

## Thermography for Automation Solutions

Individual Solutions for a Variety of Applications

**Slag Detection**



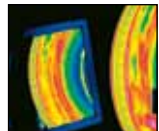
**Early Fire Detection of Waste Bunkers**



**Monitoring of Roller Mills**



**Test Benches for High-Speed Rotating Objects**



**Automotive Industry**



**Tests of Solar Cells**



**Temperature Control of Bulk Goods**



**Environment Protection**



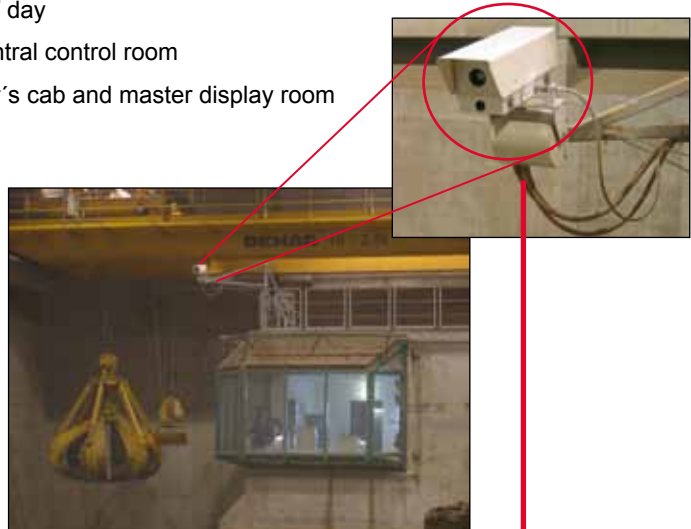
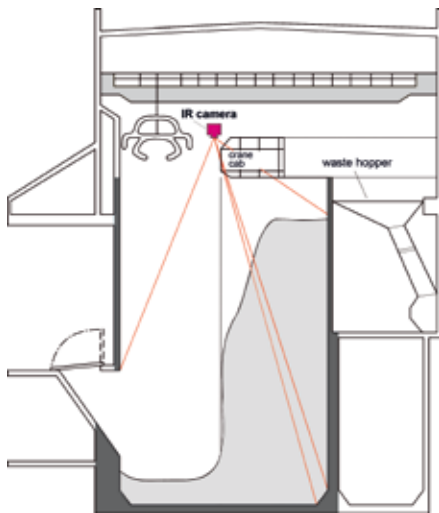


## WASTE-SCAN

### Infrared Monitoring System for Early Fire Detection

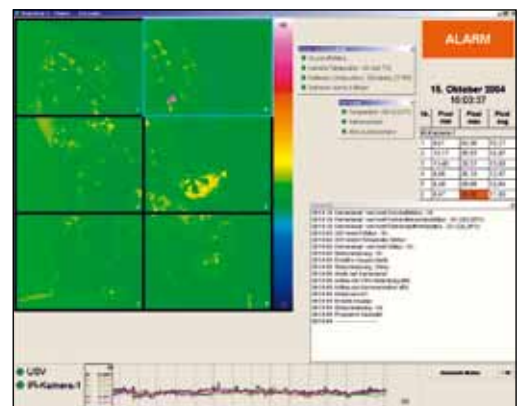
#### Customized System Design

- Suited for sustained continuous operation 24 hours / day
- Transfer of thermal images from the camera to a central control room
- Colour displays and control panels in crane operator's cab and master display room
- Flexible wiring technology (copper or fibre optics)
- Uninterruptible power supply – UPS\*
- System maintenance at PC in control cabinet\*
- Large surface black body reference for atmosphere transmission compensation\*



#### Comprehensive Software Suit

- Continuous display of current thermograms of all sections
- Simultaneous display of live image (b/w thermogram or colour video)
- Merging of live image of thermographic and video camera\*
- Tracking of maximum, minimum and average temperature of each section
- Graphical presentation of temperature-time profile of all sections
- Archiving of image data
- Logging of operations
- Display of status information of camera and system



\*These functions are optional available.

