

POINT LEVEL MEASUREMENT OF FLY ASH

Ronan Measurements Division supplies the process control industry with leading-edge Radiometric Measurement Systems that provide non-contact measurement solutions for the harshest environments.

RONAN'S POINT LEVEL WITH DUAL-POINT SOURCE RADIOMETRIC MEASUREMENT SYSTEM

Application

Fly ash is a dusty, abrasive by-product of furnaces, kilns, and boilers. Typical producers of fly ash are coal-fired power plants, steel mills, foundries, and co-generation plants. The Clean Air Act of 1990 requires power plants to reduce nitrogen oxide (NOx) emissions, resulting in the requirement that stack gasses be clean of fly ash particulates prior to being released to the atmosphere.

Problem

Two of the more common methods of separating fly ash from the stack gas are fabric filters (baghouse) and electrostatic precipitators. In both cases the fly ash falls into collection hoppers, which require high-level alarms indicating when the hopper should be emptied. Fly ash hoppers will run between 500° F and 1000° F, and the walls are subject to high vibration levels. Technologies such as paddle wheels, tuning forks, RF admittance and ultrasonic are all affected by either the composition of the fly ash or the heat and vibration of the hopper. In a coal-fired power station there will be multiple hoppers, each requiring a point level alarm. The engineer must strike a balance between the economic benefits of combining the electronics for all the level instruments into a single panel, and the risk that presents should one component fail leading to the failure of all hopper alarms.

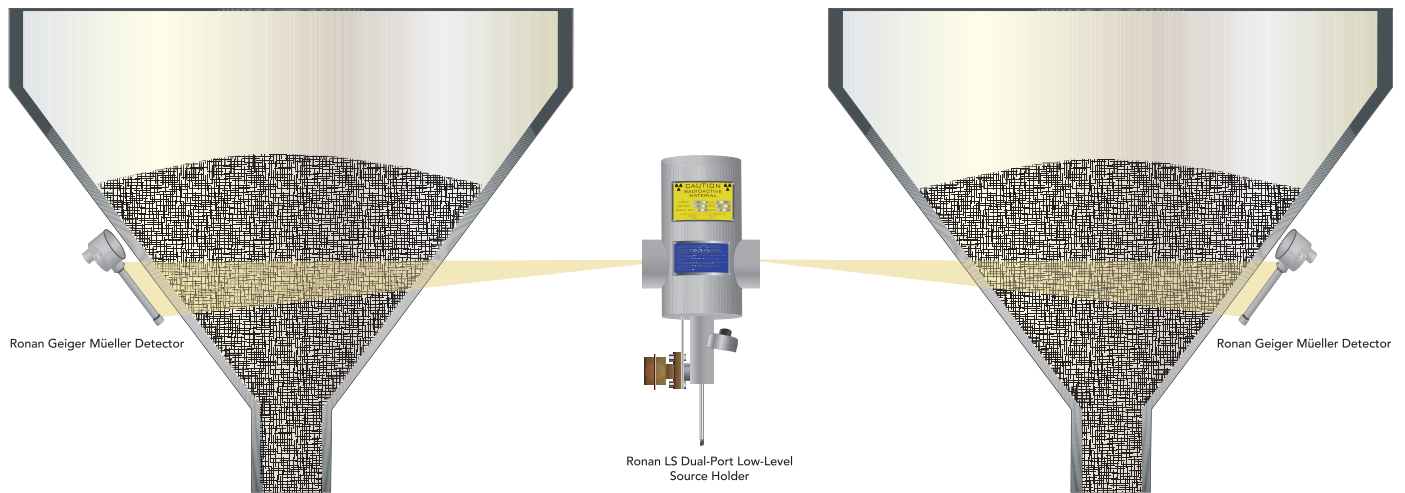
Solution

Ronan non-contact gamma point level instrumentation has been successfully used for high-level alarms on fly ash hoppers for more than 20 years. The technology utilizes low-level gamma photons which are transmitted through the hopper and detected by either Geiger Müeller tubes or scintillation detectors. Since the technology is non-contact, it is immune to the abrasiveness of the fly ash, and can be mounted away from the vibration and heat of the hopper. Due to the modularity of the system, significant cost savings can be realized. The user can utilize any combination of Dual-Port and/or Single-Port sources with remote actuators, integral or remote mount electronics in single or multi-point chassis.

A typical argument against using radiometric technology is susceptibility to build-up of fly ash on the hopper walls. While this may be true for some of our competitors, the Ronan X96 system incorporates a unique system for detecting and negating this effect, giving the user a true point level alarm.



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Summary

The Ronan point level system is the proven system for consistent, reliable monitoring of fly ash hoppers. Many of our original systems from over 20 years ago are still in use and functioning as they did when first installed. There can be no better testament to Ronan's technology, reliability and quality.



CONTINUOUS LEVEL RADIOMETRIC MEASUREMENT SYSTEM

LS Dual-Port Source Holder

The LS Source Holder with dual ports has two collimators, 180 degrees apart, which enable a single source to provide the measurement beams for two vessels, when the vessels are close to each other such as fly ash Hoppers. Using one source for two measurements provides significant cost savings.

The LS source holder contains a low-level source which is approved for General License installations on level applications when used with an interlock device.

Features:

- Stainless Steel Housing
- Dual or Single Port Configurations
- Lightweight at just 55 lbs. (25 kg)
- Shutter Options Include: Remote Cable, Remote On/Off Indicators, Interlocking Device, Air Actuation



Geiger Müller Tube Detector

Ronan Geiger Müller Tube Detectors consist of a gas-filled tube containing electrodes, between which there is an electrical voltage, but no current flowing. When ionizing radiation passes through the tube, a short, intense pulse of current passes from the negative electrode to the positive electrode and is measured or counted. The number of pulses per second measures the intensity of the radiation field. These pulses are directly proportional to the process mass being monitored and the electronics are then calibrated for the desired alarm status. For point level applications, Geiger Müller Tube detectors are used for high fields.



X96S Series Radiometric Transmitters

The X96S series of Radiometric Transmitters offer calibration and configuration in a simplified format. They provide flexibility and inherent stability of digital processing to process measurements. The diversity of the design enables the customer to choose from a self-contained unit mounted remotely from the measurement, a blind transmitter with various communication options, or any combination in between. The X96S Transmitters are modular in design, enabling the measurement computer to be tailored to the application requirements. Push-button programming is obtained through the LCD Graphic Display. All programming prompts are in English, with help screens available almost eliminating the need for a manual. Various board configurations accept multiple digital or analog inputs from ion chambers or scintillation detectors, as well as analog or discrete inputs and outputs. Serial communication is available in multiple formats including the HART® format.

