Kiln Control with COSMA DP
On-line Mineral Analyser

The major costs of clinker production are incurred in kiln pyro-processing, which is the heart of the cement manufacturing process. So it is no surprise that this part of the process received more attention than any other. Any improvements made at the kiln provide potentially huge benefits in production and have significant impact downstream in the grinding process.

Clinker production is a mineralogical process, yet the trillions of tons of clinker that have been produced to date, have all been produced in plants controlled mostly on elemental chemical data. Bogue equations construct hypothetical mineral compositions that ignore the heat treatment in the kiln. It is no wonder that operators struggle keep these expensive processes in control, with so much crucial information missing.

At last, FCT is first with COSMA mineral analyser, designed and developed to measure and report the mineralogical composition of materials being processed, on-line, in real time

A complete an analysis of clinker mineralogy at the cooler reveals a live picture of the pyro-process and allows corrections to the various parameters that affect clinker quality, before the quality is compromised.

Free lime, NOx and fuel consumption are issues critical to the cost effective operation of a clinker kiln operation. The complete mineral picture presented by the COSMA analyser enable these to be mapped and correlations determined so that effective control strategies may be implemented. Clear understanding of clinker mineralogy gives best control possibilities

Clinker burning has long been monitored via the presence of free lime, which can be due to raw meal being inhomogeneous, too coarse, the LSF too high, or the product of inadequate burning. Laboratory tests take too long to enable close process control and more often than not, clinker free limes much lower than target are produced as operators find a hard burn kiln is more stable and easier to keep in control.

Fuel consumption is major casualty of a hard burn kiln, as more fuel is used per kg of clinker produced. Kiln control based on COSMA mineralogical data can increase the operating level of free lime from under 0.5% to an average of over 1%, thereby reducing fuel consumption by some 5% as the burn zone temperature is decreased. A corresponding 5% increase in production is then available from the kiln.

NOx emissions are obviously tied to kiln burning, the levels primarily dependant on how hard a kiln is being burned. Better kiln control available from the clear picture presented by a COSMA analyser can reduce emissions by as much as 40%.

The quality of clinker produced from control models based on a comprehensive live picture of the pyro-process will be much improved and consistent. The implications for the cement milling process and final product performance are dramatic. Mill throughput can be maximized with a softer burned clinker and 28 day strengths can be consistently produced.

Increased profitability is guaranteed from a kiln operations running under optimum conditions. Moreover, pressure on fuel prices, NOx emissions and quality assurance are looming ever larger as challenges to profitable operation. The COSMAS analyser enables these challenges to be successfully met for the first time.

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

FCT-ACTech Locations

AUSTRALIA; 20 Stirling Street Thebarton SA 5031
Tel: +61 8 8352 9999 Fax: +61 8 8352 9988
E-mail: info@fctinternational.com

USA: 5 Great Valley Parkway Malvern PA 19355
Tel: +1 (610) 725 8840 Fax: +1 (610) 725 8846
Website: www.fctinternational.com