## Monitoring of Roller Mills

### Thermographic Measurements in Harsh Industrial Environments

#### Description



- Individual system solution serving all needs
- Extremely rugged configuration for operation in harsh industrial environment
- Multifunctional analysis options using the thermographic software suite IRBIS® 3
- Automatic monitoring of critical temperature ranges

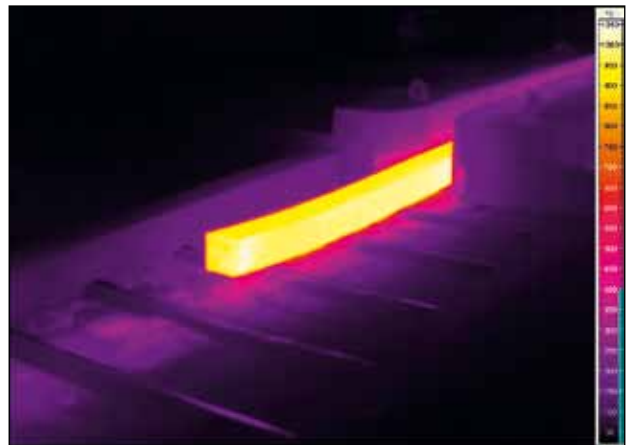


The growing interconnection of the machines and equipment and an expanding automation result in an increasing complexity of the facilities. High reliability and efficient operations of the facilities have absolute priority.

Monitoring with thermographic solutions will contribute to this optimising processes and their quality.

The high-quality cameras applied for these applications are perfectly fitting the requirements of a permanent use within the application.

The individually configured thermographic solutions of InfraTec are designed for industrial applications and withstand the harshest conditions. Depending upon the operating conditions the solutions include a protective housing to even more safeguard the thermographic camera and thus provide for a long lifetime.

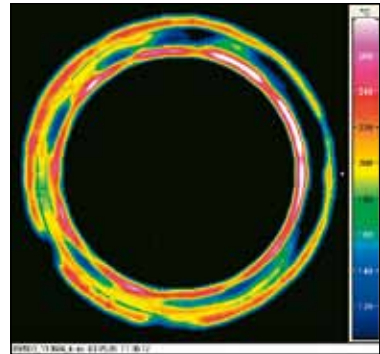
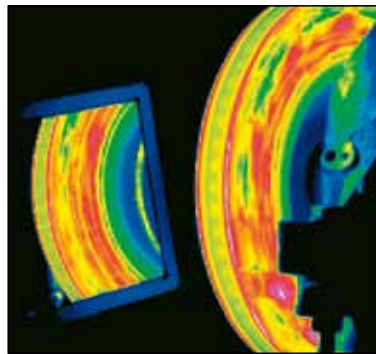
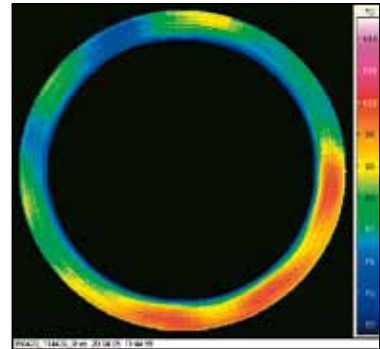


## Test Benches for High-Speed Rotating Objects

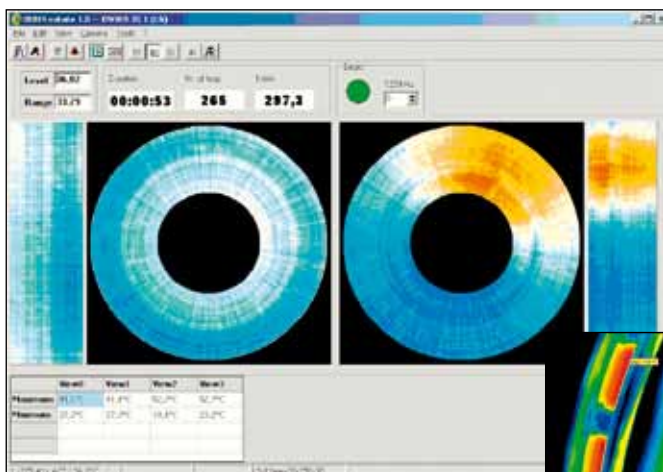
### High-Speed Thermography for Automated Test Bench Solutions

