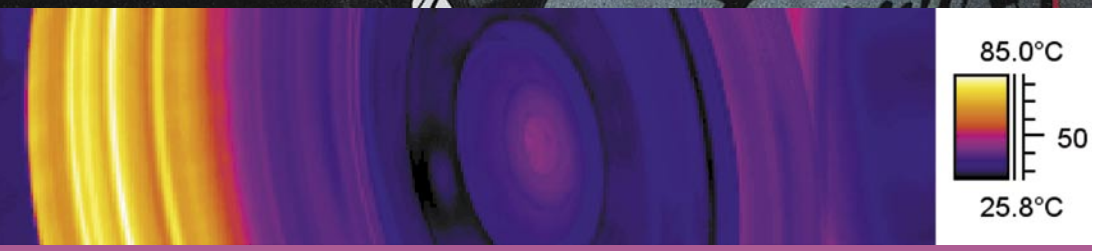
FLIR APPLICATION STORY

FLIR SYSTEMS

# Bridgestone/Firestone chooses infrared thermography both for predictive maintenance and R&D

*Bridgestone / Firestone Formula 1 tyres*




*Thermal image of a tyre during high-speed testing*

*As a world leader in the production of tyres for cars, lorries, buses, aircraft and other applications, Bridgestone / Firestone is constantly seeking new and more effective technologies for predictive maintenance and Research & Development applications.*

*Infrared thermography, effected with the help of two FLIR Systems cameras, has proven to offer considerable advantages. Not only does it enable Bridgestone / Firestone to keep their production units running at all times, it also allows them to improve product testing and to bring new products faster to the market.*

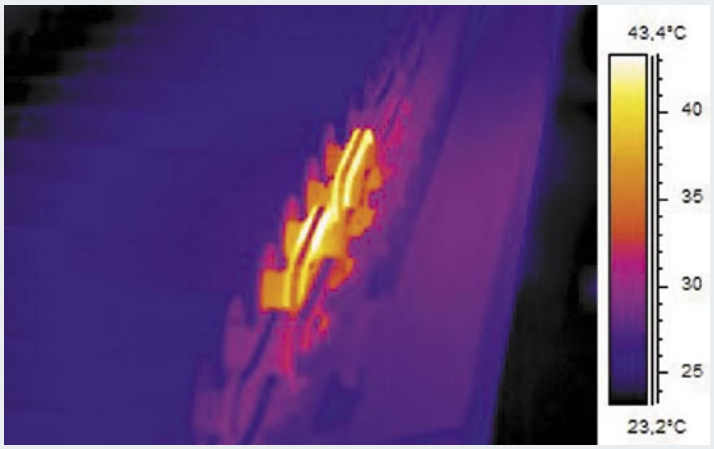
The Technical Center Europe, based in Rome, covers more than 11,000 $m^2$ floor space and houses chemical, physical and technical laboratories for analysis of tyre materials, a pilot plant for the manufacturing of prototype and experimental tyres and a tyre testing complex. The Technical Center Europe is responsible for process and equipment design and development. They technically assist Bridgestone / Firestone tyre-manufacturing plants all over Europe.

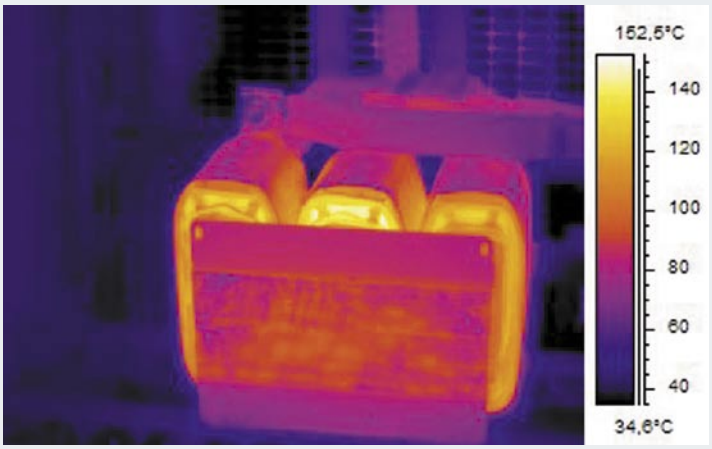
### Infrared thermography, a vital tool for predictive maintenance

Bridgestone / Firestone first came in contact with infrared thermography when they had high voltage equipment, checked by an external service provider. They were impressed by the information they obtained through infrared thermography.

