

Thermal Camera For Coke Oven Door Refractory



In steel plants, coke is used as a fuel for Blast Furnaces. Coke ovens are used to convert natural coal into Coke. The doors of these coke ovens are manufactured of refractory lining, which have limited lives, as the lining starts degrading over time due to the regular impact of high temperature which may lead to complete depletion and greater chances of accidents. The risk of breakdown of these refractories will always be present in metallurgical plants, with equipment damage and loss of production leading to costly consequences. There is a high risk of personnel injuries and loss of life, due to the refractory breakdown. The risk of door breakdown can be minimized by routine inspections and refractory re-lining.

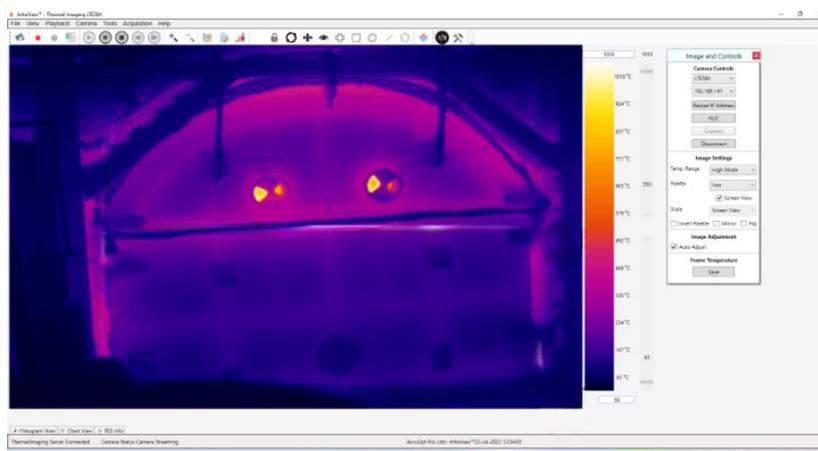


The temperature tracking of the coke oven doors surface helps to provide a scheme for re-lining the damaged area and increases the life span of the doors by avoiding excessive lining damage and break-outs.

ThermCAM-384

Pixel Resolution: 384 x 288 Pixels

Temperature Range: -20°C to 120°C/ 100°C to 1000°C Switchable via software



Solution

AccuOpt provides a precise and reliable measurement solution for Coke oven door Refractory Healthiness Monitoring to enhance plant safety and helps in organizing maintenance schedules in Coke Oven plants. In this solution, Accuopt's ThermCAM-384 thermal camera will be installed at a position from where it will have a clear view of the Coke oven door.

The lens used in the camera has such FOV that it can cover the complete profile of the Coke oven door. The camera system captures real-time thermal video/images of the Coke oven door surface. Temperature increase at the outer shell provides a clear indication of refractory damage, alarming to set a schedule for refractory relining.

The temperature of the door reaches normally ~200°C and an alarm condition can be set over ~400°C. To get the more precise temperature of a particular region configurable ROIs can be defined for analysis. The captured thermal images and temperature data can be exported and stored for analysis and quality control.

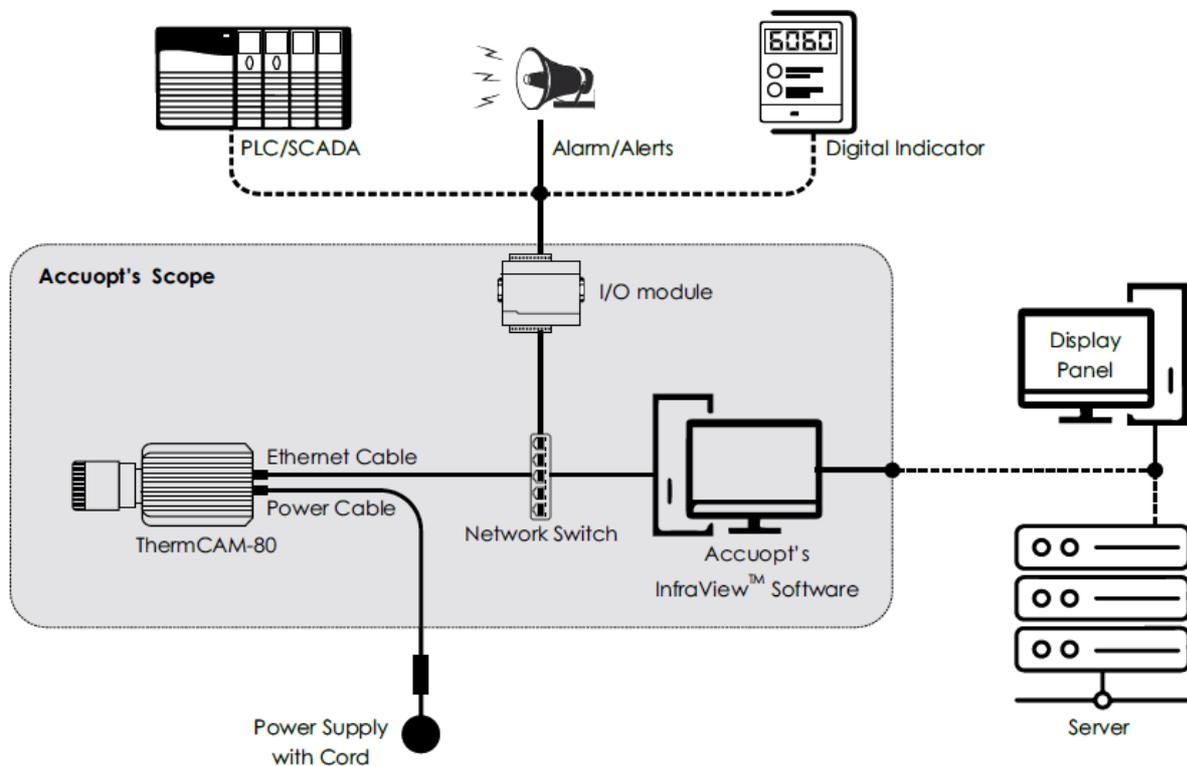
System Configuration

Advantages

- Automatic and non-contact temperature measurement system, which increases personnel safety
- Improve door safety
- Increases refractory lifespan
- Allows timely relining of refractory
- Generate alarms on detection of hot spots, which helps in predictive maintenance and reduces high rejection costs or reprocessing.

Key Features

- Provide continuous thermal video in InfraView™ Software.
- Different types of ROI (Region Of Interest) can be drawn for localized temperature monitoring.
- Histogram and trend chart of ROI can be generated for data analysis.
- Includes 9 different color palates which can be selectable as per the user demand



Thermal Camera Connections

- ThermCAM-384 provides Ethernet output. The camera has two connectors at the back side one is power connector and another one is RJ45 Ethernet connector.
- The camera get connected to PC installed with InfraView™ software which allows to stream thermal videos/images.
- This camera output can also be taken over PLC/SCADA, digital indicators or hooters/ alarms etc. through I/O module via a network switch.
- This Accuopt's I/O module provide 2 relay outputs and 4 analog output of 4-20mA.