#### Features

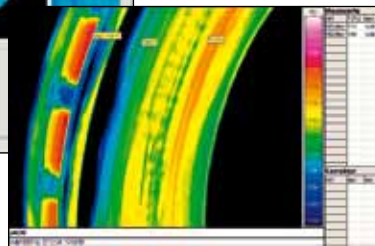
The demands for quality and lifetime of wearing parts in the automotive industry are constantly increasing. For tests of rotating parts like brakes and clutches at various stress levels InfraTec has developed a thermography based test bench solution. The object to be measured is scanned at rates up to some kilohertz. The data are automatically filed triggered by the solution. For display and achieving the data are transformed.



#### Powerful Software



- Convenient analysing options for thermographic data, e.g. temperature-time profiles
- Automatic hot-spot detection
- Export of image sequences to AVI format
- Alarm function surpassing critical temperature Thresholds during live tests



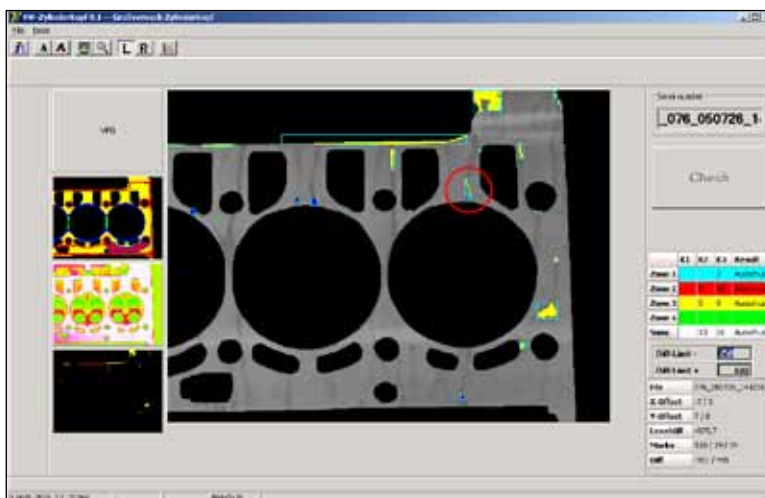
## Automotive Industry

Quality Assurance and Quality Control



- Detection of spills and oil residues
- Detection of defects and damages
- Monitoring of production quality

### Manifold Analysis Opportunities



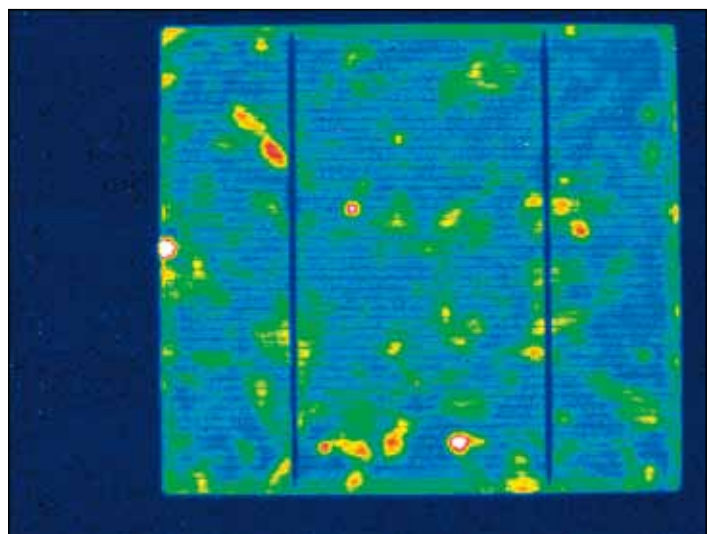
- Hot-spot detection
- Monitoring of different sections
- Automatic alarm function
- Customized parameterisation
- Image processing regarding various quality criteria

