



KILNSCAN 23™

Infrared line scanner for rotary kiln shell temperature monitoring

APPLICATION

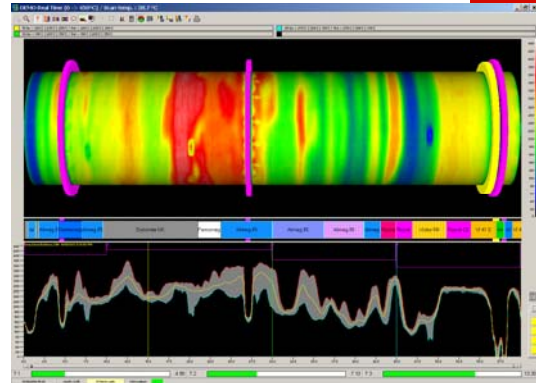
Kilnscan 23 is an infrared line scanner system purposely designed for rotary kiln applications. The package enables accurate non contact kiln shell temperature monitoring, lining and coating thickness evaluation, tyre slip and thermal warp calculation.

SCANNING HEAD

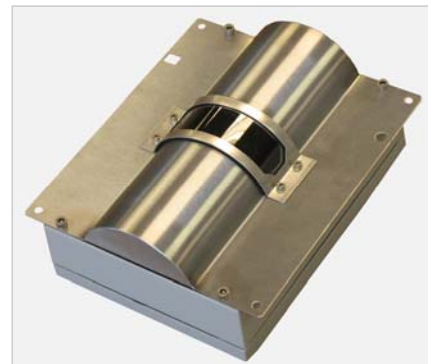
Infrared radiation from the rotary kiln is reflected onto a single flat rotating mirror driven by a heavy duty maintenance free motor operating at constant digitally controlled speed. The rotating mirror is mounted directly on the driving motor shaft properly balanced to avoid vibrations, for the best possible reliability results. Additionally, for every rotation, the mirror sweeps over an internal reference source of low and constant temperature for real time calibration. Then the infrared beam is focused into a thermo-electrically cooled detector via a set of mirrors and aspheric lens of high angular aperture. This results in an extremely high thermal sensitivity and thermal resolution which enables detection of small hot spots on the kiln shell. Because of the exceptionally good performance described above, the infrared detector does not require as much cooling as for other systems, the advantage being that the system is better adapted to wide changes in ambient temperature. The power supply unit comprising the required transformers, power filters, etc, is supplied as a separate item to prevent temperature rise and electromagnetic interference, again enhancing the unit's overall reliability.

ELECTRONICS

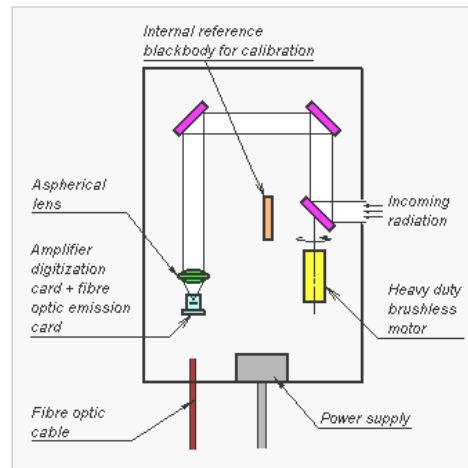
The scanner 16 bit output signal is transmitted to the remote processing equipment via a fibre optic cable for non-interference from electromagnetic field. The processing equipment comprises an electronic receiver installed in the control room for acquisition of signals from the infrared scanner, kiln and tyre switches, and blackbody. The electronic receiver also provides alarm relay outputs for shell fans control.



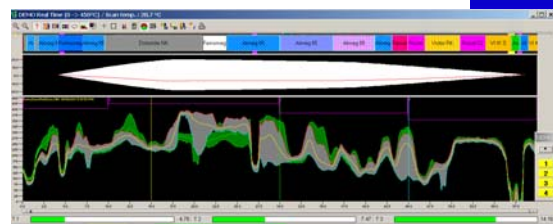
SIRCIM software, 3D display



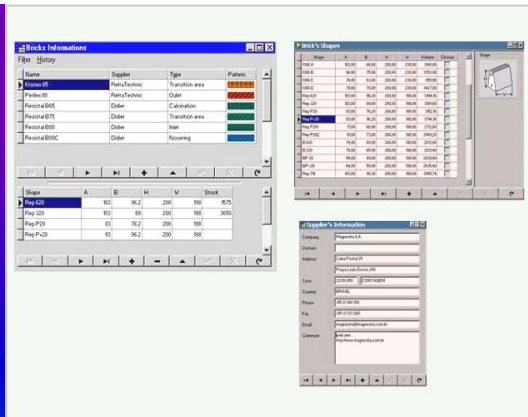
Scanner head



Scanner head principle



Thermal warp



Brick management



Blackbody

DEDICATED SOFTWARE

Specially developed under Windows XP environment, the software insures real time monitoring. Main displays are kiln thermal profiles, brick and coating thickness, kiln rotating speed, tyre slip, heat loss, kiln thermal warp, alarms, trend curves, automatic data storage, 3D display...

BLACKBODY

For sites subject to adverse weather conditions (fog, snow, rain), atmospheric absorption of the infrared signal affects the readings. For such a case, an external reference source (black body) at constant temperature (250 °C) installed close to the kiln is recommended. It enables instant and reliable signal correction for atmospheric absorption regardless of the conditions of other components such as scanner viewing window, optical filters, etc.

ADVANTAGES

- Very precise image of kiln shell temperature thanks to :
 - high sensor sensitivity : early detection of hot spots and coating /brick thickness variation,
 - high resolution : detection of single brick fall
 - 16 bit fibre optic transmission
 - 140 field of view option for long kiln or limited scanner to kiln distance
 - IP 65-60529 / NEMA 12 protection : compliance with harsh industrial environment
- Unique thermal warp calculation
- Tyre slip monitoring
- Brick and coating thickness calculation

Above information is subject to changes without notice



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