



# Continuous Level Measurement for Cement Clinker Coolers

In cement production, the heart of the system is the rotary kiln, and the corresponding cooling system that follows it. The efficient operation of these two systems together is critical in maintaining efficiency and profitability in the manufacturing process.

With operating temperatures in excess of 1000°C (1800°F), the measurement of important parameters, such as the level of clinker on the cooling grates, is fraught with problems. Traditional, intrusive level measurement technologies simply cannot last in such a harsh environment.

Using a proven non-contacting, non-intrusive level technology, Berthold Technologies makes critical measurements in the cement making process, giving customers complete confidence in the accuracy of their instruments. An added benefit of Berthold's radiometric technology is the lack of maintenance required to maintain reliability. Recalibration is not required thanks to Berthold's patented long-term scintillation detector stability.



Typical measuring arrangement with point source and rod detector

## Berthold Technologies Solution to Clinker Cooler Level Measurements

The clinker is cooled as it is discharged from the rotary kiln onto a moving grate through which air is forced. The cooling is regulated by the feed rate and the amount of airflow. The quality of the clinker is directly affected by the cooling rate.

Cooling too slowly results in larger crystalline structure, which requires more energy to complete the grinding process. Product quality can be affected. Increasing airflow to the cooler can insure rapid cooling but raising the airflow can result in high energy costs and inefficiencies in other parts of the process.

To optimize cost savings, the airflow must be regulated to the proper amount for the mass of the clinker present on the cooler grates. This requires an accurate level measurement of the clinker.

Berthold Technologies non-contacting and non-intrusive radiometric level measurement technology provides a means of making an accurate and reliable clinker level measurement while operating outside this extreme high temperature environment. The high degree of accuracy, stability and repeatability insures high production rates, optimal efficiencies and superior product quality.

Whether it is the proven two-wire system using traditional remote electronics or the integrated field devices with HART or Bus protocol, Berthold Technologies has the proven and cost-effective solution for this application. Berthold Technologies level gauges use highly sensitive and rugged scintillation-based detection technology combined with low radiometric sources and can provide long-term stability down to  $\leq 0.002\%/^{\circ}\text{C}$ .

