Radiometric Instruments in Electrostatic Precipitator Hopper Level Control

Electrostatic precipitators (ESPs) are essential components in industrial processes for controlling particulate emissions, especially within the power generation industry. They work by using electrical forces to remove particles from the exhaust gas stream and collect them into hoppers for proper disposal/mitigation.

One critical aspect of maintaining the efficiency and reliability of ES Precipitator is the management of hopper levels, where particulates are collected. Radiometric instruments are a proven measurement solution in this process by providing accurate and reliable level measurements.

Radiometric instruments use gamma radiation to measure the level, density, or flow of materials. These instruments consist of a radioactive source, typically Cesium-137 or Cobalt-60, and a detector. The source emits gamma rays that pass through the vessel and are attenuated by the process material in the hopper, and the radiation beam can be turned on/off via a mechanical closure of the emission aperture. The detector measures the intensity of the radiation that reaches it. As process material fills the hopper, it blocks the radiation between source and detector indicating the presence of material at the installed elevation.

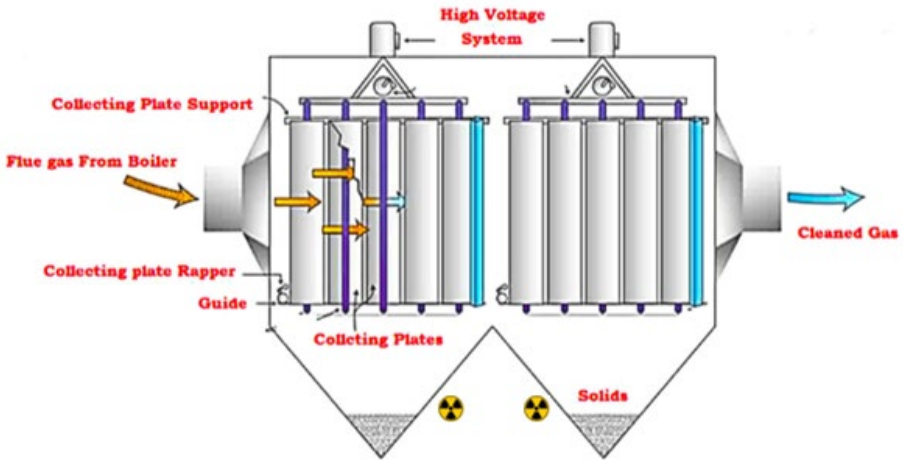
Radiometric instruments are ideal for service in the Electrostatic Precipitator Hoppers because:

- Non-contact measurements mean the sensing elements do not require connection to the working volume of the vessel. They can be installed/commissioned while the plant is in operation and mounted at any elevation that the level should be maintained.

- They are not subject to the harsh corrosive, erosive, and dusty process material, and therefore maintain a high degree of reliability, essential for maintaining hopper levels and preventing overflows or blockages.

- They can be easily integrated into existing control systems, where data from the instrument is fed into the plant control system, allowing the operator to maintain hopper levels and ensure continuous operation.

VEGA Americas has provided measurement systems to multiple coal-fired power plant & other emissions control systems using ESP technology. We can provide our expertise and experience which include hardware design but also signal integration with the plant control system.



Conclusion

Radiometric instruments are a proven and reliable measurement technology for hopper level control in electrostatic precipitators. The VEGA Americas POINTRAC 31 offers a high accuracy, dependable, and easy to user configuration interface that them ideal for use hopper level control. If you want to ensure reliable particulate control and contribute to cleaner and safer industrial operations, contact your local VEGA Americas representative and let us help you find a solution.