

Coal Fire Detection Systems

Spontaneous Coal Combustion

Potential coal fires and coal-induced explosions pose life-threatening safety issues and major economic concerns for any industry that uses pulverized coal in combustion systems.

Coal that stagnates at normal operating temperatures in a coal supply or storage system has the potential to spontaneously combust. While various factors influence the oxidation of coal, some coals begin oxidation at temperatures as low as 60F (16C). The oxidized coal often self-heats faster than the rate of heat dissipation to the surrounding environment. The resulting spontaneous combustion can accelerate into an unanticipated fire or explosion.

An Early Warning Solution from B&W PGG

The risk of coal fires and explosions can be substantially reduced by early warning systems. Because carbon monoxide (CO) is a proven indicator of potentially dangerous coal fires and explosive conditions, Babcock & Wilcox Power Generation Group, Inc. (B&W PGG) designed a coal fire detection system (CFDS) to detect the presence of CO in coal preparation equipment and issue an alarm when it reaches pre-determined critical levels.

B&W PGG's CFDS monitors CO in the preparation compartments where coal is stored, or where coal particulates consolidate, to assist in detecting dangerous conditions before the coal ignites.

As a vital part of an aggressive safety program, the monitor's early warning capabilities can assist in preventing injuries or fatalities, as well as equipment or structural



B&W PGG's coal fire detection system provides a reliable early warning in any environment where the spontaneous combustion of coal is a potential problem.

damage, from major fires and explosions. Early prevention also can help to prevent minor fires and the associated clean-up costs of extinguishing these fires.

Robust Design, Reliable Detection

System features include:

- Sample probes encompassing a stainless steel filter are encased in an abrasion-resistant and hardened metal protective shield designed to withstand the erosive conditions of this demanding environment
- Sample filtering and condensate removal process facilitates detection accuracy and system reliability
- A single CFDS supports up to 12 separate monitoring locations through multi-point sampling, providing a low-cost solution
- A highly selective and sensitive non-dispersive infrared (NDIR) CO gas analyzer offers high precision measurement
- High sensitivity and adjustable alarm limits enable system use in a variety of conditions

- Optional dual-range setup of CO analyzer accommodates situations where separate locations have differing levels of background CO
- A special purpose PLC-based controller automates the CFDS and communication with the plant control system
- Works in conjunction with existing inerting systems
- Automatic re-calibration validates an alarm condition before setting alert status to help eliminate false alarms
- Remote operator interface and display panel allows operation from the control room or other locations
- Optional O₂ analyzer adds another layer of assurance for accurately detecting coal fire potential

Applications in All Potential Combustion Locations

With more than 200 system installations worldwide, as well as our expert knowledge of coal-fired power plant design and operation, B&W PGG has proven

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experience with diverse systems and applications. CFDS is applicable in any environment where the spontaneous combustion of coal (or other combustible ash byproducts like biomass residuals or flyash) is a potential problem. This includes:

- Coal pulverizers
- Coal storage silos
- Conveyor belts
- Coal bins and hoppers with pulverized coal storage
- Fabric filters for pulverized coal dust collectors

B&W PGG Delivers Integrated, Cost-Effective Solutions

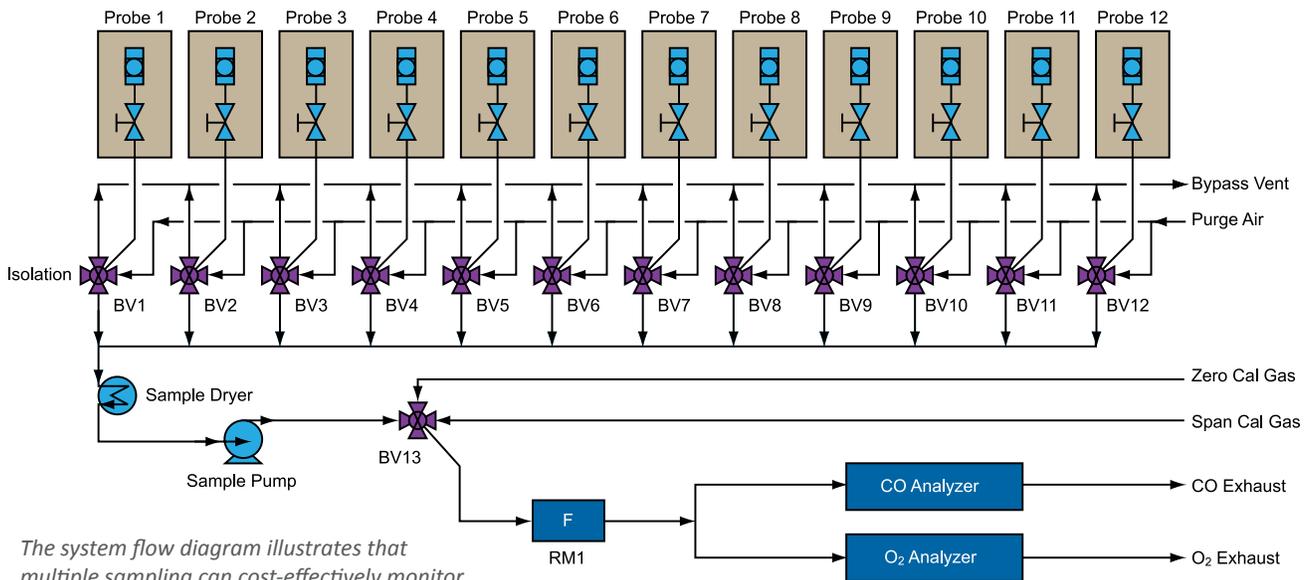
B&W PGG provides installation services that are custom engineered for each application. Our modular design minimizes maintenance requirements and allows for easy upgrades and future modifications.

B&W PGG also provides detailed maintenance procedures to be conducted by the customer or

we can provide a comprehensive maintenance service contract.

Our field service technicians are strategically located to provide a complete range of services, including turnkey installation contracts, installation supervision, system start-up, complete on-site or factory training programs, and spare parts inventory programs.

The KVB-Enertec suite of emissions monitoring (EM) products and services is now part of B&W PGG's environmental products and services, a leading full-service solutions provider of quality environmental equipment, construction and aftermarket services.



The system flow diagram illustrates that multiple sampling can cost-effectively monitor up to 12 separate locations with a single CFDS in the plant.

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