

Two Dimensional Measurement of Air Temperatures Above Clinker Bed

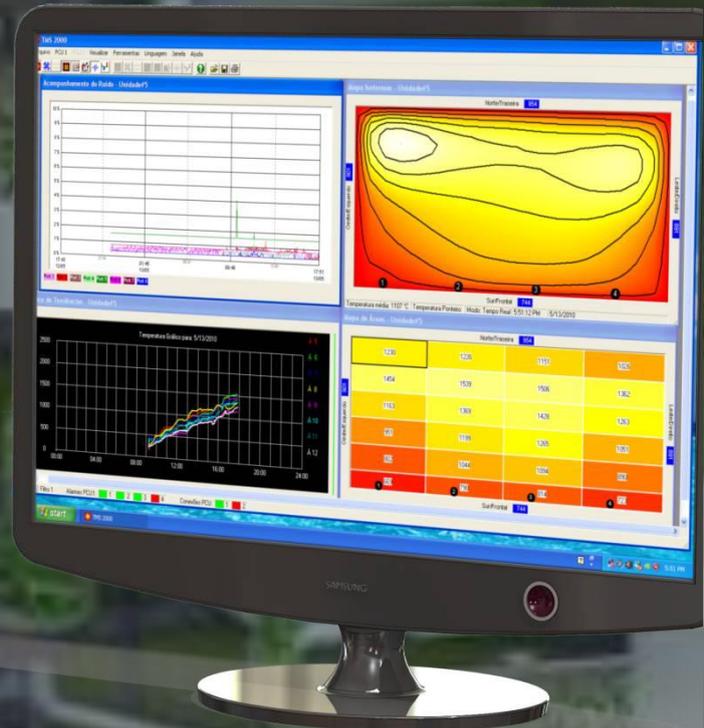


Background:

It is well known, how heated air passing thru the clinker affects the secondary and tertiary air in the cement process. Currently many thermocouples are used to measure temperatures both at the cyclones and clinker bed.

Many CFD simulations have shown that the efficiency of the clinker cooler is affected by controlling the burner at the kiln and burners at the cyclones. Important is to focus the thermal heat distribution above the clinker bed so that optimal temperatures are achieved.

Boilerwatch MMP-II-SSX a technology that has been used in power generation, oil refineries and petrochemical furnaces, is now being presented to the cement industry. The actual air temperatures above the clinker bed is shown in a 2-dimensional form with areas of temperatures that will allow very precise control of the air blowers.

