



Plant life assessment of radiant heater tubes

Radiant heater tubes in fired heater service are normally code-designed for a specific lifetime, using as inputs maximum operating temperature, maximum corrosion rate and minimum material properties. Service experience of this type of plant typically indicates fitness-for-purpose significantly beyond design life, suggesting conservatism in the calculations adopted.



To ensure economic, safe and continued extended-life operation of fired heaters beyond design life, it is prudent to apply a policy of routine inspection, predictive maintenance and timely refurbishment. To assist in this, ERA Technology utilises a phased approach to life assessment, identifying and giving appropriate weight to the predominant degradation mechanisms and their interaction. Using this approach more accurate assessments of heater life may be made.

Benefits

ERA's plant life assessment of radiant heater tubes can help clients:

- Improve confidence in heater integrity
- Reduce outages and unplanned inspection/maintenance
- Extend operating life
- Prioritise tube repairs and refurbishment
- Save costs.

Methodology

ERA's approach to remaining life assessment would be dictated by the condition of the heater and the needs of the client. Preliminary assessments can utilise a deterministic approach. For long-term life management, a probabilistic approach is recommended, with the outcome integrated into a risk-based life management policy.

Scope

Pre-shutdown

- Plant-wide survey of heaters
- Preliminary assessment of high-risk heaters
- Additional assessment of high-risk heaters

Post-shutdown

- Additional assessment of high-risk heaters.

Approach

Pre-shutdown

- Deterministic
- Enhanced deterministic
- Probabilistic

Post-shutdown

- Enhanced probabilistic.

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- HeaterPLUS for fired heater plant
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