Cement Cyclone Measurement

In the production of cement material, the raw material of limestone and clay, or marl is heated to high temperatures to create cement. Radiometric instruments can be utilized at various points within the production process for indication/control because they are mounted outside of the process volume allowing them to avoid exposure to the high temperatures (>2000 degrees Celsius.) A specific example is the measurement of raw flour entrainment in the cyclone pre-heater section of the plant.

In this example, exhaust gas from the kiln is used to preheat material feed coming to the kiln. This effort economizes the use of heated gas, allowing more efficient operation of the kiln. For maximum efficiency, material must be fed into the preheater at a rate that ensures adequate kiln feed and allows enough time in the cyclone to reach peak temperature before final heating in the kiln.

Measurements are taken on settled powder levels at the bottom of the final stage of cyclone vessels to control material loading and ensure sufficient inventory levels are maintained for feed downstream to the kiln.

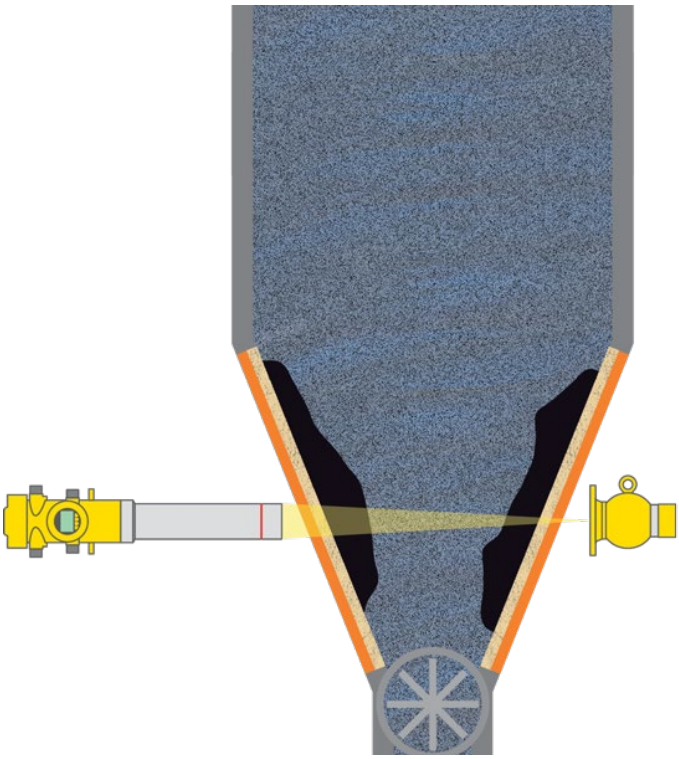

Figure 1 Cement Cyclone

One challenge in this application is that these cyclones can have substantial refractory brick to contain the heat applied to the process material. In radiometric measurement, this refractory brick will attenuate or block the radiation signal used for monitoring the inventory levels.

VEGA Americas has worked with end users to find solutions where refractory is modified to reduce the thickness, an alternate material (of lower density) is used where measurement is to occur, or thermowells are used to create a passage for the radiation signal to be transmitted unabated.

If your plant uses radiometric equipment for cyclone level measurements, and the refractory of these vessels are being maintained or modified for plant efficiency, you may need to consider the impact on the instrumentation in place for process indication or control measurements.

If you are interested in opportunities to measure material levels in a cement cyclone preheater, or having issues with your existing equipment installation, VEGA Americas can help to recommend or diagnose issues with existing equipment. Contact your local VEGA Americas sales representative or VEGA Americas Radiometric Applications Engineers for a conversation around your process control challenges.