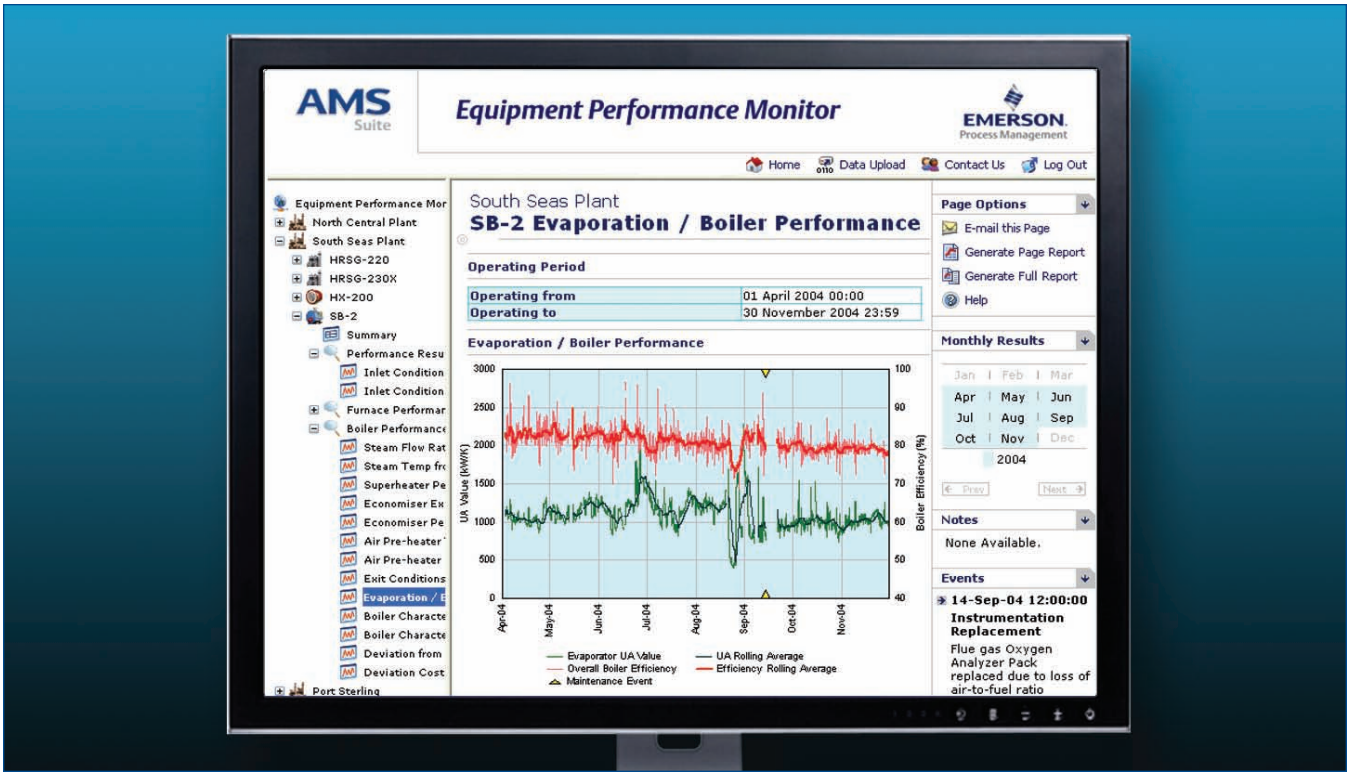
Performance Monitoring - Steam Boilers



Operating efficiency of the boiler including evaporator performance.

- *Reduce fuel costs and maximize steam production*
- *Identify optimum boiler loading*
- *Tighten existing excess oxygen control loops*
- *Reduce stack gas temperatures*
- *Increase boiler availability and lifetime*
- *Evaluate the effect of control operation efficiency and stack losses*
- *Diagnose fouling of individual exchanger banks*
- *Access continuous evaluation of fuel supply quality and furnace performance*
- *Identify the rate of fuel-steam conversion degradation*

Enable Predictive Maintenance

AMS Performance Monitor helps achieve the peak performance of Steam Boilers. It facilitates the move to predictive and proactive maintenance programs, maximizing equipment performance.

Equipment Categories

AMS Performance Monitor calculates the performance of the following types of natural and forced circulation, single and multi-fuel boilers:

- Firetube
- Watertube
- Coiltube
- Electric

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Success Stories

- Identified the optimum excess oxygen control levels, enabling an increase in thermal efficiency.
- Determined best control regimes for multi-fuel boilers, increasing overall boiler efficiencies by 1.6%.
- Pinpointed the cause of reduced heat recovery to the degradation of heat exchanger banks, allowing precision maintenance to be targeted.
- Evaluated the optimum loading across a network for given total steam production requirements.

Capabilities

- Assess current boiler performance relative to design (and plan).
- Quantify performance within operating envelopes, and indentify the real causes of performance loss.
- Investigate upstream factors on operation.
- Compare operation between units.
- Filter and reconcile data using rigorous mathematical routines.
- Analyze furnace/firebox combustion.
- Assess degradation independent of machine load.
- Compare and identify performance with multiple-fuel usage.
- Diagnose the root cause of performance degradation, or impending failure.
- Reduce costs by scheduling/anticipating maintenance based on actual performance.
- Select optimum production rates.

Key Performance Indicators(KPIs)

The furnace/firebox KPIs, using ASME PTC 4.4 based modeling techniques, typically include:

- **Combustion Efficiency** - View the effect of incomplete combustion on furnace performance.
- **Inlet Conditions (Fuel and Air Intake)** - View the effect of input conditions on boiler operation.
- **Air to Fuel Ratio** - Trend relationship, defining the temperature driving force of the hot flue gases throughout the boiler.
- **Excess Oxygen** - Determine the effect of excess air levels required for complete combustion of fuel in the furnace.

The boiler KPIs typically include:

- **Steam Conditions** - Current steam production and temperatures.
- **Superheater Performance** - Trend the heat transfer properties of (each) superheater within the boiler.
- **Economizer Exit Temperature** - Assess exit water temperature from the economizer heat exchanging section.
- **Economizer Performance** - Heat transfer properties of the economizer within the boiler.
- **Exit Flue Gas Temperature** - Effect of the stack gas temperature on overall boiler performance.
- **Evaporator Performance** - Trend the heat transfer properties of the evaporating section of the boiler.
- **Additional Fuel Requirement** - Compare the fuel flowrate required to generate the equivalent amount of steam if operating at design.
- **Flue Gas Characteristics** - Indication of the operating envelope of current efficiency against stack temperatures.
- **Fuel Usage Characteristics** - Steam energy plotted against total fuel feed to the furnace.
- **Energy Deviation** - Analyze deviation in energy recovery from the hot flue gases.
- **Deviation Cost** - Track cost of performance degradation.

Product Data Sheet
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