

## Thermography in Electronics Development

VarioCAM®-Series – Precise, Efficient and Reliable

*Being one of the largest automobile component supplier throughout the world Delphi attaches fundamental importance to the quality of its products. In Wiehl where Delphi's laboratory plant "Test & Validation Services" is located, thermography is used for design and product validation as part of quality assurance. Therewith, a stable hardware basis is set for integrating new technologies in motor vehicles that again present a substantial contribution to traffic safety. In order to fulfil the high demands in terms of hardware, e.g. fuses, connectors and printed circuit boards, Delphi counts on efficient and exact thermographic test routines.*

**Delphi Deutschland GmbH Test & Validation Services**

[www.delphi.com](http://www.delphi.com)

InfraTec- solution:  
VarioCAM® series

The laboratory plant in Wiehl has decided for the VarioCAM®-series as the most suitable thermography solution because these cameras offer high flexibility. Already today, Delphi is testing products in various sizes asking for an optimal adaption of field of view and a high detail resolution. Already now small details of components and products can reliably be measured using its inbuilt close focus function. By extending the cameras with other lenses up to microscopic ones the test engineers of Delphi are also able to quickly meet emerging future demands.

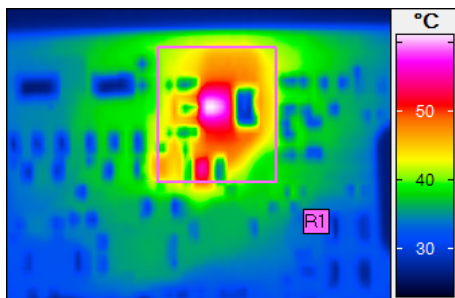


Fig. 1: 5x digital zoom of thermal image with hotspot – PCB

But it is not just the optic design of the VarioCAM®-series that convinced Alexander Ott of Delphi but also the opportunity to operate the thermal camera both handheld as well as stationary. In stationary application while the camera is being fixed on tripod and remotely controlled via a computer radiometric data can be acquired with a frame rate of up to 60 Hz without any smearing for further analysis. Therewith, even fast temperature changes can be measured with reliability and further be surveyed in detail. For analysing its data Delphi has decided for the software IRBIS® 3 plus. Thus, the time curve of a temperature distribution or the distribution of temperature changes in turn-on processes can be reviewed.

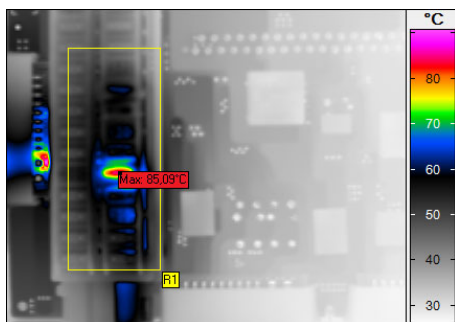


Fig. 2: 5x digital zoom of thermal image of fuse block

In image no. 1 a hidden hotspot can be seen that was detected with the help of infrared thermography. In order to increase sturdiness in operation the circuit part has been revised by optimisation. Image no. 2 shows the temperature distribution of a fuse block.

Based on the thermal test results Delphi now benefits from reduced development times as hardware is optimally designed in the first design process already. This again results in high standards of quality and cost optimization at the same time.