

Thermography in the Automotive Industry

Thermography Systems for Process Control, Error Detection and Quality Assurance

INFRAtec.

Increase of safety, reliability and environmental friendliness

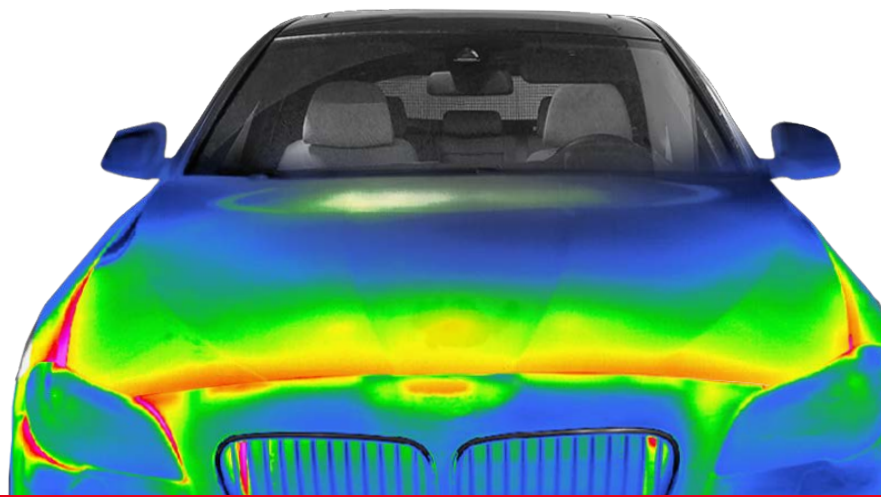
Increase of efficiency in production processes

Manufacturing-integrated, flexible solutions

Detection of the smallest geometrical details, even with large measurement objects

Application-specific and powerful analysis software

Innovative measurement technology to support research and development



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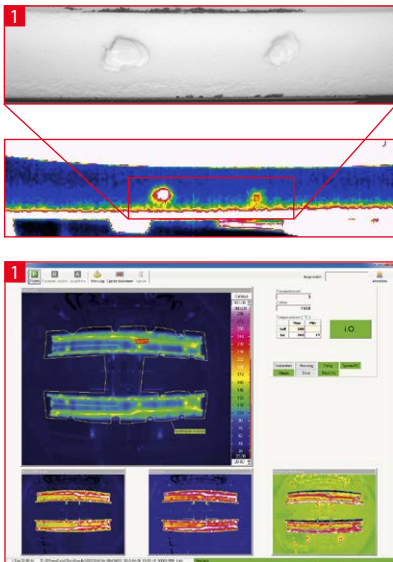
Innovative Measurement Technology
Made in Germany

Range of Applications in the Automotive Industry

More than 6,000 satisfied customers are examples of the productive cooperation of InfraTec with renowned automobile manufacturers and suppliers. In many areas of the automotive industry, infrared thermography is used for process control and monitoring, as well as for non-destructive testing of various vehicle components. Excellent thermal resolution, high frame rates and integration into complex test environments enable accurate and efficient quality control.

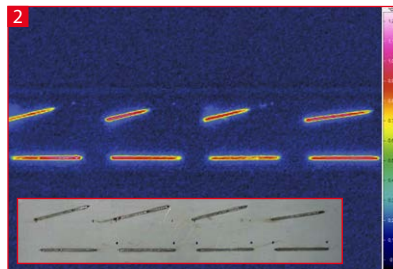
1 Materials testing, large-scale temperature measurements of components

- Quality tests on lightweight materials and the visualisation of concealed damage
- Monitoring of the thermal process parameters in the manufacturing of car body parts



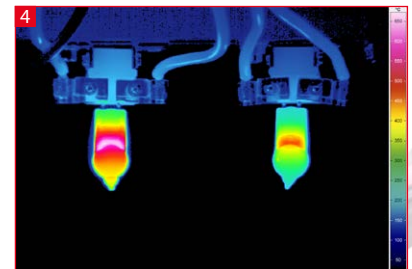
2 Quality assurance in joints

- Non-destructive testing of welds and laser welds
- Visualisation of hidden bonds and seals



