

# Infrared thermography: A non-invasive method for medical examinations

Thermal imaging, also called thermography is the production of infrared or “heat pictures” by utilizing an infrared camera. Based on these thermal images, accurate temperature measurements can be made to detect even the smallest temperature differences when looking at human bodies.

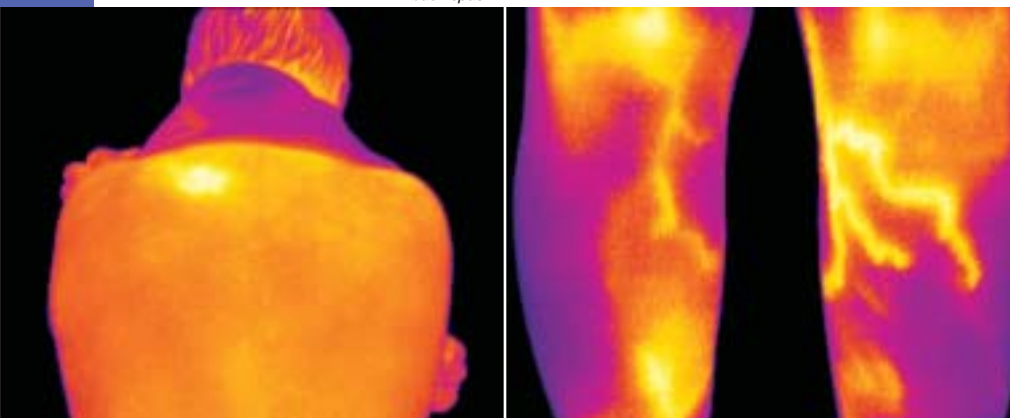
Human body temperature is a complex phenomenon. Man is homeothermic, and produces heat, which must be lost to the environment. The interface between that heat production and the environment is the skin. This dynamic organ is constantly adjusting to balance the internal and external conditions, while meeting the physiologic demands of the body.

Numerous medical specialists have discovered that infrared is a reliable and quick non-invasive method to detect hot spots, as this technique provides a visual map of skin temperatures in real time. Infrared is widely accepted as an accurate and reliable tool for medical assessment and diagnosis.

Able to measure differences in the surface temperature of the skin as small as 0.08°C, one of the obvious applications of infrared thermography is to detect whether a person has a fever or not. Changes in the thermal conductivity of the skin caused by burns, skin ulceration or grafting have also been detected and monitored with a sensitive thermal imaging system.

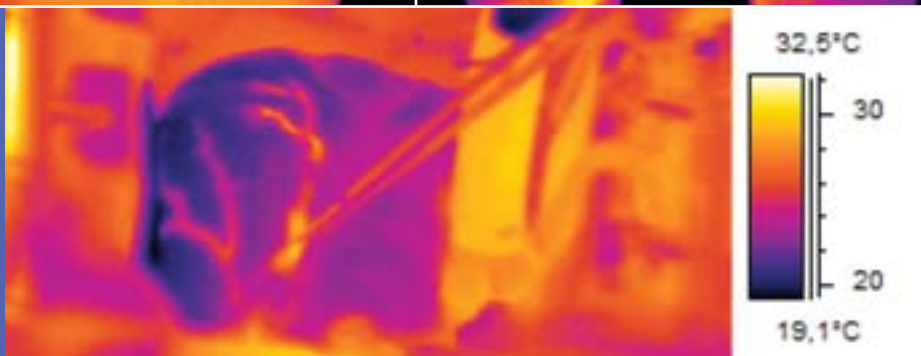
*back spasm*

*varicose veins*

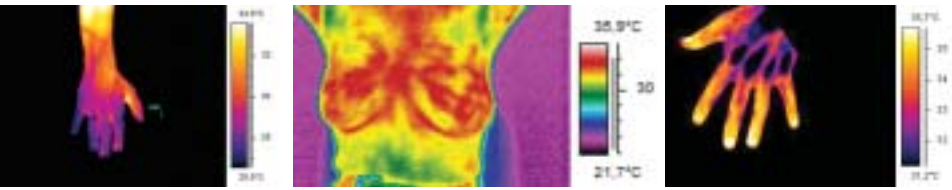


## Possible Applications:

- Determining the temperature of a human body (fever or not)
- Early detection of skin cancer
- Pain management
- Burn depth assessment
- Open heart surgery
- ....



*open heart surgery*



# Thermography tools for medical applications

FLIR Systems is the world leader in the design, manufacturing and marketing of thermal imaging systems. No matter if you are a general practitioner or specialized in a medical discipline, FLIR Systems has the camera AND the software to offer you a solution which is perfectly adapted to your needs.

## The infrared camera: ThermaCAM S40

The ThermaCAM S40 is an infrared camera perfectly suited for medical applications. Hand-held or mounted on a tripod, operated locally or by remote control, the ThermaCAM S40 can be configured to meet a variety of medical applications.

- **Precision temperature measurement:**

The ThermaCAM S40 is able to detect differences in the surface temperature of the human skin as small as 0.08°C. It produces noise-free, crisp high-resolution images (320 x 240 pixels) and offers more than 76,000 individual measurement points per image at a refresh rate of 50 Hz

- **IEEE-1394 FireWire digital output:**

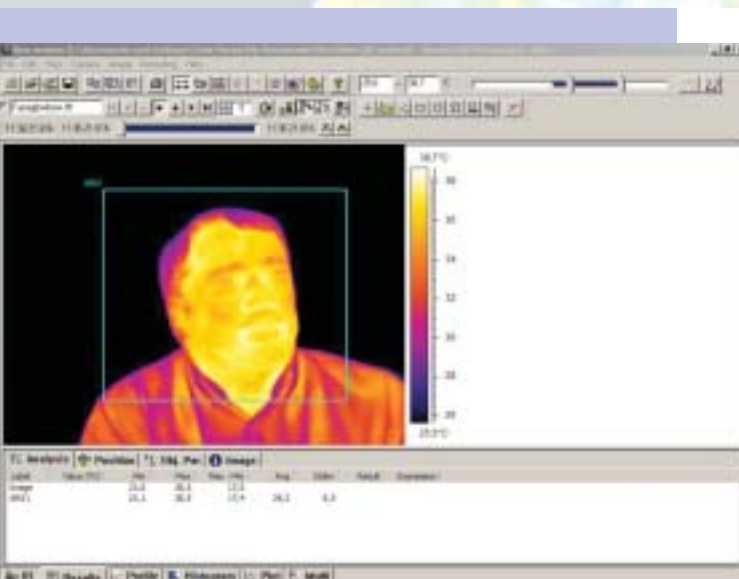
Connectivity options include composite video and IEEE-1384 interface for super fast image and data transfer of real-time 14-bit JPEG images.

- **Easy to operate:**

Conveniently located buttons and a joystick control all the features of the camera. Functions like autofocus, freezing and storing images are just a button away

- **Flexible JPEG image storage:**

The ThermaCAM S40 saves images as fullyradiometric JPEGs. These images can be stored on removable FLASH PC cards.



*Analysed in ThermaCAM Researcher, the infrared image clearly shows a person with a 38.5 °C fever*

## The infrared software: ThermaCAM Researcher

Powerful real-time digital storage and analysis

Coupled with FLIR Systems ThermaCAM Researcher software, the S40 allows in-depth thermal analysis including 50/60 Hz digital recording and evaluation of high speed events.

Windows based and easy-to-use, ThermaCAM Researcher offers built-in measurement functions for fast and extensive analysis including isotherms, spot measurements, ...

For more information on applications or on the tools themselves, please contact us at the following address:

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