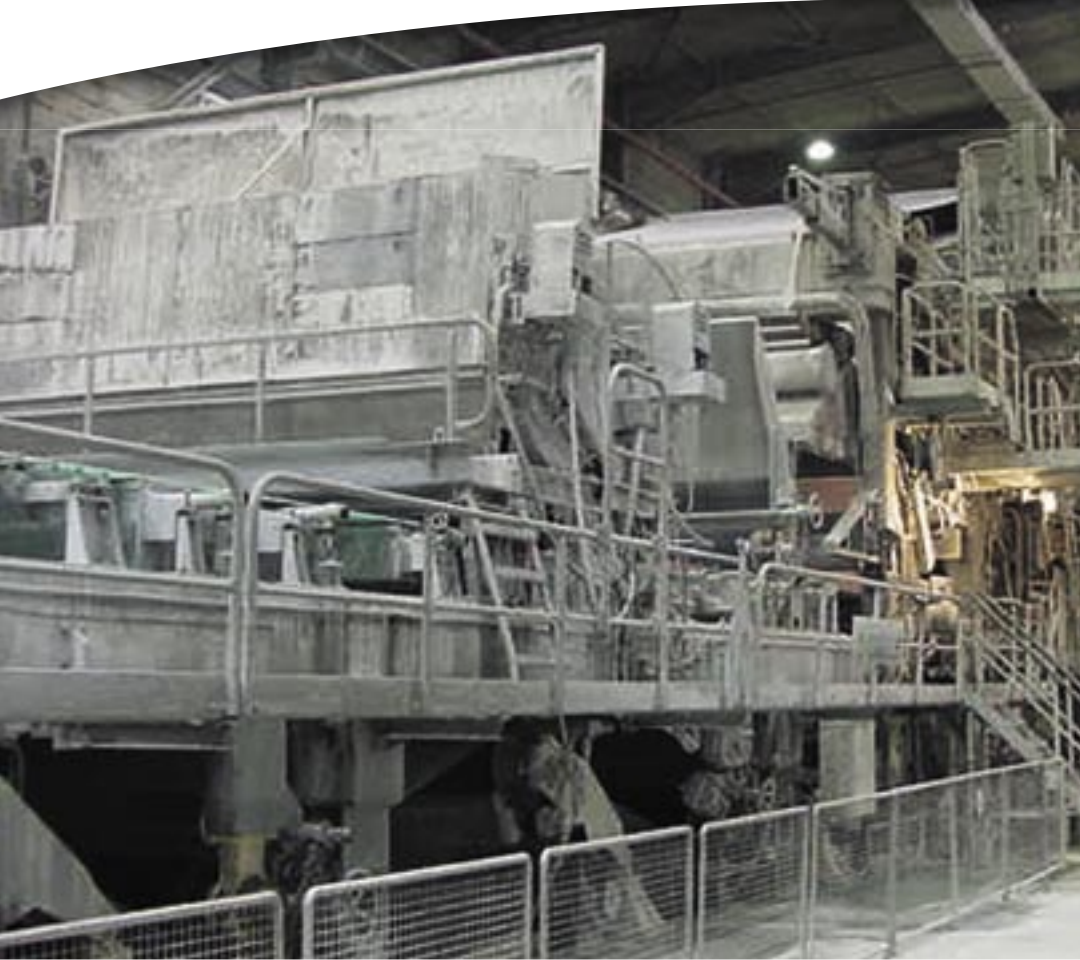


APLITER
TERMOGRAFIA

FLIR APPLICATION STORY



One of the paper machines at the Bessé plant

FLIR Systems ThermaCAM P-series camera keeps eye on Arjowiggins paper production quality

Arjowiggins is a leading international paper production group which manufactures and supplies products ranging from paper for dictionaries to packaging for cosmetic products and security papers. The group has worldwide production sites and employs approximately 8,000 people. The origins of Arjowiggins France are rooted in ancient local paper mill traditions going back to the 18th century, when Arjowiggins' predecessors invented the watermark.

