



Improve Reliability



Reduce Downtime



Extend Product Life

FIRED FURNACE INSPECTIONS

MEASURE FURNACE TUBE METAL TEMPERATURES THROUGH A GAS FLAME WITH THERMAL IMAGING

THE CUSTOMER'S CHALLENGE

Furnace tubes can overheat and rupture resulting in equipment downtime and lost production, as well as creating additional collateral damage. The ability to monitor tubes for signs of overheating due to over-firing rates or flame impingement from improper burner alignment is critical to the reliability of the furnace. Refractory damage can result in a loss of mechanical integrity of the flue duct and firebox shell and can also create a personnel safety issue - especially near inspection ports and ladders. That's why it's crucial to routinely inspect and assess the working condition of the external steel firebox, tubes, and supports. Internal furnace evaluation requires inspectors to accurately measure the tube metal temperature through the flame and combustion products without affecting the temperature measurement. In order to determine whether actual overheating is taking place, as opposed to overheating due to external tube scaling, they must be able to distinguish between internal tube "coking" and external tube "scaling".

A SOLUTION

Thermal imaging is a powerful technology that enables furnace inspectors to evaluate the condition of the firebox, burners, and tubes, even when looking directly through gas flames. The GF309 is designed to remove the flame from the image, allowing the inspector to monitor the tubes for any signs of overheating or damage. Thermocouples are notorious for failure inside a furnace and often give inaccurate temperature readings, which could affect the reliability of the furnace. The GF309 allows the user to verify thermocouple measurements and to also see potential overheating in areas adjacent to, or away from thermocouple coverage. The FLIR GF309 also features a detachable heat shield designed to reflect heat away from the camera and camera operator, providing increased protection. There are times when the inspector only needs to view the external "shell" of the firebox and flue ducting. For this application, a premium handheld thermal camera with high temperature calibration, such as the FLIR T840, is an ideal solution.

THE RESULTS

A furnace inspection camera with thermal imaging allows fired furnace inspectors to look through gas flames and determine whether localized internal "coking" is occurring vs external scaling. Inspectors can accurately measure the true hot spots and make recommendations to the operations team to reduce the firing rate in the furnace and avoid an unexpected tube rupture. The integrity of the refractory lining can also be evaluated by an external firebox inspection to ensure no overheating of the steel shell is taking place.

For more information about FLIR in the oil and gas industry or to schedule a product demonstration visit:

www.flir.com/oilandgas/processing-refining

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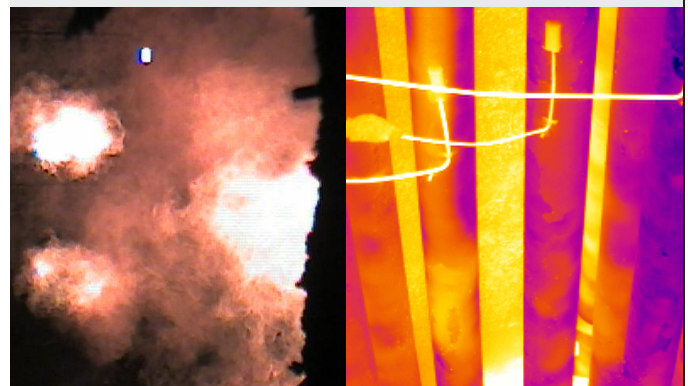
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Thermal imaging of the external surface of the firebox shell and flue ducts can identify areas of overheating due to internal refractory damage.



The GF309 makes it possible to monitor furnace tubes for signs of overheating, and to accurately measure the tube metal temperature, even when viewing the tubes directly through the gas flames.

FLIR GF309



FLIR T840