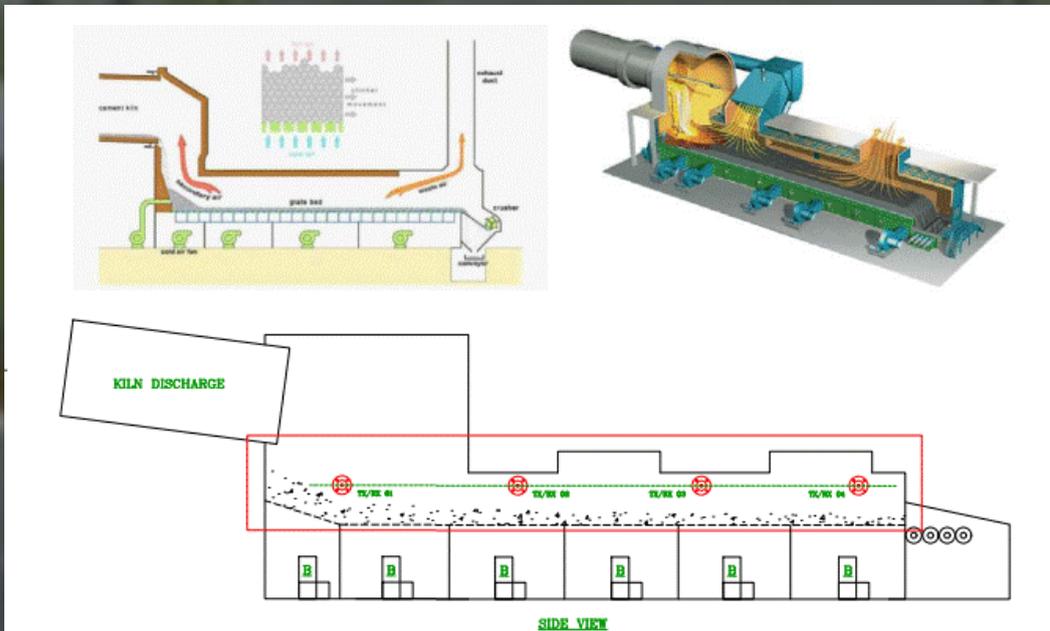


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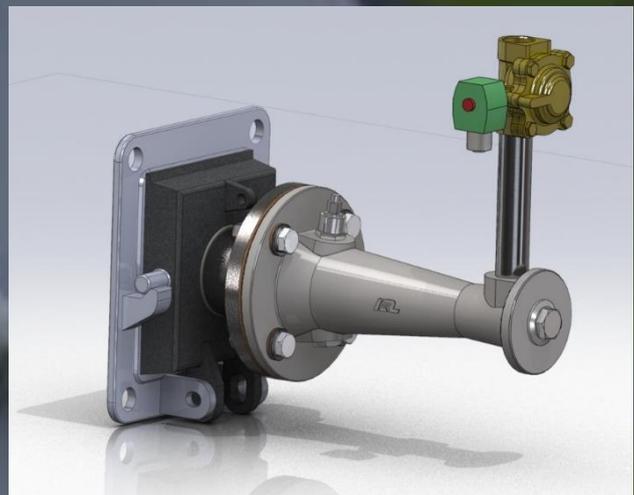
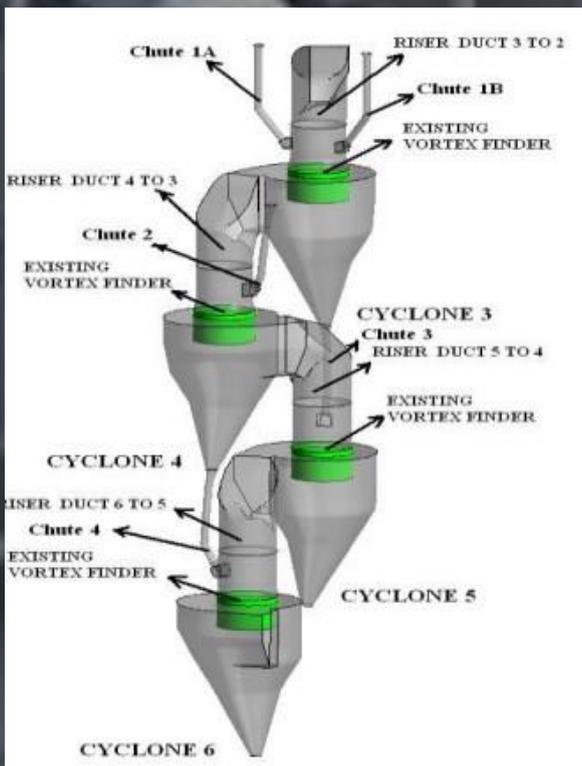


Technology:

From the ideal gas law, the air temperature is directly calculated from the speed of sound in between the externally mounted sensors. Strategically placed transceivers, transmit broad band noise which allows, from the 24 trajectories of air temperatures to draw the thermal image every 15 seconds. The thermal map is represented as a 2-dimensional map. Our software will show temperatures in small rectangles plus statistical information on air temperature behavior.

Benefits:

A 2 -dimensional map of temperatures PLUS a grid of area temperatures will allow early detection of anomalies. With the Boilerwatch MMP-II-SSX, control of the blowers will allow for optimal temperature distribution. Also, by placing transceivers in areas of high abrasion precise temperatures will be displayed.



References: Best Practices in Energy Efficiency in Cement Sector , A KEP initiative 7th-8th July, 2016 at My Home Industry Ltd., Mellachuruvu , Nalgonda Presented By: Akshay