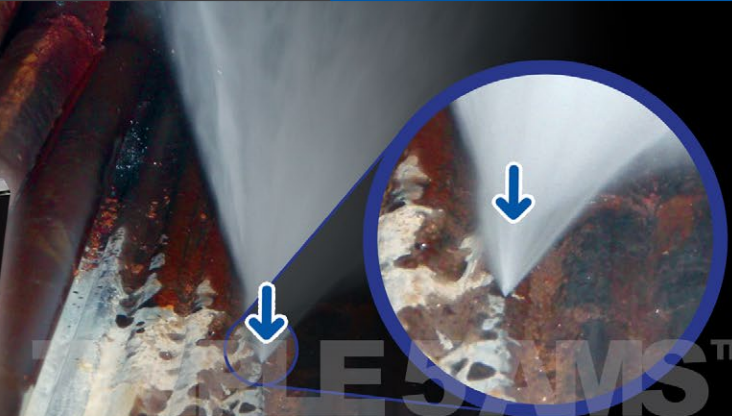


Sensor:	EL	Description:
1/2	2.5	South / North Lower Slope
3/4	3.5	Front Lower South / North Furnace
5/6	3.5	Rear Lower South / North Furnace
7/8	5.5	Front Upper South / North Furnace
		South / North Furnace



Boiler tube failures (BTFs) consistently are the leading cause of lost availability for recovery boilers. Headers and boiler internal piping continue to age and degrade.* Read on to discover how the MISTRAS | TRIPLE 5 AMS™ can help..

AMS™: Acoustic Monitoring System for Recovery Boilers

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

The Triple 5 AMS™ for early tube leak detection has been used in boilers very successfully over the past 25 years. Non-invasive sensors, mounted on the boiler wall, listen 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 mills with information to make operational, safety, financial, and technical decisions based on real-time trending.

Traditional indicators for assessing tube leaks—audible leak noises, boiler water make-up, opacity, water chemistry changes, and water dripping—may not provide early warning. In addition, mill operators are often unable to locate the area of the leak with traditional detection methods. The MISTRAS | Triple 5 AMS™ indicates leaks sooner than traditional methods, and helps mill operators to locate leaks 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 recovery boiler. The rods do not penetrate the membrane, but 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 a mill's 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. A single AMS™ can monitor both the boiler and feedwater heaters. MISTRAS | Triple 5 AMS™ early tube leak detection is also available for Heat Recovery Steam Generators (HRSGs).

FEATURES

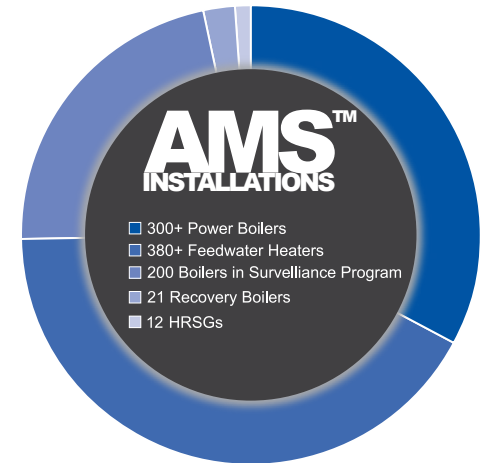
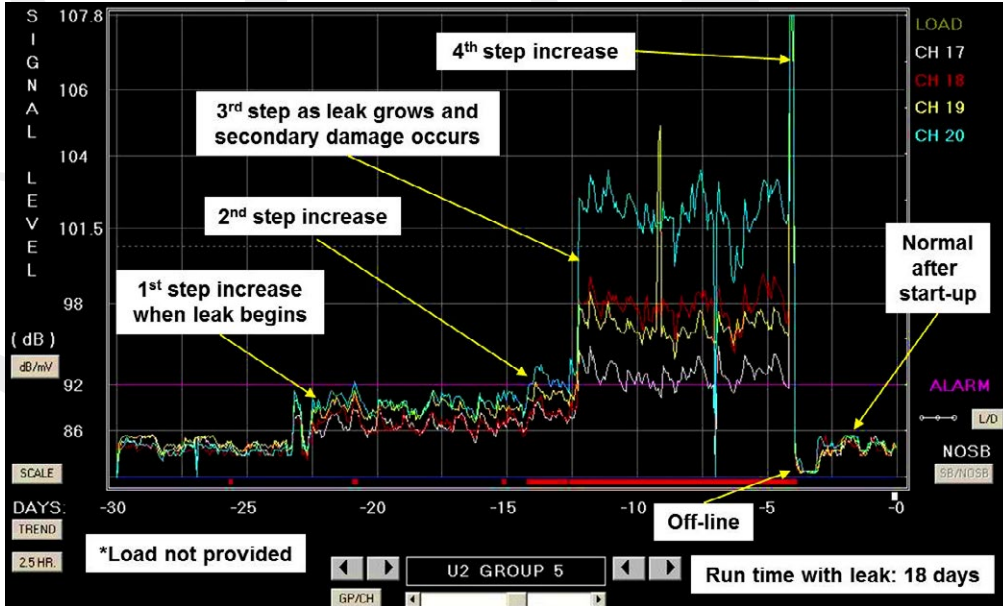
The Acoustic Monitoring System includes all the software and hardware for installation on your boiler.

- AMS™ software
- 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
- Facility-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

- Earlier indication of a tube leak than traditional methods
- Reduce secondary damage
- Manage 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
- Pre-plan jobs with correct assets
- Scalable installation options
- Reduce maintenance costs

AMS™: Acoustic Monitoring System for Recovery Boilers



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

MISTRAS | Triple 5 offers technical support through Surveillance, a remote monitoring service that analyzes data for acoustic changes and hardware issues. A report is sent on the system's status by email to a group designated by the mill. 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.

FOR MORE INFORMATION:

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

WORLDWIDE HEADQUARTERS:
195 Clarksville Rd •
Princeton Jct, NJ 08550 • USA
T: +1.609.716.4000 • F: +1.609.716.0706
E-MAIL: sales@mistrasgroup.com

Visit our website for an office near you
www.mistrasgroup.com

