

## CO Monitoring System for PRB Coal

Why monitor Carbon Monoxide (CO) in the mill?



Coal mills are susceptible to fires for several reasons. Many mill fires start under the grinding table when coal falls through unchecked. As coal is ground to a powder, the risk of fire or explosion increases substantially. But there are two instances when the onset of combustion can be indicated by a significant rise in the level of CO. One occurs when coal is brought in close contact with elevated pulverizer temperatures. The other is when suspended coal dust or smoldering hot spots of coal enter a grinder.

While temperature measurements can be used to detect coal burning within a mill, a CO detection system can provide an early warning that fire is imminent. This allows preventative actions to be taken before a problem gets out of control. A CO monitoring system starts with the probe being mounted in a confined space and transporting a sample to the analyzer on a continuous and dedicated basis. The measurement can detect a significant rise in CO level, suggesting that a fire is about to be caused by oxidizing coal dust or a smoldering hotspot somewhere within the mill. This infrared detector is so sensitive to the level of CO that a fire within the surrounding area, such as a silo linked to a mill, can be detected.

Because a CO detector monitors continuously, it removes the element of chance from techniques such as spot checks or intermittent monitoring making them superfluous. What's more, CO monitoring can even detect dangerous buildups of CO while a mill is in standby if the remaining coal has begun to smolder. This reduces the possibility of a fire or explosion when the mill is put back into service. Starting up a mill is potentially dangerous because oxygen is suddenly introduced to an environment where CO may have already accumulated.

Applied Controls integrates complete analyzer systems, from the sample probe, sample transport umbilical, analyzer cabinet, auto calibration, sample conditioning and communications.

This system is an example of a multi-point continuous CO measurement. PRB coal is a much more volatile solid fuel and therefore the use of a stream switching system should be avoided.



Please contact Applied Controls to discuss your specific requirements