IRMonitor

Thermographic Monitoring Solutions

PLANT MONITORING

- Refineries
- Chemical Plants
- Gas and Oil Production
- Gas Flares
- Casting Ladles
- Slag Detection
- Substation Monitoring

EARLY FIRE DETECTION

- Coal Stockyards
- Biomass Warehouses
- Conveyor Belts
- Wood Processing
- Fertilizer Storage
- Waste/Recycling Facilities
- Road Tunnels

Automation Technology
Vision Sensors and Systems

IRMonitor

Thermographic Monitoring Solutions

IRMonitor is a flexible solution concept for early fire detection and temperature monitoring of industrial plants by means of thermography. Infrared cameras detect objects through their thermal radiation and are able to perceive certain characteristics regarding the condition of these objects, which conventional cameras cannot pick up. IRMonitor is thereby able to detect potentially hazardous situations based on critical temperature developments and to initiate security measures.

With its various configuration options and its wide range of system units, IRMonitor enables flexible adaptation to customers' specific requirements for the reliable monitoring of industrial plants.

An IRMonitor system can be set up with a large number of infrared cameras so that even large areas with many different angles can be fully monitored. Automated self-checking image evaluation ensures that hazardous situations can be detected around the clock.

Thermographic monitoring is an ideal solution for many branches of industry. The use of thermographic monitoring systems is especially useful in storage areas for easily flammable materials such as coal and chemicals. IRMonitor is also extremely useful for applications in which the condition or safety of the plant can be assessed, based on temperature developments.

As an optional supplement to the default setup with infrared cameras and system control, we offer a variety of additional components. Depending on the individual requirements, these components can increase the efficiency of an IRMonitor system appropriately. For example, IR cameras with a pan/tilt unit can be installed in many different positions. In this way, each individual camera can cover several positions, thereby scanning a substantially larger area. This reduces the number of infrared cameras needed to a minimum.

Moreover, we also provide a large selection of protective camera enclosures to ensure reliable operation in harsh environments. One example is an ATEX certified ex-protection enclosure that enables the installation of infrared cameras in environments where explosion-hazards exist.

Main Features at a Glance

Wide-Area Monitoring with Infrared Cameras
Precise and Comprehensive Temperature Detection in Hazardous Areas

Multi-Camera Application
Control and Analysing of several Infrared Cameras with one System

24/7
Thermographic Monitoring around the Clock

Cyclical Temperature Evaluation
Scanning and Comparison with Preset Thresholds in Defined Zones (Evaluation Areas)

Continious Output and Saving of Measuring Results/Image Data
Display and Archiving of Reference Data, Pre- Alarm and Alarm Events

Trending
Visualization with Temperature-Time Diagram

Spatial Visualization
Diplay of all Zones in a Map View

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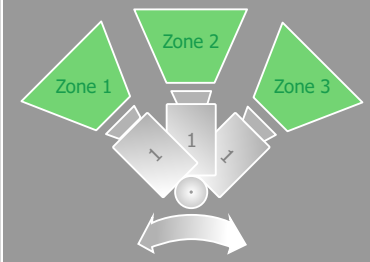
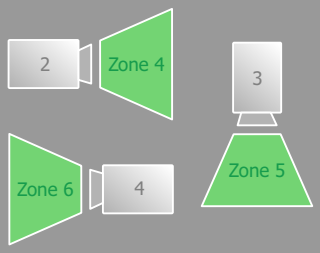
Performance

1. System Configuration

Depending on the conditions of the area to be monitored, the IR cameras are positioned and assigned to their monitoring zone (viewing range) via the software interface. Each zone is configured individually and the settings are stored in the measurement plan for continuous evaluation purposes. With the aid of a pan/tilt system, one infrared camera can move into different positions, thereby enabling the monitoring of various zones.



