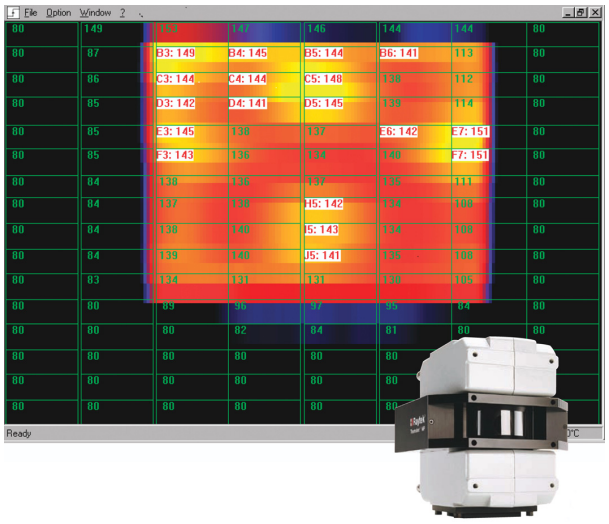
Process Imaging System

TF150

Infrared Temperature Measurement for Thermoforming Processes



Benefits

- Quickly find material defects and failed heating elements
- Significantly reduce setup time
- Automate quality monitoring for ISO 9000
- Improve profitability and product quality
- Reduce scrap

Quality Monitoring for Thermoforming Processes

The TF150 System allows thermoformers to visualize the temperature distribution of virtually any plastic part in thermoforming processes.

Core of the system is the MP150 linescanner. The MP150 measures a line of up to 1024 points using a rotating mirror that scans a 90° field-of-view up to 150 times per second. The high scan rate allows rapid detection of temperature non-uniformities and hot spots. The scanning of a sheet can be initiated by the measured temperature, or by an external “trigger” signal. As the heated sheet traverses the field-of-view, a two-dimensional thermal image or “thermogram” is formed. Thermal images are displayed each time the scanned sheet indexes.

The system software provides features to sub-divide thermal images from MP150 into portions of specific interest, the zones. The zone grid overlaid on the thermal image represents the heating elements in the furnace. Temperatures in each zone can be processed for a certain math function like average, maximum, or minimum temperatures. In case of a thermal defect, the software triggers an alarm. For later analysis, the thermal image is automatically stored in a separate file. The alarm can also be output with an optional digital output module.

Through the use of OPC (OLE for Process Control), the TF150 system acts as an OPC server and communicates with many common process control systems. This feature allows the TF150 to move beyond being just a measurement tool and to become an integral part of the total process control system.

Features

- Detailed thermal images based on 40,000 measurement points per second
- Define product-specific configurations (recipes)
- Play back stored files as “movie”
- Heater zones overlayed on thermal image
- PC independent alarms
- Integrated OPC server for remote system control
- Analog or digital output modules
- On board Ethernet TCP/IP communication
- Built-in laser sighting
- Multiple language support

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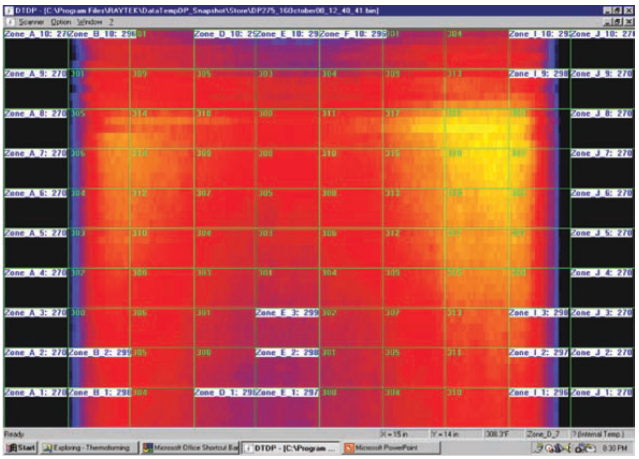
System Description



Actual thermogram showing heater zones
Overheated area on one part due to out of spec sheet thickness

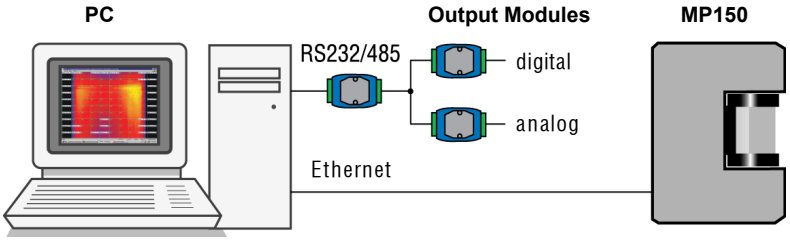
Sheet Analysis with 40,000 Pixels per Second

The software displays each thermal image snapshot with overlaid customizable zones and zone results. 100 zones are shown (several have alarm conditions). A high-alarm appears red and a low-alarm is blue. To control the heater, the zone results can be output to your PLC or SCADA system.

All thermal image data files can be recalled for analysis and display. As the cursor is moved around the thermal image, the spot temperature and location (x- and y- coordinates) appear on the task bar.

Easy Installation

The MP150 Linescanner installs easily – just like a camera – and views the sheet between the oven and forming sections from above or below. Connecting the pre-wired cables (included) to a PC and entering installation dimensions in the TF150 Software completes the installation process.



Specifications

Temperature Range	20 to 350°C
System Accuracy	±2°C
Repeatability	±1°C
Optical Resolution	150:1 (90% energy)
Ambient Temp.	0 to 50°C (optional 180°C)
Field of View	90°
Points per Line	up to 1024 pixels
Scan Rate	up to 150 Hz
Dimensions	200 x 180 x 190 mm
Weight	7 kg

Scope of Delivery

RAYTTF150LT	• MP150LT linescanner • TF150 Software • Line laser sighting • Industrial power supply

Accessories

XXXTMP50ARMB	Adjustable mounting base
XXXSYS16DA	Digital output module (16 channel, open collector)
XXXSYS7RA	Digital output module (7 channel, relay contacts)
XXXSYS4AA	Analog output module (4 channel, mA or V)
XXXSYS485CV	RS232/485 converter for output modules

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