

## Predictive Emissions Monitoring System

### Accurate Results, Up To 70% In Savings

Emission regulations worldwide require many boiler operators to continuously monitor concentrations of NO<sub>x</sub>, CO, and other pollutants in their stack gas emissions. The traditional solution requires investing in a costly Continuous Emissions Monitoring System (CEMS). The more economical method is the Predictive Emissions Monitoring System (PEMS) from John Zink Hamworthy Combustion.

#### PEMS vs. CEMS

Based on a proprietary mathematical model developed using our unrivaled knowledge of combustion systems, our PEMS is an accurate alternative to traditional CEMS solutions. PEMS delivers:

##### Lower Cost Regulatory Emission Compliance

- + Reduces installation and operating costs as much as 50-70% over CEMS solutions
- + Meets U.S. EPA and other international regulatory requirements for emission compliance

##### Reliable Emissions Monitoring

- + Provides around-the-clock monitoring
- + Uses proprietary, nonlinear hybrid model developed by a burner OEM for increased accuracy
- + Includes robust sensor validation models for increased reliability
- + Delivers accurate monitoring with various gas and liquid fuels
- + Offers the ability to accurately monitor emissions on systems that use catalyst for emission control

##### Improved Emission Compliance Planning

- + Assists with planning emission-trading activities
- + Aids in planning maintenance requirements by monitoring the combustion dynamics of your boiler when used in combination with other measurements



*Our proprietary knowledge gained from manufacturing John Zink®, Coen®, Todd®, Peabody® and Hamworthy Combustion® brand burners allows us to predict emissions quickly and accurately.*



## How PEMS Works

PEMS uses nonlinear hybrid modeling techniques based on our proprietary empirical methods. Our unique design uses sampled operating data to calibrate and tune the model to the specific burner, boiler, and fuels being fired. The tuning process involves adjusting the model coefficients by pairing observed emissions with corresponding burner input parameters. This results in faster setup and reliable emission compliance. Our PEMS meets or exceeds stringent standards required by the U.S. EPA, set forth in 40 CFR Part 60 and part 75 for alternative continuous emissions monitoring systems. Our design is easily configured to meet ISO standards and other relevant international standards for emissions monitoring.

Our PEMS can be fully integrated with our combustion and boiler control systems, eliminating the need for separate hardware. This saves space and speeds commissioning. However, if you have your own DCS, PLC-based, or other type of control system, we can design a standalone PEMS that will work seamlessly with your system.

**PEMS solutions require *less* equipment, *less* operational man-hours and *less* maintenance. *That's smart. That's JZHC.***

### Standard CEMS Components

- Heated stack gas sample probe
- Heated hoses - long to convey gas from stack to instrumentation
- Emission analyzers in a temperature-controlled enclosure
- Instrument calibration gases
- Gas pumps to pump gas from stack
- Filters and dryers to condition the gas
- Electronic controllers
- Computers
- Clean air source
- Spare parts

### Standard PEMS Components

No additional components required if integrated with our combustion control system\*

*\* For a standalone PEMS system, we will supply a small cabinet with a touch screen.*



### GLOBAL REACH

JZHC has locations all over the map, with thousands of employees worldwide.



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