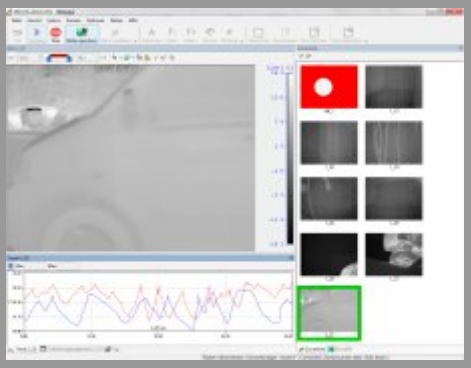
Infrared camera with pan/tilt unit



Fixed infrared cameras

2. Monitoring

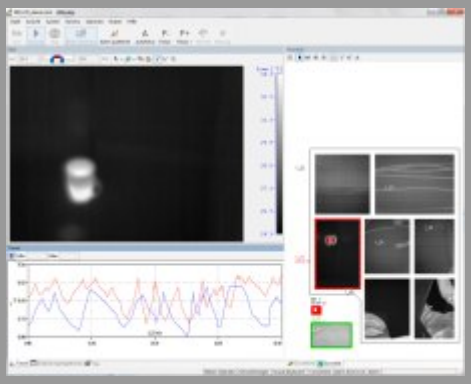
The control of all components (infrared cameras, pan/tilt units, etc.) is taken over by the IRMonitor software 24/7. This includes the evaluation of the recorded thermal images, of the different zones, the various camera views with the pan/tilt units, saving of images and results, trend analysis, self-verification of the system and the provision of output signals (alerts, pre-alerts, system status, etc.).



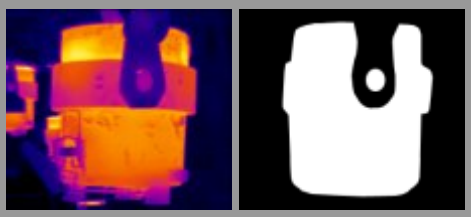
The IRMonitor software scans large areas continuously.

3. Alerts/Signals

If IRMonitor detects a critical temperature threshold, it generates the appropriate signal via the output interface (Digital I/O, OPC or Modbus-TCP). In this way counter measures are initiated automatically. Furthermore, the position of the alarm zone is highlighted in the map view and the live image of the affected zone is shown in the main view. This helps to identify the cause of the alarm quickly and precisely. The output of report data is another option. An additional feature of the IRMonitor software is "Template matching". This enables reliable detection of moving objects and avoids false alarms by masking irrelevant areas of a zone.



Automatic display of the live view if alarm occurs

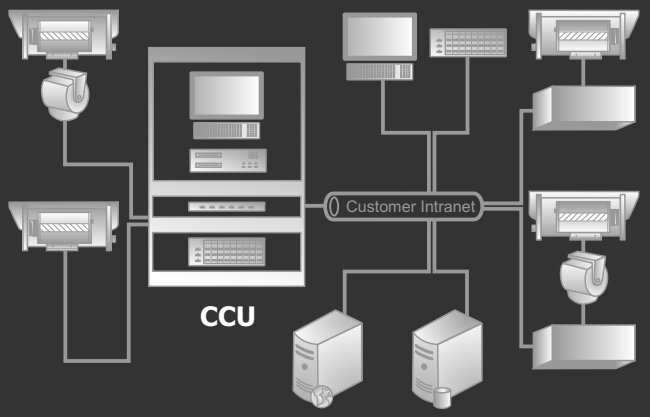


Template matching for monitoring of moving objects

The Concept

Flexible design with modular setup for customized requirements

With its combinable hardware and software modules, IRMonitor offers a flexible solution for stationary early fire detection and plant monitoring. This allows reliable system solutions for both simple and complex applications that can easily be adapted to suit the customer's specific requirements.