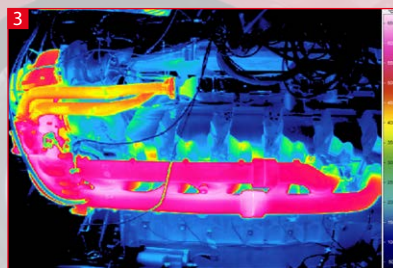
4 Performance optimisation for components of the lighting system

- Functional testing and development of components for lighting technology



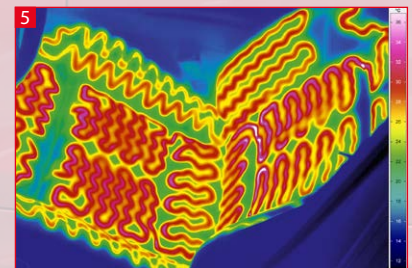
3 Optimisation of drive units

- Detection of overheating in motors and exhaust systems
- Thermal behavior of electric motors and batteries



5 Quality assurance in the car interior

- Function tests for heatable components such as seats, steering wheel or windshields



Custom Thermography Solutions

Camera Systems

- Professional thermography technology from Germany assures maximum system availability
- Assortment ranges from compact microbolometer cameras to cooled, high-end cameras with focal plane array photon detectors with the highest detection sensitivity (320 × 240) to (1,280 × 1,024) IR pixels and frame rates of up to 25,000 Hz

Software Solutions

- Selection and provision of application-specific software packages
- Complete and convenient instruments for the evaluation of thermal imaging data
- Variety of automatic and configurable features, depending on customer needs
- Precise and efficient work using convincing reporting and analysis capabilities

Process Integration

- Integration friendliness simplifies integration into existing customer processes
- Efficient use of thermography for process control and quality monitoring
- Stationary systems prove themselves in the manufacture of thermally-sensitive components, as well as in quality control at the end of production processes

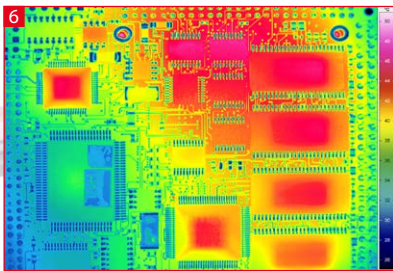
System Components

- High-resolution thermal imaging cameras, efficient control and analysis, robust excitation sources and controllers, as well as continuous-operation-proof automation peripherals
- Modular system design saves time and money
- Project-specific, functionally optimised configuration of each individual test system
- High flexibility in adapting to changing requirements

The modern automotive production combines complex, technologically highly sophisticated manufacturing processes. Their quality can be kept constant only on the basis of reliable data. Therefore, world market leaders such as Audi, BMW, Daimler and Volkswagen have been cooperating with InfraTec for many years when it comes to temperature data. These companies use thermal imaging systems by InfraTec for tasks in process control, quality assurance and in the field of research and development.

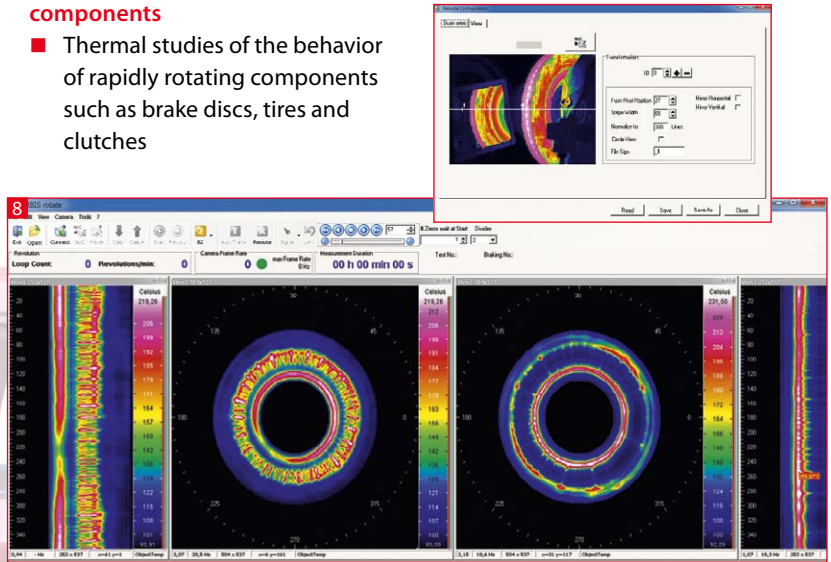
6 Thermal management of electronic components

