MISTRAS

One Source for Asset Protection Solutions

PRODUCTS & SYSTEMS DIVISION

APPLICATION BRIEF

Boiler tube failures (BTFs) consistently are the leading cause of lost availability for fossil power plants, with equipment availability losses due to BTFs averaging around 3% worldwide. Headers and boiler internal piping continue to age and degrade. Read on to discover how the MISTRAS | TRIPLE 5 AMS™ can help.*

MISTRAS | TRIPLE 5 AMS™ for Power Boilers

AMS™: ACOUSTIC MONITORING SYSTEM

The MISTRAS | TRIPLE 5 Acoustic Monitoring System is used for early tube leak detection on pressurized vessels such as pulverized coal or gas fired power boilers, recovery boilers and feedwater heaters.

The Triple 5 AMS™ for early tube leak detection has been used in conventional power boilers very successfully over the past 25 years. Non-invasive sensors, mounted on the boiler wall, are listening for a change in the normal background noise of the boiler that indicates a steam leak. The AMS™ provides 24-7 real time data that tracks the progression of a tube leak.

Early knowledge of tube leaks provides a plant with information to make operational, safety, financial and technical decisions based on real time trending.

Traditional methods for tube leak detection, audible leak noises, boiler water make up, opacity, water chemistry changes or water dripping prior to or after shutdown, may not provide early warning of a leak. In addition, plant operators are not able to locate the area of the leak with traditional leak detection methods. MISTRAS | Tripe 5 AMS™ indicates a leak sooner than traditional methods and helps plant operators to locate the leak based on sensor location and signal amplitude.

The AMS™ uses 3/8" diameter sounding rods (also known as waveguides) and high temperature sensors to listen for leaks. The sounding rods attach perpendicularly to the cold side of the boiler wall of a power boiler. The rods do not penetrate the membrane, instead fillet weld to the cold side of the boiler wall, and then pass through the insulation and lagging to the outside of the unit. The boiler wall acts as a diaphragm, vibrating synchronously with low and high frequency sounds that transmit through the combustion gasses and boiler wall. The sensor converts the vibration to an electrical voltage for processing by an amplifier filter box. The resulting trend utilizes the air and metal-borne frequencies generated by a leak to show the greatest difference from the normal background noise of the boiler. The AMS™ further processes and trends the data for the operators using specialized hardware, proprietary software and an industrial data logger.

Acoustic data and alarm functions are viewed and analyzed by multiple users either locally, at the system enclosure, or from any remote location using VPN protocol or MISTRAS' proprietary data replay software, Virtual AMS™. In addition, the AMS™ has the capability to interface and transmit data to and from the plant DCS system.

The AMS™ is also used for feedwater heater leak detection. The waveguide welds to the shell at the tube sheet below the water level. One AMS™ can monitor both the boiler and feedwater heaters.

FEATURES

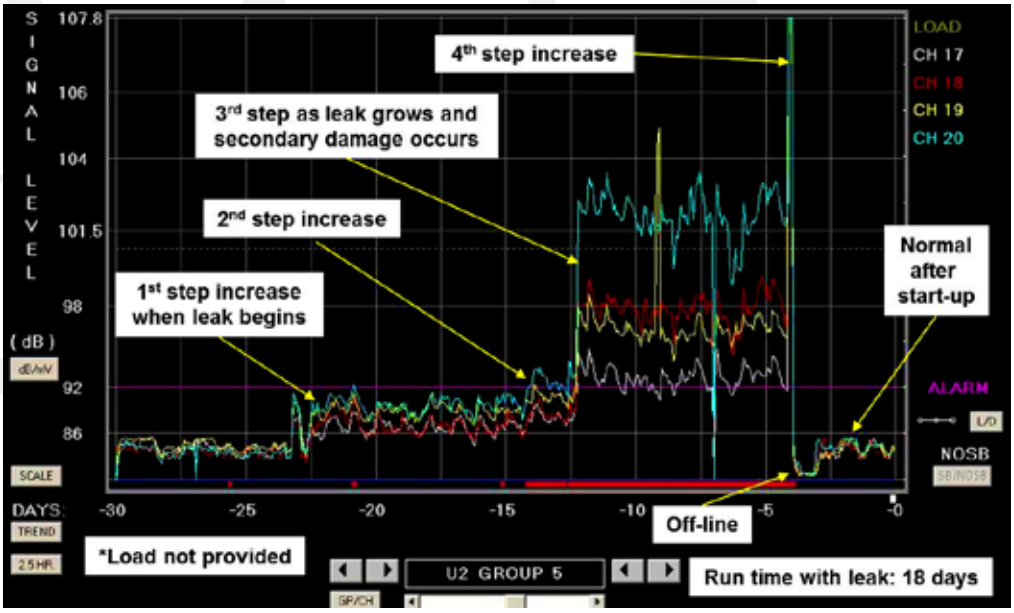
The Acoustic Monitoring System includes all the software and hardware for installation on your coal or gas fired Power Boiler.

