PdM Payback

Infrared Imaging Reduces Operating Costs and Avoids Problems in

Paper Manufacturing

Reducing operating costs and increasing profits in a highly competitive industr, like paper manufacturing is a daily challenge. The process of fabricating paper depends upon a series of exacting steps to insure quality product output. Electrical or mechanical failure of the process equipment or improper drying of the paper product can lead to hundreds of thousands of dollars lost. Infrared imaging systems used for plant predictive/preventative maintenance (PdM) and process monitoring have enabled paper manufacturers to identify and diagnose problems before they occur, resulting in significant savings and rapid return on investment.

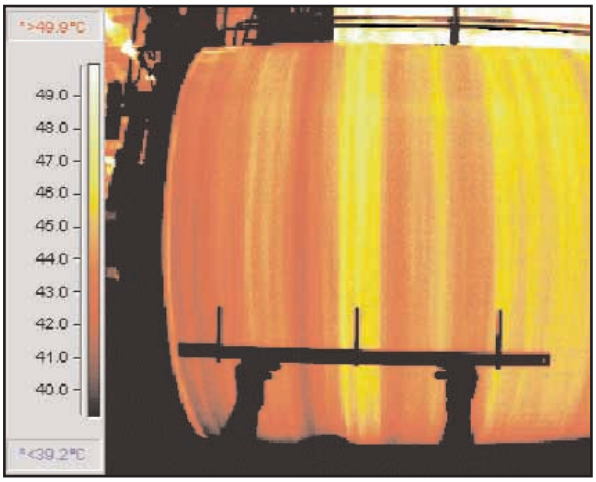
Rapid Payback on Process and Predictive Maintenance Applications

For many years, infrared (IR) cameras have been invaluable troubleshooting tools in the paper-making process. Many of the problems that commonly occur in the paper manufacturing process and equipment manifest themselves thermally before critical problems occur. Infrared cameras "see" thermally and allow users to spot potential problem areas earlier, allowing proactive corrections to be made before costly repairs are needed.

Many large paper-producing plants have successfully implemented predictive/preventative programs utilizing thermography. Typical applications include identifying "hot spots" on mechanical systems such as motor windings, roll bearings and gearboxes. Nearly all paper manufacturing plants experience unscheduled downtime resulting from electrical component failure such as electrical bus bars, line splices, switch disconnects, transformers, circuit breakers, and distribution panels, which are all easily detectable with infrared. Boiler operations and steam systems within paper manufacturing facilities can also benefit from the heat-loss isolation capabilities of an infrared camera.

Infrared imaging is also used to monitor various phases of the actual paper manufacturing processes. For example, IR provides an excellent means of evaluating one of the most difficult parts of the paper manufacturing process, the drying stage. Moisture in the paper appears significantly cooler than the warm dry paper when viewed with an IR camera. Utilizing the real-time video display from an IR camera allows plant engineers to adjust drying heaters for optimal uniformity while having instant feedback in the viewfinder of an external TV monitor.

IR imaging offers a clear advantage over other diagnostic tools in the paper industry because it is a non-contact method of detecting minimal temperature variations on the object of interest. Operator safety is maximized while working around large paper manufacturing machinery, since the IR camera operator can view objects and make measurements from a safe distance.



Variances in drying time are shown on thermal image. Light areas indicate dryer spots on paper roll.

ThermaCAM® PM Series Designed to Meet Paper Industry Challenges

ThermaCAM PM series of infrared imaging systems were designed to provide the thermal information necessary to keep a modern paper process running productively and efficiently. Key areas of the camera's design cut right to the heart of the needs found in the paper plant environment. ThermaCAM features simple "point and shoot" operation. ThermaCAM is the only IR camera designed with the paper manufacturing environment in mind. While ThermaCAM looks just like a standard

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camcorder, it has been fully sealed and hardened for use in the high humidity and ambient temperatures of a paper plant and has an IP 54 environmental rating. The camera's rugged aluminum enclosure not only provides unrivaled shock isolation but also has a unique design that allow use of the camera in extremely high heat environments.

ThermaCAM's lightweight, totally cordless operation and ultra-low power consumption assure long hours of safe operation in virtually any paper manufacturing environment. Intuitive features such as the live profile mode and large color LCD display make collecting and analyzing data fast and easy right on the production floor.

FLIR's family of software makes report writing simple. Thermal images and annotated data from the ThermaCAM are automatically inserted into a user defined report template, significantly reducing post-processing time. Optional software modules provide databasing and trending capabilities.

Proven Savings and Return on Investment

In an aggressive and competitive industry, such as paper manufacturing, the ability to reduce plant operating costs is a necessity for survival. Studies have shown that dollar for dollar, investments in predictive/preventative maintenance and product quality programs, yield immediate, positive returns to a plant's "bottom line". Typical payback on an IR system investment is realized within the first few months of use in the paper industry.

IR at Work

Kimberly-Clark, Champion Paper, International Paper, Weavexx

Kimberly-Clark, Champion Paper, International Paper, and Weavexx have all benefited using infrared systems as part of their PdM and process monitoring programs.

One large paper manufacturer used IR to check the incoming power at the sub-station located on the plant property. The maintenance crew discovered a potential fault at the transformer feed. Had there been an actual power loss, the estimated production losses would have cost between $200,000 and $300,000.

Infrared easily detects abnormal temperature variances across the surface of drying rolls used in the paper fabrication process. Recognizing wet areas with IR during the drying process can result in cost savings in excess of $50,000.

FLIR Systems is committed to ongoing advancement of state-of-the-art infrared imaging and measurement. Consequently, system specifications are subject to change.

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