

Diamond Power® Furnace Heat Transfer Sensors

Diamond Power® Furnace Heat Transfer Sensors from Babcock & Wilcox (B&W) play a vital role in successful furnace water cleaning applications. This includes:

- Protecting furnace tube walls from excessive thermal shock that can result in accelerated tube wall cracking
- Adapting water flow and impact speed in Diamond Power Hydrojet applications
- Measuring furnace wall heat transfer and regional temperatures for intelligent sootblowing goals and cleaning adjustments
- Providing information on real-time furnace slagging conditions for enhanced reliability, availability and longevity

B&W has supplied power generation utilities and other facilities around the world with more than 6,000 of our Diamond Power Heat Transfer Sensors. Their accuracy and reliability make them integral components in both water cleaning and intelligent sootblowing systems.



B&W has installed more than 6,000 heat transfer sensors in furnace cleaning devices around the world.

Unique design for conformance and performance

B&W's heat transfer sensors have been designed, engineered and proven to last, with some plants reporting more than 13 years of reliable performance. Our sensors offer unique and important advantages that make them superior to competing alternatives:

- **QUALITY CERTIFIED**
Conformance to American Society of Mechanical Engineers (ASME) and other code requirements
- **TUBE SIZE VERSATILITY**
Capability for furnace tubing diameters as small as 0.875 in. (22 mm) OD, with no flow restriction inside the tubing or weakening of the pressure boundary
- **REDUNDANCY**
Design that allows system to remain operational should one or two of the four thermocouples fail
- **OPTIONS FOR SPECIAL CONFIGURATION**
Designed for either positive pressure or balanced draft furnaces, flexible extended leadouts for specific nose arch or spacing requirements



◀ Extended leadout sensor

Manufactured in B&W's facility in Lancaster, Ohio, our heat transfer sensors can feature both rigid and extended leadout designs that allow for installation on the boiler nose, through windboxes, or other specific configurations.

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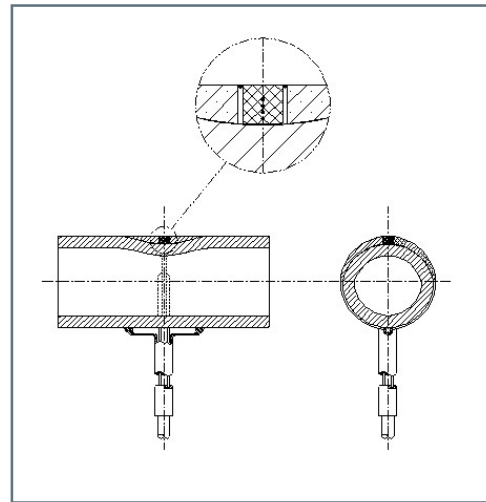
Stacked against the competition

B&W uses a stacked thermocouple design: each of the four thermocouples is located at an incremental distance from the fireside of the tube in a linear series.

Any two of the thermocouples can be used to determine heat transfer. This provides the maximum redundancy should a thermocouple fail. If any one or two of the four thermocouples fail, the sensor will remain fully functional by swapping the thermocouples in use.

A competitor's option features thermocouples placed in pairs at varying distances from the fireside tube surface. Since there must be one functional thermocouple at each plane, should the two thermocouples nearest the fireside surface fail, the sensor would no longer function. These two thermocouples are the most susceptible to failure from exposure to higher temperatures.

B&W's heat transfer sensor design also offers a more standardized and repeatable method for wiring. Our sensor terminal boxes contain an isothermal cover to ensure accuracy at the thermocouple measurement point. Therefore, our approach prevents error due to temperature-related junctions at any other cable junction in wiring back to the sootblower control system.



With B&W's stacked thermocouple design, the sensor continues to operate so long as any two of the four thermocouples remain in service.

The Babcock & Wilcox Company

20 South Van Buren Avenue
Barberton, Ohio, U.S.A. 44203
Phone: +1 330.753.4511

www.babcock.com     

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