- Data logger and process interface hardware
- Amplifiers
- High Temperature Sensors
- High Temperature Cables
- Waveguides mount to cold side of the boiler membrane
- NEMA and protective sensor boxes
- Power Boiler AMS™ software
- Plant specific software and high signal alarm outputs
- 6 months of Weekly Surveillance, a remote monitoring service
- Installation, Maintenance & Operation Manuals
- MISTRAS provided operator training

BENEFITS

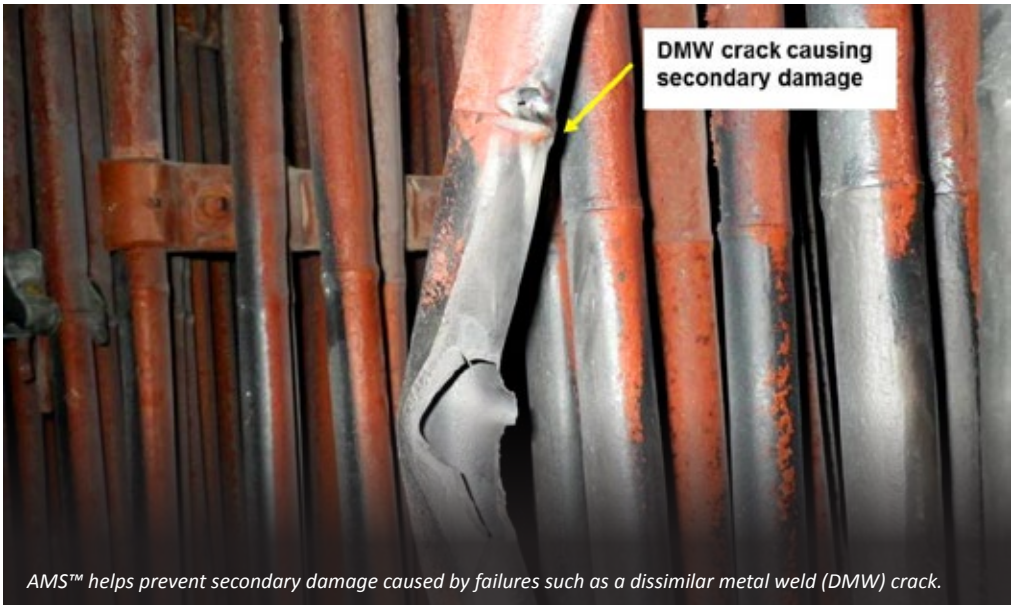
- Early indication of a tube leak, before traditional plant methods
- Reduce secondary damage
- Manage power market exposure and risk
- Locate area of leak(s) before unit comes offline
- Trend severity and progression of leak with real-time data
- Schedule maintenance vs forced outage
- Preplan jobs with correct assets
- Scalable installation options
- Reduce maintenance costs

MISTRAS | TRIPLE 5 AMS™ for Power Boilers

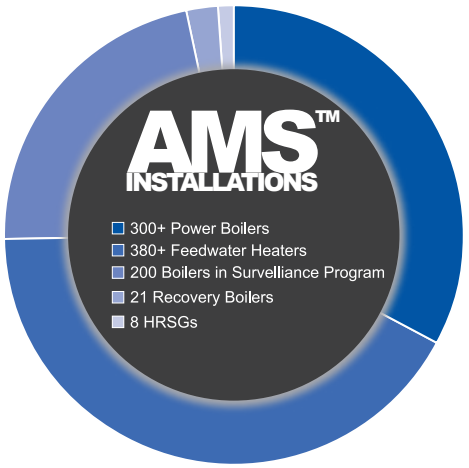


Waveguides are one instrument MISTRAS | Triple 5 AMS™ uses to monitor for leaks.

Sounding rods are attached to the cold side of the boiler wall of, but do not penetrate the membrane.



AMS™ helps prevent secondary damage caused by failures such as a dissimilar metal weld (DMW) crack.



MISTRAS | Triple 5 offers technical support through Surveillance, a remote monitoring service that analyzes the data for acoustic changes and hardware issues. A report is sent on the status of the system by email to a group designated by the plant. A phone call is placed to the main contact and/or the control room when immediate attention is needed. A 24 hour hotline is available for high signal consultations after hours and on weekends and holidays. MISTRAS offers Daily, Weekly and Monthly Surveillance options. A six-month Weekly Surveillance Contract is included with the purchase of a system.

MISTRAS | Triple 5 AMS™ early tube leak detection is also available for Heat Recovery Steam Generators (HRSGs).

FOR MORE INFORMATION:

Please call 1-609-716-4077 or visit us on the web at www.mistras.triple5industries.com.

*Reference "EPRI Boiler Life and Availability Improvement Program-Program 63"

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