



Boiler Tube Oxide/Scale Thickness Measurement

Ultrasonic Application Solutions

Application

Boiler tubes are used in power plants. A hard oxide coating will gradually build up on the inside of power generation boiler tubes.

The thicker the oxide layer, the less efficient the boiler becomes and additional heat build up will shorten the life of the boiler.



Figure 1: Inspection of a boiler tube

Solution

The object of the test is to perform a separate thickness measurement of the steel tube wall and the oxide scale layer located on the inner diameter of the tube. The interface echo from the tube-to-oxide is much smaller than the echo from the oxide-to-air interface, thus, the difficulty is separating these two echoes from each other and making the measurement between the two echoes.



Figure 2: Probe



Results

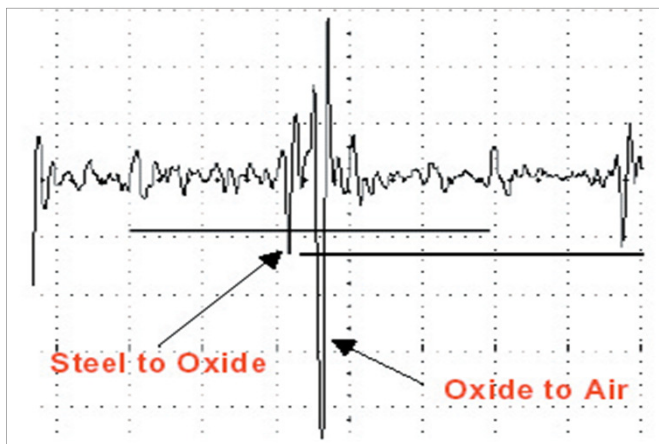


Figure 3: A-scan

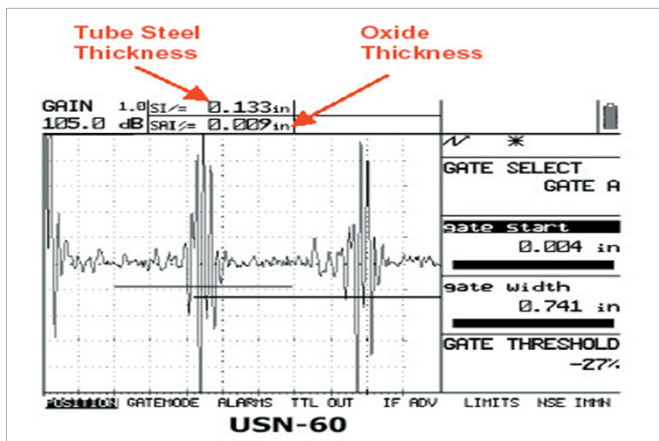


Figure 4:

General solution information

- USN-58L or USN-60
- IF Gate option (for either unit)
- Shear Wave DFR Probe
- BNC-MD or Lemo-MD cable

The example in figure 3 shows the steel-to-oxide interface echo at about 1/3 the amplitude of the oxide to air interface echo. Using a highly damped “Alpha” type straight beam Shear Wave probe is the key to obtaining thin oxide layer measurements.

The shear waves have 1/2 the velocity of L-waves which doubles the time resolution and enables the system to measure thinner layers than with conventional L-wave probes.

Your benefit

- Measure Thinner Oxide/Scale Layers and Oxide on Thick Wall Boiler Tubes
- Use “compare mode” to view set-up standard vs. actual measurement
- High display resolution and range allows for clear signal interpretation and resolving the measurement

Part numbers

USN-58L	0036048	USN-60	0036051
OSS-10 (DFR2)	0105383	DFR probe	291-484-700

Contact the GE European Solutions Center for your individual inspection problems:

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