## Tests of Solar Cells

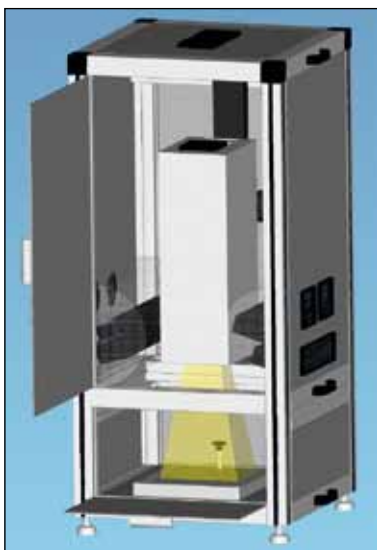
### Control of Solar Cells Using Lock-in Thermography



Solar cells can already be contactless tested in shortest times during the production process using light-modulated lock-in thermography (PV-LIT). A periodically modulated lightning of the solar cell results in a local warming of the damages (shunts) which are detected using a powerful thermographic camera integrated into a lock-in thermographic solution.



#### Advantages of the PV-LIT Test Bench:

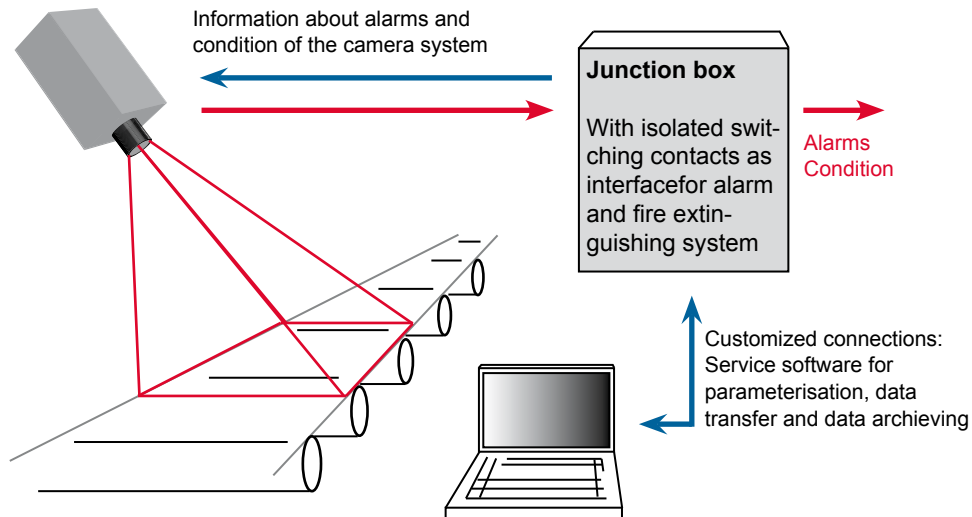


- Suitable for stand-alone and in-line operations
- Uncomplicated change of operation modes
- Testing of solar cells possible before wiring
- Easy handling through testing of the solar cells horizontally
- Solar cells of a size up to (210 x 210) mm<sup>2</sup> possible
- Freely determinable integration time of the thermographic camera for optimising the resolution
- Powerful software for measurements, savings, analysis and comparison of measurement data

## Temperature Control of Bulk Goods

Individual Solutions for Every Field of Application

Schematic Draft of an Industrial Solution using VarioCAM® hr head



The main part of the solution is a thermographic camera VarioCAM® hr head (compact industrial camera) with a standard 25 mm lens and a temperature measurement range from (-40 to 1200) °C. This is installed directly above the conveyor belt to be monitored.

For implementation and parameterisation the video and the FireWire signal are led to the junction box.

The junction box contains the power supply for the complete solution. If needed a protective housing and the junction box are made from stainless steel.



## Environmental Protection

### Observation of Flocking Birds

- Complete solution is sea water proof
- Automatic protective action at critical weather conditions
- Remote data transfer via fibre optic cables or radio
- Customized infrared lenses for optimized observation
- Save and loss-free data transfer and archiving



### Schematic Draft of a Solution for Observing Flocking Birds