The huge Arjowiggins plant at Bessé-sur-Braye (Le Mans region, north east of France) is one of the group's main plants in France. It has some 700 employees. The site produces coated papers for the group's Printing and Writing division. Coated paper is treated with a clay-

based material for special printing finishes. Two-side coated wood-free papers have to meet high-quality requirements. They are used for art editions, marketing materials or selective printed magazines, among others.

The production of paper is very energy intensive and it creates large amounts of heat. First the basic mixture, which mainly consists of wood pulp plus additives, is formed and pressed. After the sheet formation process, pressing cylinders remove water. Further drying takes place while the paper is passed around a whole series of cast-iron cylinders heated to temperatures in excess of 100°C. The water content is then lowered to its final level of 1 to 2 %. After the drying process and before the rolling, surface treatment such as calendaring or coating is done.



Pre-drying process viewed from machine operator's position: higher temperature due to bad extraction in the area



Pascal Oger, Technical Assistant inspecting paper sheet



Monitoring the production process

The drying stage is one of the most difficult parts of the paper manufacturing process. The more the paper dries, the more the drying process on the rolls has to be as equal and uniform as possible. Arjowiggins technicians use a FLIR Systems infrared camera to verify the uniform spread of temperature on the rolls. As an instrument able to scan entire surfaces, the camera is an excellent instrument to display variations in moisture distribution.

"The visual information is more important for us than the mere temperature indication", says Pascal Oger, Technical Assistant and main thermographer at the plant. "The higher the camera resolution and the broader the Field of View, the better", he adds. "We have a ThermaCAM P-series with a 320x240 pixel resolution combined with a wide angle lens. An investment, but it enables us to see the entire huge paper roll from a few meters distance."

If the drying process happens according to a regular pattern, no extra drying is needed, which substantially saves energy, and thus production costs. Based on the data provided by the ThermaCAM P-series camera, plant engineers can adjust the drying heaters for an optimum product uniformity. The company-owned P-series camera is frequently used at two other Arjowiggins plants in the area.

Another frequent application of thermography is the monitoring of vapor distribution. Observing the condensate return after the vapor distribution gives a good indicator of the rational or non-rational use of the thermal resources. It enables the engineers to use less energy for an identical drying process. This way, the ThermaCAM P-series camera contributes to making the production leaner.

Maintenance and product quality inspection

At manufacturing plants, infrared camera's are often introduced either by the maintenance or the production department. Infrared thermography has always had a good stance at

the Arjowiggins group. At the plant in Bessé, the benefits of infrared have been discovered as early as 1997, when the company purchased its first cameras from AGEMA, the predecessor company of FLIR Systems.

Predictive Maintenance of electrical installations and machines at the huge plant is outsourced to an external infrared thermography consultant, who has the required time, equipment and expertise to make and present his reports to the technical staff.

Using the P-series camera

Pascal Oger mentions the laser pointer, which is standard equipment on the P-series camera, as a very practical and safe tool for his applications as well as the flexible handling of the camera's big screen. Oger stores his images on a set of Flash cards, using one card for each plant he inspects in the course of a week.

"We are happy with the camera and its features, and we see the substantial savings generated by infrared thermography every day", says Pascal Oger, who, meanwhile, is turning the search of building and isolation deficiencies at the plant into some kind of a hobby. "However", he adds, "I am aware that we do not yet use the full potential of infrared thermography here at our plant. But we will do more soon, as a cost-benefit analysis has prompted us to participate in a certified ITC course."

Thanks to Franck Carette, Area Sales Manager at FLIR Systems France for providing contacts and local support



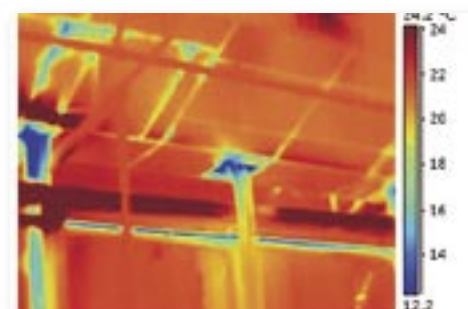
The Arjowiggins plant at Bessé-sur-Braye



Close up of pre-drying process



Uniform drying of paper sheet (no humid edge)



Cold spots in factory building



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