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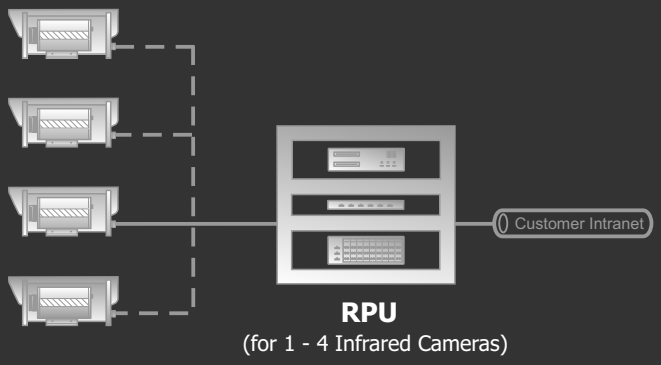
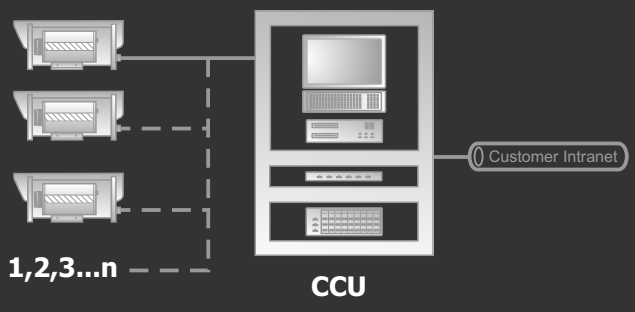
The flexible system architecture offers different concepts for thermographic monitoring. A wide range of peripheral equipment and extensive software functions enable both centralised and decentralised system administration using as many cameras as necessary.



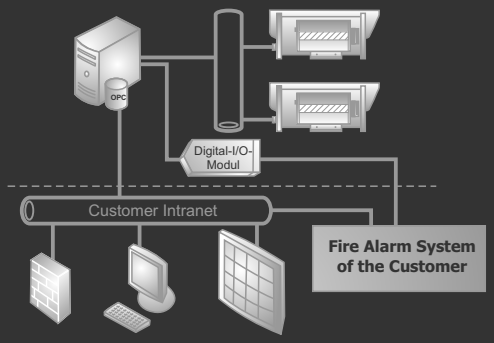
Concept 1: IRMonitor-RPU (Remote Process Unit)

An IRMonitor-RPU system comes with a robust control cabinet that includes an embedded PC with additional peripherals for self-contained control of monitoring cycles with up to 4 infrared cameras. Customers have the option of monitoring the user-interface via a remote operator console.



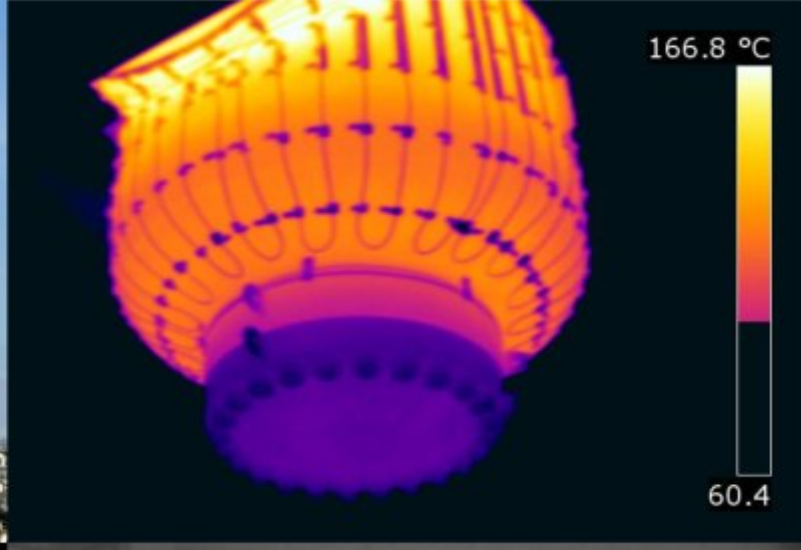
Concept 2: IRMonitor-CCU (Central Computing Unit)

