COOLSCAN 27™

Infrared Imager for Grate Clinker Cooler Monitoring

INTRODUCTION

Real time recording of clinker temperature over the whole surface area of the grate provides further possibilities for cooler optimisation such as the control strategy - which in turn affects the whole burning process. The cooling air flow is minimised, heat recovery and clinker cooling improved, thereby resulting in better clinker quality, less specific heat consumption, increased production and extended cooler plate lifetime. COOLSCAN is an infrared scanner which provides real time thermal imaging to identify temperature non-uniformity and to manage process problems such as product avalanche or red rivers. It can operate as a stand alone instrument or act as an interface for cooler chamber air flow adjustment and process control.

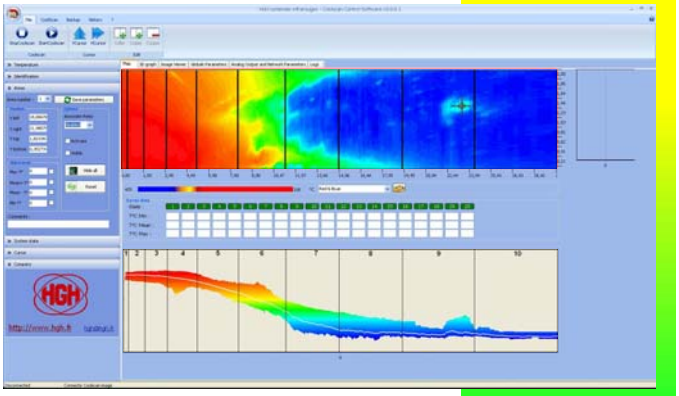
DESCRIPTION

COOLSCAN is a unique periscopic infrared scanner which views the clinker bed surface on the inside, through the cooler side wall. This ensures optimum combination of ease of installation, continuous operation and uninterrupted process monitoring.

SCANNER PERISCOPE

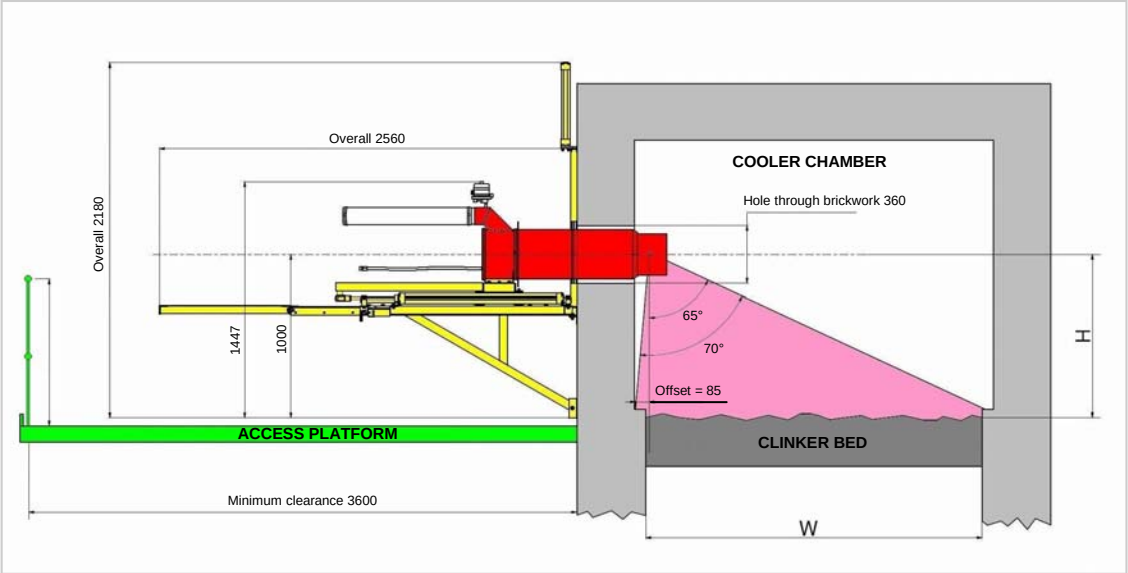
A rotary mirror combined with an indexed cam driver positioner produces a real time two-dimensional thermal image. The thermal radiation is focussed onto an infrared sensor mounted inside a water cooled enclosure. The infrared signal is processed by on-line electronics to produce a calibrated thermal image of the wide field of view displayed on a PC monitor located in the control room. Inside the furnace, the periscope is protected from high temperature and abrasion by a stainless steel sleeve and separate air cooling. The sapphire viewing window is heat and abrasion resistant. The optical scanning assembly is gear driven by a heavy duty DC motor with sealed-for-life bearings. The periscope assembly is trolley mounted for automatic extraction. Cooler port closure is ensured by a pneumatically operated stainless steel shutter. In the event of periscope head overheating, the periscope automatically withdraws from the cooler chamber.

General view of the scanner assembly



Clinker bed thermal map

In-situ assembly and tip detail



General principle

TECHNICAL SPECIFICATION

Scanning optical periscope of case aluminium body
Thermal jacket : stainless steel lined, air swept
Driving motor and electronic parts housed inside water cooled enclosure
Synthetic sapphire optical window

Infrared sensor	:	thermoelectrically cooled MCT detector
Detector wavelength	:	5 µm
Optical field of view	:	70° x 180°
Number of sampling points	:	1000 x 580
Line frequency	:	25 Hz
Instantaneous field of view	:	2 mrad
Thermal resolution	:	3 °C at 300 °C 2°C at 700 °C
Temperature measurement range	:	120 ° to 1400 °C
Image refresh rate	:	45 seconds
Weight of periscope /support frame	:	57 / 188 kg
Power supply	:	230 V, 1 ph, 50/60 Hz, 500W

High/low temperature thresholds through 4-20 mA signal converter
OPC server/client available

Above information is subject to changes without notice

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