

Lecture: Failure Analysis: The devil is in the detail

14 January 2016

Post event report

Neil Henry, Principal Materials Consultant of ABB started his talk by discussing the importance of communication between the design process and the operational requirements to prevent premature failure. Failure rates published by the HSE show low failure rates for pressure vessels and piping. However, these figures do not include failure due to corrosion, which in some cases is classified as 'wear and tear'.

Further analysis indicates that corrosion accounts for 32% of failures with fatigue second at 25%. Corrosion is therefore still a major cause of failure and has been so for 40 years. Of these failures, analysis of the root cause identified that design contributed to 42%, operation 31%, and maintenance 15%.

The talk then continued with detailed analysis of 3 specific failures, one of these being a fascinating example of failure due to the use of dual certified material. The theme from each failure highlighted how it is critical details of material properties and service duty requirements, which ultimately define equipment life.

A key feature is learning from failure, as over the years, a number of factors have changed. The duty cycle has become increasingly arduous, the control systems are becoming increasingly sophisticated, and design material has become increasingly exotic. These and other factors, will demonstrate the value from an integrated process and integrity management.

The talk was followed by a question and answer session. Feedback on this lecture was excellent, with a number of the audience requesting more details on failure analysis. As the lecture was oversubscribed, a lecture on detailed failure analysis is being considered for next year.