



SOUTHWEST RESEARCH INSTITUTE



Guided Wave Systems for Screening Hot Side Waterwall Boiler Tubes

Restricted access to corrosion-damaged cold side waterwall boiler tubes at coal fired power plants makes conventional nondestructive evaluation (NDE) challenging.

To address that issue, engineers at Southwest Research Institute® (SwRI®) developed a system using guided waves to cover inaccessible areas from a remote sensor location. For waterwall tubes, a sensor is attached from the hot side of the waterwall to inspect both the hot and cold sides of the tube.

SwRI engineers apply a high-powered magnetostrictive transducer (MsT) probe with a solenoidal excitation coil wrapped around an iron cobalt (FeCo) strip with a belt of permanent magnets to magnetize the FeCo.

Advantages of using MsT probe:

- High signal amplitudes produced by solenoidal excitation coil allow signal-to-noise ratios above 60 dB
- Stable permanent magnets provide consistent signal amplitudes over long periods of time
- Protective coatings and ruggedized transducer design allows for multiple applications or long-term use
- Applicable frequency range: 30-250 kHz

Method is applicable for long range (a few meters) guided wave testing of boiler tubes with and without membranes. Anomalies such as generalized corrosion or axial and circumferential EDM notches starting from 25 percent depth could be detected.



MsT probe for guided wave screening of waterwall boiler tubes with membrane from hot side



Advanced science. Applied technology.



MsT probe can be used for guided wave screening of waterwall boiler tubes without membrane

**We welcome your inquiries.
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SOUTHWEST RESEARCH INSTITUTE

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