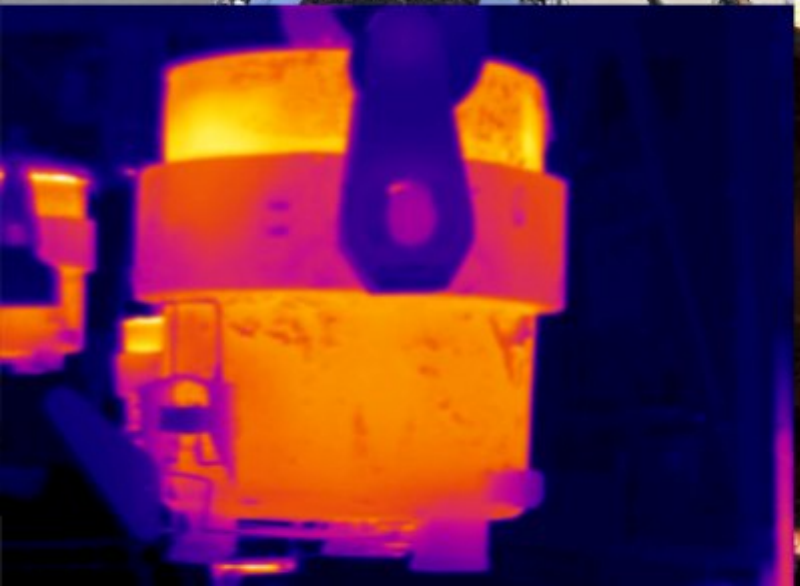
This system concept is based on a powerful processing unit that enables the use of a multitude of sensor units (IR and vision cameras). With the aid of CTUs (Camera Terminal Units), the cameras and their peripherals (e.g. pan/tilt heads) can be integrated into system solutions, even across considerable distances. Furthermore, the CCU concept offers a central interface and user console for the parameterization and visualization of the monitoring system.



Concept 3: IRMonitorCS (Client-Server)

IRMonitorCS manages a network of "smart cameras", which independently monitor the area assigned to them. The alerting and control are either performed directly by the relevant camera interface or by a central camera manager. This concept is particularly suitable for applications that need a large number of cameras.


166.8 °C
60.4



IRMonitor

Technical Data

Infrared Cameras	
Supported Infrared Cameras	Calibrated IR Cameras of Various Manufacturers
Resolution	640 x 512 Pixels, 640 x 480 Pixels or 320 x 240 Pixels (Depending on the Model)
Image Rate	3 bis 60Hz (Depending on the Model)
Accurate Measurements	± 2°C
Thermal Sensitivity	< 50mK

Pan-Tilt Units	
Assembly	Top-Mount / Side-Mount
Load Capacity with Top-Mount	4 kg
Load Capacity with Side-Mount	6,3 kg
Pan Angle	288°
Tilt Angle	120°
Operation Mode	24/7 Continuous Operation
Interface	Fast Ethernet / VISCA
Protection Class	IP67

IR Camera Enclosures	
IRCamSafe AW	Aluminium Enclosure with Protective Window, IP66
IRCamSafe AI	Stainless Steel Enclosure with Protective Window and Integrated CTU-Board, IP67
IRCamSafe AI - DualView	Stainless Steel Enclosure with Protective Window and Added Vision IP-CAM, IP67
IRCamSafe AIW	Water-Cooled Stainless Steel Enclosure with Protective Window, IP67
IRCamSafe HTTP Stainless Steel	Enclosure with Protective Window and Integrated CTU-Board for Temperatures up to 250°C, IP67
IRCamSafeEX-A/BC	Enclosure with Protective Window and Integrated CTU-Board for the Ex-Zones 1, 2, 21 and 22; IP67

Options for all IR Camera Enclosures
Protective Window made of Germanium or Zinc Selenide
Optics According to many Applications
Air Curtain for Cleaning/Cooling

Infrastructure
Fast Ethernet
Gigabit Ethernet
Up to 90m with Industrial Ethernet
Up to 500m with Multi-Mode Glass Fibres
Up to Several Kilometers with Single-Mode Glass Fibres

Interfaces
OPC Server
Modbus-TCP
Web-Server
Digital I/O, 24V Input/Output, Potential-Free (Fieldbus Module)
SQL Database

Visualization / User Console
RTC (Remote Terminal Console) is a Remote Operating Panel that displays the User Interface of a Desktop PC on a Remote Monitor.
Input Units e.g. Mouse, Keyboard, Touchpad, Joystick

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