- Verification of the thermal behavior of circuit boards and hybrid assemblies (micro thermography)



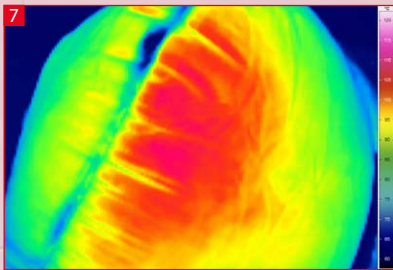
8 Load testing of mechanical components

- Thermal studies of the behavior of rapidly rotating components such as brake discs, tires and clutches



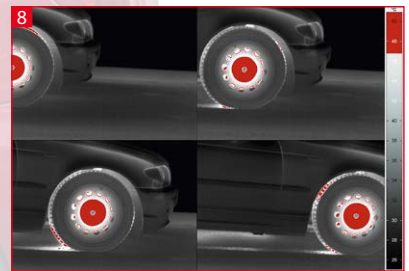
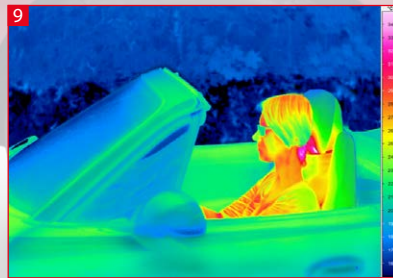
7 Development of security systems

- High-speed thermography for the ignition of the airbag



9 Comfort optimisation

- Heating design in vehicle interiors



Comprehensive Service for Your Applications

Shorter product life cycles and higher requirements for environmental protection and safety are just some of the challenges faced by manufacturers and suppliers in the automotive industry. Answers to these issues are provided by the use of new materials, efficient production equipment and accurate test systems.

InfraTec offers tailored thermography solutions for the successful management of such tasks, as well as the matching service for partially or fully automated applications.

- Comprehensive advice for individual thermography solutions
- Feasibility studies for complex system requests
- A global network of sales and service partners
- 24-hour service hotline
- Maintenance and remote diagnostics
- Calibration



Infrared Thermography Systems and Solutions

Based on more than 25 years of experience in infrared thermography, InfraTec offers a full range of thermal imaging systems and complete solutions.

High-end Thermographic Camera ImagerIR® Series

- High-end camera series for the highest standards
- Cooled photon detectors of the latest generation with up to (1.920×1.536) IR pixels
- Thermal resolution better than 0,015 K
- High-speed thermography to 25,000 Hz
- Long-life stirling cooler for continuous operation applications
- Motorised filter/aperture wheel for spectral thermography
- 10 GigE interface
- Integrated trigger and process interface
- Modular design for individual upgrades
- Extensive range of accessories and optics

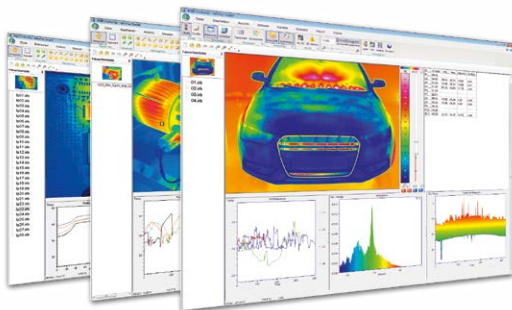


Professional and Universal Cameras of the VarioCAM® Series

- High resolution and robust industrial cameras
- Compact, lightweight metal housing (degree of protection up to IP67)
- Ergonomic design, light weight
- Microbolometer detectors of the latest generation with very high geometric resolution up to $(2,048 \times 1,536)$ IR pixels
- Large standard temperature measuring range
- Storage of infrared sequences up to 240 Hz
- Process interface and GigE interface



Thermographic Evaluation and Analysis Software



- Modular software suite IRBIS® 3 for standard measurement tasks
- Expandable if desired, by special modules for camera control and data acquisition
- Special software packages as an alternative to measurements in automated applications
- Targeted adjustments to local conditions, for example with representation in different operating modes or the adaptation to various test scenarios

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Latest information on the Internet.

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