



Project Summary

Assessment of tubes for evidence of embryonic corrosion fatigue cracks and measurement of internal deposit accumulations.

Ref. HSE publication <http://www.hse.gov.uk/comah/alerts/corrosion.htm>

The Challenge

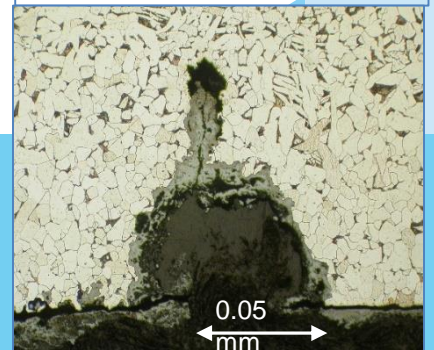
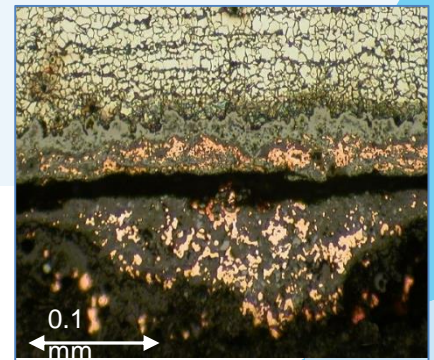
Internally initiating microcracks and deposit accumulations are virtually undetectable by external examination. Metallographic examination of tube samples provides early warning of window pane failure and also provides an opportunity to assess deposits.

The challenge is around persuading boiler owners to be proactive rather reactive.

Key Achievements

Metallographic examination revealed that selected tube samples removed during a scheduled outage were free from internal crack defects.

The magnitude of the internal deposits was revealed to be excessive (16 g/ft^2) however sectional examination showed the values were made artificially heavy due to the entrained elemental copper (Right centre image).



Why Axiom Engineering Associates?

Axiom's Materials Engineers have over 40 years of accumulated boiler inspection and failure experience, and a well equipped metallurgical laboratory. The lower right image is an embryonic corrosion fatigue crack.

The Result

Metallographic examination of representative samples confirmed the boiler was not exhibiting early onset evidence of window pane failure, and despite the seemingly heavy internal deposition, Axiom concluded there would be no benefit in undertaking expensive (and potentially detrimental) chemical cleaning.

The boiler could confidently be run until the next scheduled outage.