

Heat recovery steam generators (HRSGs) pose a unique set of operational challenges, due in part to their rapid startup capabilities and high operating efficiencies. Preventing HRSG tube failures (HTFs) is a priority, but complex failure paths, which are influenced by cycle chemistry or thermal transients, are difficult to understand and mitigate. Limited access and other complexities make inspection and repair of HRSGs very difficult. \* Read on to discover how the MISTRAS | TRIPLE 5 AMS™ can help.

## MISTRAS | TRIPLE 5 AMS™ for HRSG

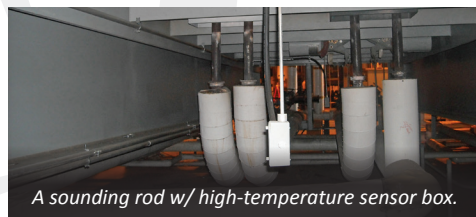
The Acoustic Monitoring System is used for early tube leak detection on pulverized coal power boilers, recovery boilers, feedwater heaters and Heat Recovery Steam Generators (HRSGs).

The Triple 5 AMS-3 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 tube leak. The AMS-3 provides 24-7 real time data that tracks the progression of a tube leak. The same technology, and resulting benefits, is now being applied to HRSG's.

HRSG operators report that tube leaks have been most troublesome at the Superheater and Reheater tube stub welds to the headers and Reheat drain areas. Early knowledge of these leaks provides a plant with information to make decisions on continued operation of the unit and scheduling repair during a planned outage.

Economic, environmental, and technological changes are reshaping the marketplace for electric power. Gas plants are being relied on to provide a significant amount of our electricity. This shift in the marketplace highlights the need for increased reliability and the need to avoid downtime.

Traditional methods for tube leak detection, visual observation of moisture in auxiliary equipment (Continuous Emission Monitoring



A sounding rod w/ high-temperature sensor box.

System), boiler make up increases, visual steam from stack exit and audible leak noises or water dripping after shutdown, do 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' Triple 5 AMS™ provides an early indication of a leak, at least 2 weeks before traditional methods, and helps plant operators to locate the leak based on sensor location and signal amplitude.

The MISTRAS | Triple 5 AMS™ uses sounding rods and high temperature sensors to listen for leaks. The sounding rods attach perpendicularly to the cold side of the inner liner of a HRSG. The rods do not penetrate the inner liner, instead they are fillet welded to the cold side and pass thru the insulation and outer casing to the outside of the unit. The inner liner acts as a diaphragm that vibrates synchronously with low and high frequency sounds that transmit through the combustion gases and boiler wall/liner. 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

### FEATURES

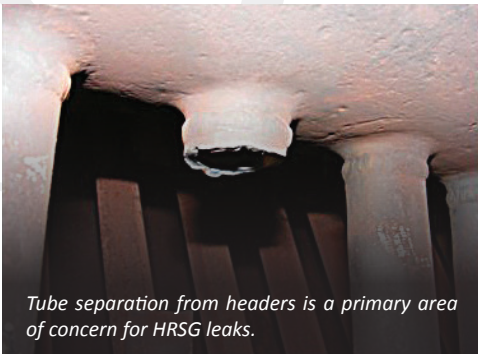
The Acoustic Monitoring System includes all the hardware/software for installation on your HRSG.

- 1 Data logger and process interface hardware
- 4 Amplifiers
- 8 Sensors
- 8 Cables
- 8 Waveguides to mount to inner liner
- 2 NEMA and 8 protective sensor boxes
- HRSG AMS™ software
- Plant specific software and high signal alarm outputs
- 1 year 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/risk
- Locate leak(s) before unit comes offline
- Trend severity & progression of leak with real time data
- Schedule maintenance vs. forced outage
- Preplan jobs with correct assets
- Scalable installation options