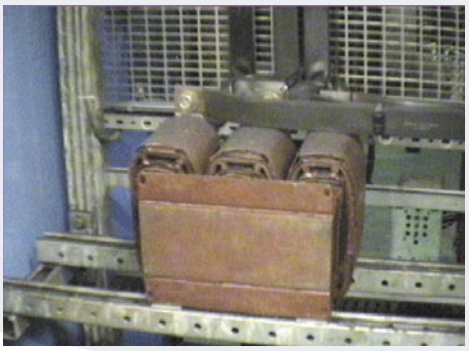
They not only wanted to do inspections of their electrical equipment on a more regular basis, but realised that infrared would offer them added value in their predictive maintenance programmes. Not only for electrical, but also for mechanical and other inspections. They decided to buy an infrared camera.

After careful technical evaluation they decided to buy a FLIR Systems ThermaCAM™ PM 695. "We decided to buy a FLIR Systems camera because

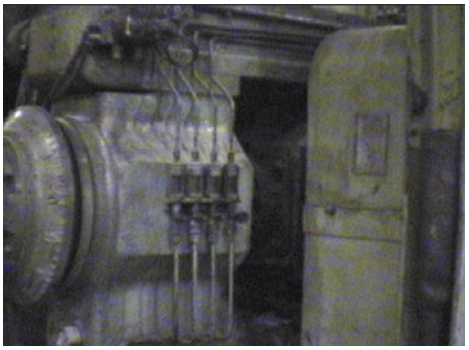



*Heated rollers on a conveyor belt*

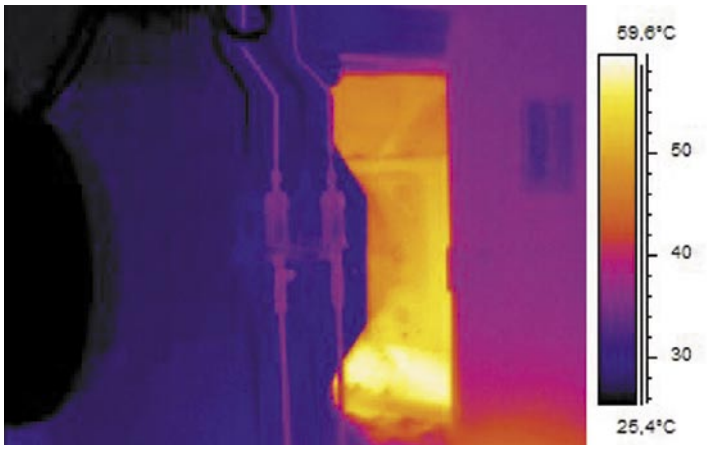


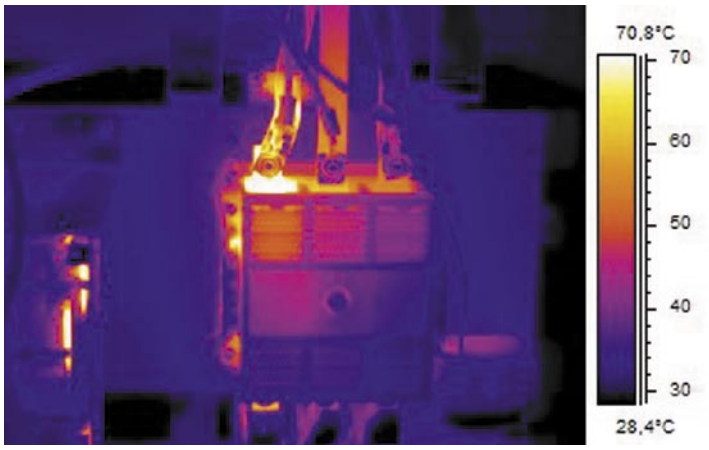
*Thermal image of a tri-phase transformer*



