

FACT SHEET

DETECTION OF FLOW-ACCELERATED CORROSION

Using pulsed eddy current technology for examination through insulation

Flow accelerated corrosion (FAC) in piping is a widespread problem in all types of power plants and, if left undetected, can result in personal injury, equipment damage and plant downtime.



What is Flow-Accelerated Corrosion?

Flow-accelerated corrosion (FAC) is metal loss through the dissolution of the protective oxide film in piping serving water or wet steam. Many pipe failures caused by FAC have been reported in power plant piping systems.

Under certain water chemistry, fluid velocity, and operating conditions, FAC can cause internal wall thinning of condensate and feedwater piping, heater drip and drain lines, and other carbon steel piping. In some cases, this thinning has led to catastrophic failures and fatalities.

Why Be Concerned?

All personnel are concerned about safety and the consequences of a high energy piping failure. Whether a power plant remains with a utility or is purchased by a new owner, assessment of the damage that can result from FAC is a relatively inexpensive and prudent prevention measure.

Our Approach to FAC Examination

Intertek's experience with FAC has led to the development of the following steps for proper evaluation:

- Computer software to identify and rank high priority areas
- Online or offline non-intrusive examination of high priority areas
- Ultrasonic examination of selected locations
- Engineering analysis

Non-Intrusive Inspection Technology

A unique feature of Intertek's approach is our non-intrusive wall thickness measurement service which uses a patented pulsed eddy current technology.

The pulsed eddy current system is especially attractive to many industrial and power plant clients because it can be used:

- While the plant is online or offline – no outage required
- Without removing insulation and lagging
- At a substantial cost savings, particularly when asbestos is present
- The field performance is excellent
- Wall thickness accuracy: better than $\pm 5\%$
- Pipe temperature: -150°F to 950°F
- Insulation thickness: 0 to 4 inches
- Pipe wall thickness: 0.15 to 2.6 inches

To address the issue, we have developed a comprehensive Total Quality Assurance approach to identifying the early signs of FAC in piping and locate high risk areas.

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Pulsed Eddy Current: Expanded Capabilities & Availability

Intertek has expanded its capabilities in doing Pulsed Eddy Current evaluations using a next generation technology.

Typical applications:

- Feedwater Heater Shells
- Deaerators
- Feedwater Piping
- Boiler Tubes
- Cyclone Tubes
- Refractory Boilers
- Tanks and Vessels
- Corrosion Monitoring of 0.2% of Known Problem Areas
- Precision Wall Thickness Monitoring to Extend Runtime
- Inspection of Storage Sphere Legs through Fireproofing
- In-Service Inspection of Annular Rings of Storage Tanks

PEC Advantages

- Online or offline wall thickness readings through insulation
- Avoids insulation removal/installation costs
- Single mobilization can include examination of several units at a plant or nearby plants

If online examination prior to outage:

- No interference with other work during the outage
- FAC or CUI NDE is no longer a potential critical path of an outage
- Fitting replacement can be identified and planned ahead of the outage

FAC causes wall thinning in piping, vessels and other components, and if not detected in time, can lead to leaks or instantaneous ruptures. In some instances, the failure to detect FAC has resulted in catastrophic failures and fatalities at power plants.

FOR MORE INFORMATION

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