

The client operates a major gas terminal to process the gas received from a number of offshore oil and gas fields operated by a number of operating companies.

Gas is received at the terminal sub-sea pipelines, treated, compressed, metered and exported via the UK transmission grid. The terminal was built in a number of stages as the gas reserves beneath the North Sea were progressively exploited. The oldest assets on the terminal date from the 1980s.

ABB were commissioned to carry out a comprehensive study of the equipment installed on the terminal to identify what needed to be done to extend the operating life of the terminal by a further 25 years. Cost estimates were prepared for recommendations to address identified life extension issues. Cost projections were required for different areas of the terminal.

Solution
ABB were selected to undertake this study because of:
- Our tried and tested methodology for delivering asset life studies
- The expertise of our specialist technical consultants
- Our track record of successfully delivering other studies for this client
- Our reputation as the market leader in this area

ABB delivered this study using our pRIME methodology and software. This has been developed and refined over many studies to identify the key issues and integrity threats to the safe and reliable operation of the asset and to deliver pragmatic, implementable solutions to manage the deterioration of equipment and systems as they age in service.

Data for the equipment was downloaded from the client’s asset register and other documentation systems including inspection reports and maintenance records. A series of detailed technical discussions were held with key operations and engineering personnel. Visual surveys of the equipment were undertaken across the terminal.
The study was delivered to the agreed time and budget.

**Study scope**
The scope of this study covered all of the equipment and systems on the terminal; it included the pressure vessels, tanks and piping systems, the rotating equipment, instrumentation, metering and control systems, safety and emergency response systems, the electrical equipment and infrastructure, utilities, buildings, structures and civil infrastructure.

**Findings**
The study assessed and documented the current condition of the equipment and the age related deterioration mechanisms. The actions necessary to extend the operating life of the equipment on the terminal were identified and estimates of the implementation costs were produced. From this the asset life investment plan was created.

As a key part of the overall study the findings and recommended actions were reviewed and validated with the client’s operations and engineering personnel.

The overall findings were presented to the key stakeholders.

A fully detailed report was presented to the client at the completion of the study.

**Benefits**
This study has provided the client with:

- Confirmation of the technical feasibility of extending the life of the terminal
- An exhaustive list of the factors that may impact the operation of the terminal in the future
- A consolidated long term plan for the operation of the terminal with the various actions identified and costed
- A large number of items were covered and the number of issues identified required adjustment of the client’s engineering team’s work load and priorities