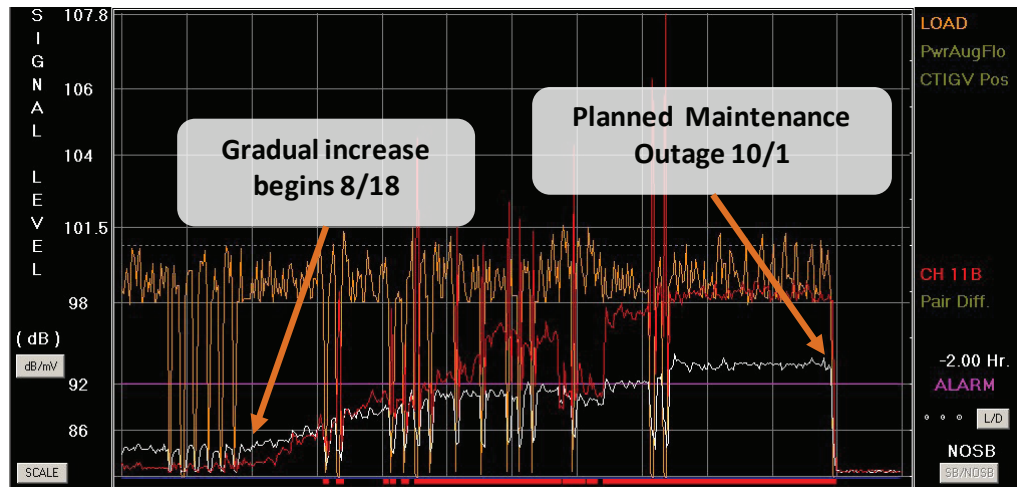
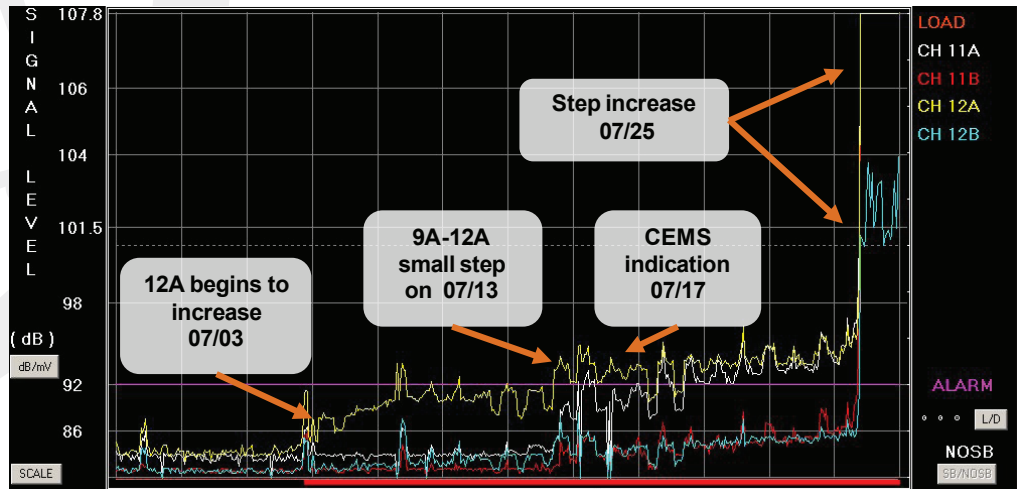
# MISTRAS | TRIPLE 5 AMS™ for HRSG



Tube separation from headers is a primary area of concern for HRSG leaks.



Sounding rod attached perpendicularly to the cold side of the inner liner of a HRSG.



show the greatest difference from the normal background noise of the HRSG. The Triple 5 AMS™ further processes and trends the data for the operators using specialized hardware, an industrial data logger and proprietary software.

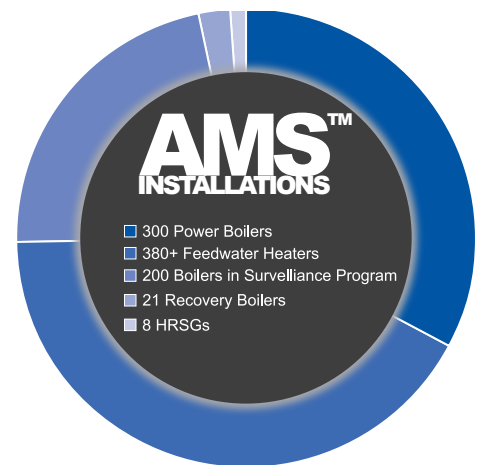
The MISTRAS | Triple 5 AMS™ system data and alarm functions are viewed and analyzed by users either locally, at the data logger, or from any remote location using VPN protocol or MISTRAS' proprietary data replay software, Virtual AMS™. In addition, the AMS™ has the capability to interface and transmit data to and from the plant DCS system.

MISTRAS offers tech support through Triple 5 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 consultation after hours and on weekends. MISTRAS offers Daily, Weekly and Monthly Surveillance options. A one year 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](http://www.mistras.triple5industries.com).

\*Heat Recovery Steam Generator (HRSG) Dependability-Program 88



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