FLOW ACCELERATED CORROSION (FAC)

Chemistry affects are strong on Flow Accelerated Corrosion (FAC). As low as a 0.3% chrome content can increase FAC resistance up to 100 times. Temperature also has a pronounced effect on FAC wear rate. Temperature exceeding 250°F should be of the highest priority.

Areas that should be priority to be checked, where FAC can be found:
- Feed Water Lines (Discharge & Suction)
- Condensate Return Lines
- Wet Steam Lines
- Downstream of Flow Meter
- Downstream of Control Valves
- Downstream of Thermowells, Sampling Lines, and Injection Quills
- High Pressure Elbows, Reducers, Tees, and Caps

Ultrasonic thickness readings can measure the wall thickness on a wide range of components including tubes, pipes, pressure vessels, and other equipment subject to thickness loss. Laying out a grid provides a semi-permanent “map” for traceability, and also can be used for comparing regular inspections to determine a rate of loss.

In Ultrasonic thickness inspection, an ultrasonic (sound) pulse is transmitted by a probe into the material being tested. The probe is a transducer that converts an electrical signal from the DMS 2 into a sound pulse. Couplant is then applied onto the surface being tested. Couplant allows sound to pass from the probe into the material being tested until it encounters a change in the material type (such as air or liquid). This occurs at the surface of the material being tested that’s farthest from the probe. (This surface is commonly called the back wall.) When the signal reaches the back wall, the pulse reflects or “echoes” back to the probe.
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Hot Reheat line – Drip Pot

Feed Water line

Underground fuel gas line

OSTS
55 Chapman Street Providence, Rhode Island 02905 Tel (401) 467-8661 Fax (401) 467-8662 www.ostservices.com
FLOW ACCELERATED CORROSION (FAC)

At the completion of a job, OST Services personnel will provide a “field copy” print out onsite. Like the example shown below, thickness readings are displayed in a spread sheet identical to inspection piece.
### FLOW ACCELERATED CORROSION (FAC)

**Example Ultrasonic Thickness Readings**

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<th>E</th>
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<table>
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<tr>
<th>Nominal Wall Thickness</th>
<th>12.5% Wall Loss</th>
<th>20% Wall Loss</th>
<th>30% Wall Loss</th>
<th>40% Wall Loss</th>
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<td>0.375&quot;</td>
<td>0.330&quot;</td>
<td>0.300&quot;</td>
<td>0.263&quot;</td>
<td>0.225&quot;</td>
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</table>

**High Temperature Measurement Procedure**

- Grind excessively rough or corroded surfaces smooth for proper couplant, reliable readings.
- Verify the test surface temperature.
- Select the appropriate couplant.
- Calibrate instrument with probe according to procedure in instrument’s operating manual.
- Apply couplant directly to probe face.
- Couple the test material using light contact pressure to achieve proper coupling.
- A measurement should display in 1 to 2 seconds.
- Gently rock the probe, if necessary, to get a thickness reading.
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DO NOT INCREASE CONTACT PRESSURE OR PROLONG CONTACT FOR MORE THAN 5 SECONDS TO AVOID DAMAGING PROBE.

- Uncouple the probe and air cool per the “Recommended Duty Cycle” on the other side.
- Wipe remaining couplant from probe face before making another measurement.

High Temperature Measurement Guide for HT-400 Transducer

Compatible Instruments
Thickness Gauges: DMS2, DM4E, DM4, DM4DL
Flaw Detectors: USN and USM Series

Operating Range
Surface Temperature: Ambient to 1000°F
Material Thickness: 0.030” to 10”

Couplant/Temperature Range
HITEMPCO: Ambient to 500°F
ZGM: 500°F to 1000°F

Recommended Duty Cycle
Up to 400°F: No Cooling Required
400 - 550°F: 5 seconds on/15 seconds air cool
500 - 700°F: 5 seconds on/30 seconds air cool
700 - 800°F: 5 seconds on/60 seconds air cool
800 - 900°F: 5 seconds on/90 seconds air cool
900 - 1000°F: 5 seconds on/120 seconds air cool