*Checking the circulation of oil in a lubrication system*

*Checking the main switch inside an electical panel*




it is the best system on the market." says Mr. Martinez de Septién, Section Manager Equipment & Maintenance Control, "The camera / software combination offered by FLIR Systems clearly offered us a total predictive maintenance solution "

### Camera, software and training: a perfect combination

The ThermaCAM™ PM 695 has proven to be an excellent choice. "The people doing the inspections with the camera are often not the same as the ones that need to do the repair. Therefore the visual camera integrated in the PM 695 is great. Our technicians can not only clearly see on the infrared image that there is a problem, but they immediately know where it is located since the associated visual image is included in the report. The possibility of storing text comments in the field and the intuitive ThermaCAM Reporter software, allow us to generate inspection reports very easy and very fast."

*An aerial view of the Technical Center Europe, Rome*

On buying the camera, Martínez de Septién decided to appoint two of his employees to follow a training course at the Infrared Training Center (ITC).

"Handling an infrared camera is fairly easy," comments Claudio Bosurgi, "but during the ITC course I acquired a theoretical background which helps me to understand what to take into account when taking infrared images with the camera and how to interpret these infrared images better. "

### Additional cameras in the near future

The next step was to introduce the camera in their European production facilities. A training programme was set up in Rome for the maintenance managers so that they could familiarise themselves with the infrared camera. Afterwards, the camera was sent to every production facility so that local maintenance managers could evaluate its possibilities.

"The response was extremely positive", explains Claudio Bosurgi "all our plants are convinced that infrared is a great tool for predictive maintenance. It gives you a clear image of the situation and problems are detected before they really start troubling the production. The purchase of additional cameras is being assessed, so that each plant will have its own infrared camera"

### Return on investment

"Although it seemed to be a big investment, we calculated that if we could detect only 2 critical problems with the camera, it would pay itself back. A problem is considered to be critical when, if undetected, it would shut down production for several hours. During the first six months that we have used the ThermaCAM™ PM695 we detected already more than 2 of these problems. This alone justifies our decision to buy a camera".

### And what about Research and Development?

Being a leading company, Bridgestone / Firestone is constantly looking for new techniques and innovations to make an even better product. One of the tools they are using to realise this, is, again, infrared thermography.

"The research and tests we are conducting include those that enable us to determine the behaviour of the tyres in various operating conditions," explains Vincenzo Ciaravola, engineer of the Research and Development Department. "We simulate the real working conditions and test the tyres at different speeds, with different loads and according to other variable para-meters. As temperature has a considerable effect on the performance of a tyre, the infrared camera provides us with valuable information that would be difficult, if not impossible, to obtain with the help of other techniques."

"We decided to buy a FLIR Systems SC3000 infrared camera for some important reasons. First of all it was very important to us that we could record images with a speed up to 750 Hz. On top of this the SC3000 has a larger temperature range than other cameras on the market. Also the software package ThermaCAM Researcher HS, is an excellent tool to do in depth analysis of the captured images. And finally, just as our colleagues in preventive maintenance we consider it to be vital that we can get fast and accurate local support when we need it.

"The camera not only helps us to keep our factories running but also to develop a better product, not only for Formula 1 racing teams, but also for everyone travelling in cars or planes every day.", concludes Mr. Ciaravola.

*Claudio Bosurgi and Santiago Martínez De Septién at the Bridgestone / Firestone Technical Center Europe, Rome*

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