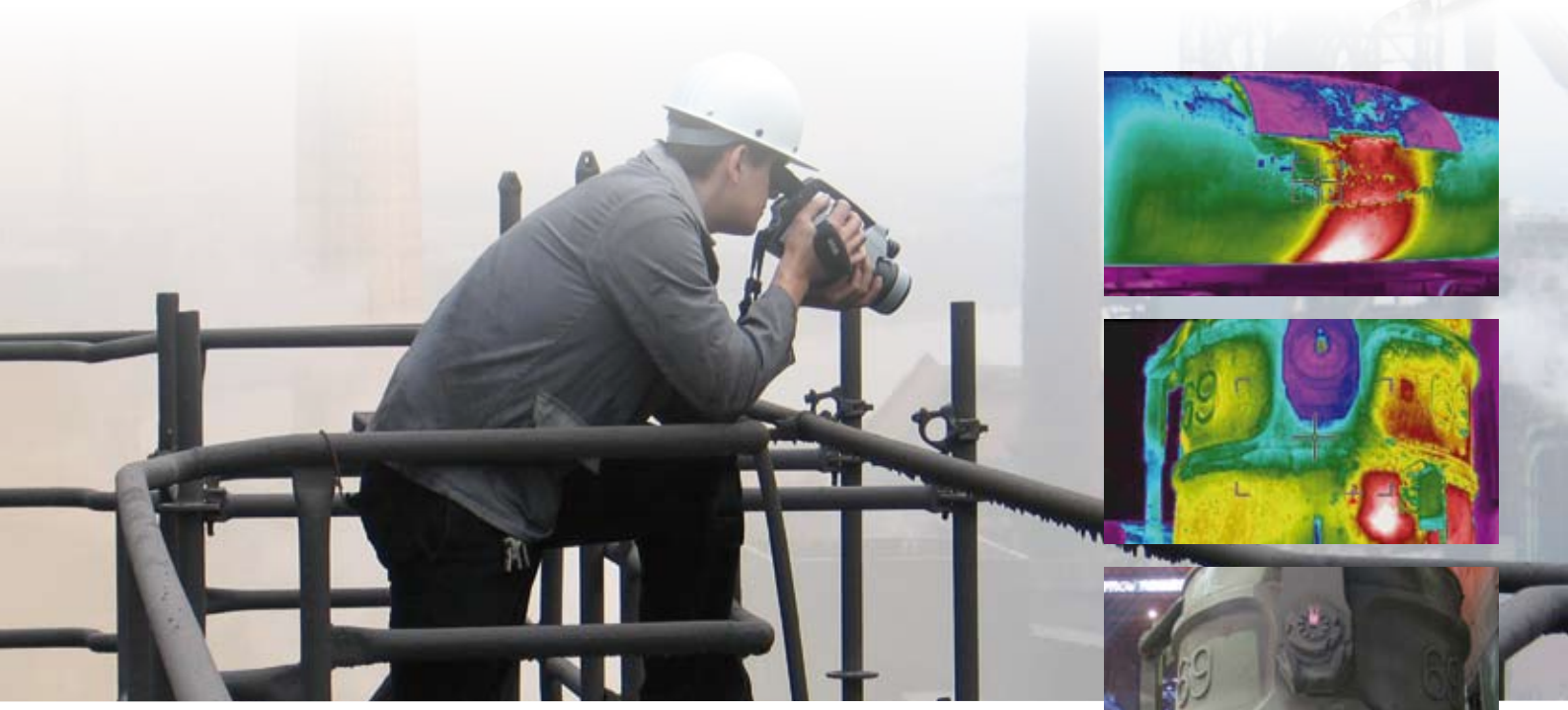
FLIR SYSTEMS
THE GLOBAL LEADER IN INFRARED CAMERAS

APPLICATION STORY



640x480 pixel resolution Infrared camera proves vital at steelworks

HKM's steelworks use FLIR P-Series infrared cameras to inspect, maintain and optimize production processes

Hüttenwerke Krupp Mannesmann GmbH (HKM), located in Duisburg, Germany, manufactures pig iron and steel. HKM also operates a coke plant and a sintering plant, a factory where iron-bearing particles are formed into pellets or pulverized to be charged again into the blast furnace.

"Steel production is a long, powerful, energy-intensive chain of processes. If something goes wrong, the whole chain is blocked, usually with unpredictable consequences for workforce and infrastructure. Infrared contributes to keeping the production going" says Ralf Ponczeck, who together with his colleague Dirk Ehrich is responsible for thermography at the HKM plant.

The two technicians, both ITC certified Level III thermographers, are assigned to HKM's Energy Management Department, as measuring and calculating heat development is vital to determine and reduce the plant's energy output. They use a P640 infrared camera, equipped with 14 bit FireWire video streaming (called SC640) calibrated to + 2,000 C and equipped with 24 and 80° lenses. The camera has to function in extreme conditions in terms of temperature, dust and thermal load. Process engineers responsible for production levels call on them to inspect or monitor the heat load on engines, gears, structural casting plant elements as well as the proper functioning of cooling elements which are in direct contact with 1,000 °C hot molten steel rounds.

What's cold and hot in steel manufacturing?

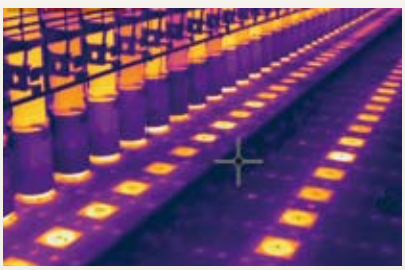
In addition to inspection tasks, Ponczeck and Ehrich gather thermographic evidence in order to determine thresholds and severity criteria for vital production processes and units. They use the ThermaCAM Researcher software, an advanced software suite for temperature and infrared image analysis, to calculate relevant temperature development models. "We use a three-fold classic severity criteria scheme for electrical inspections, but our steel process inspection results are based on our experience and the data we gather" says Dirk Ehrich.

The two technicians assert that they continue to find new applications for the IR camera at the HKM plant: "the 640x480 pixel resolution not only gives a clearer picture of the situation, it also allows us to inspect the many hazardous areas we have, from a safer distance."

Thanks to Thomas Jung, FLIR Systems Germany Regional Sales Manager, for providing contact and support.

Ladles (picture) are huge containers used in steelworks to transport the molten steel to other production stages. They are covered inside by refractory lining that is needed to withstand molten metal temperatures during the casting process. Refractory materials are heatproof, but also thermal shock-sensitive. Their quality and performance is vital to a clean and safe production process. If they are not exchanged on time, the ladle will burst and tons of 1,500 °C hot liquid steel will gush out into the foundry.

Coke plant furnace



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