Free Lime Control in Clinker Production with COSMA DP

Clinker mineralogy is dependant on the composition of kiln feed and the treatment it receives I the kiln. On-line analysis of raw meal is now commonly used to provide consistent feed, based on elemental analysis.

Laboratory assays are conducted hourly or less frequently on samples collected and prepared manually or automatically by very sophisticated and expensive robotic systems. The mineralogy of clinker samples is then estimated using Bogue calculations made from the elemental data produced by XRF equipment.

Bogue equations calculated from elemental data assume certain reactions take place but do not consider heat treatment in the kiln and thus cannot accurately reflect the mineralogical changes actually taking place.

Free lime composition is mostly used as an indication of clinker burning, but off-line assays in the lab are too slow and infrequent for real time process control. Also, the total composition should be considered for control to optimum performance.

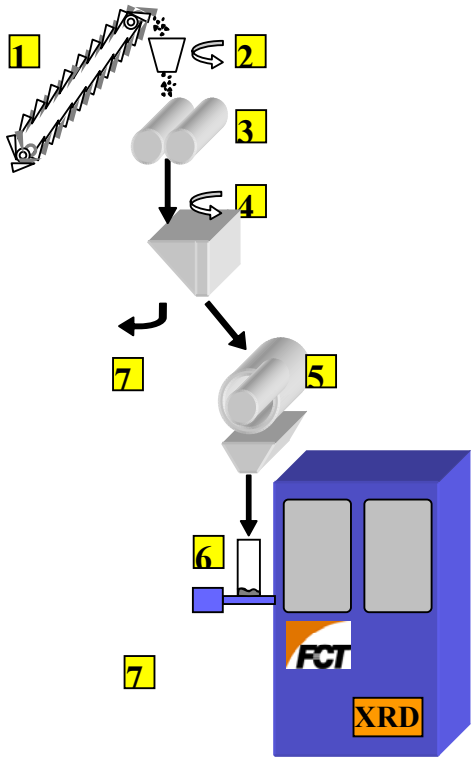
Typically free lime in clinker is lower than the optimum in most plants, because there is no on-line analysis to guide the operators, who are therefore obliged to err on the side of over burning to maintain the process easier to control.

Overburning causes excessive fuel consumption, reduced production, high NOx, short refractory life and harder to grind clinker. If clinker with a higher acceptable free lime content can be consistently produced; lower fuel consumption, higher production, reduced NOx, longer refractory life and easier to grind clinker will result.

COSMA on-line analysis monitoring free lime and active clinker minerals, will reduce free lime excursions and increase the average free lime content of the clinker produced in a softer burn.

Increasing cement mill throughput and lowering of kwh/t are additional benefits of a softer burnt clinker, which is easier to grind.

Ultimate performance of the finished cement is largely determined in clinker production. COSMA on-line monitoring provides a real time picture of the mineralogical changes as they are taking place. Thus process engineers are able to construct control regimes that allow the operators to maintain the kiln process at optimum performance levels for both cost and quality.



What COSMA can do....for you
Free lime control in clinker

- ***Reduced free lime excursions***
- ***Increase average free lime content***
- ***Reduce overburning of clinker***
  - ***Reduction in fuel consumption***
  - ***Reduction in NOx emission***

Every 10° C reduction in kiln burn temperature saves 1% fuel

Fuel saved increases cement mill throughput

Call us now *and learn what else COSMA can do for you…….. in real time.*

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