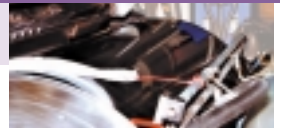


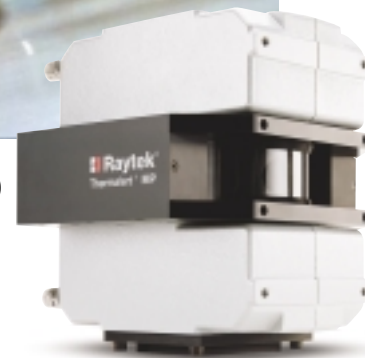
# EC100



## Thermal Imaging System for Quality Control in Extrusion Processes



The EC100 provides real time temperature analysis for extrusion coating processes. (Photo: Courtesy of SIG Combibloc GmbH, Wittenberg, Germany)



*MP50 Process Imager*





## Film Extrusion Imaging System

The EC100 System is an automated surface inspection system for detecting, measuring, and classifying defects occurring in extrusion coating, co-extrusion and laminating processes.

### Benefits

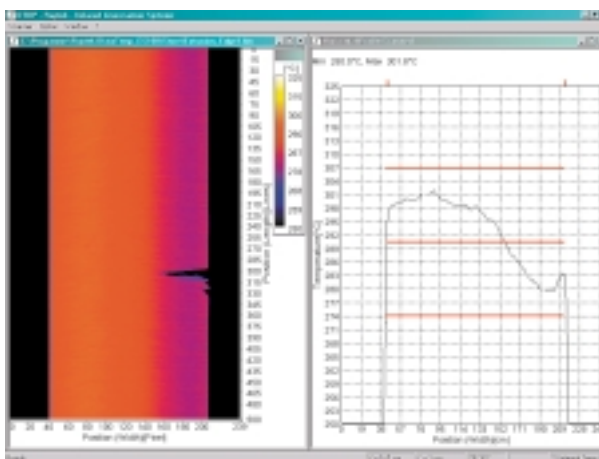
- Detect waving or running edges, gaps, and torn edges quickly and automatically
- Insure proper web temperatures for strong film-to-substrate adhesion
- Improve profitability and product quality
- Automate quality monitoring
- Reduce scrap

### Features

- View complete thermal images and temperature profiles
- Define product-specific configurations and data files
- Customize and display "automatic" sector overlaid on thermal image
- Automatically analyze sector temperature distributions
- Automatic fail-safe alarm logging
- Software supports English, German, French, Finnish, Italian and Swedish languages

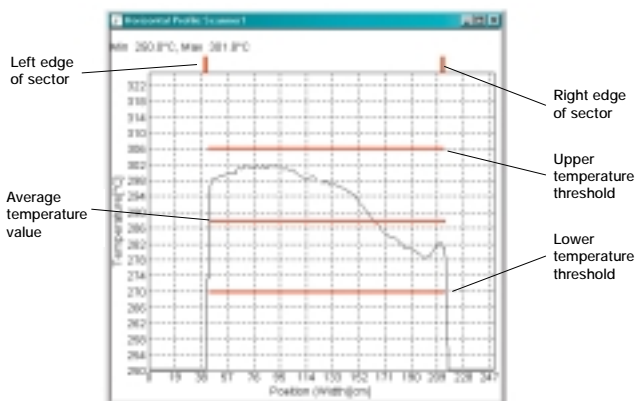
## The EC100 Thermal Imaging System monitors thin film extrusion coating, co-extrusion, or lamination processes

The EC100 System provides a unique capability for managing the quality of plastic film extrusion processes. Temperature and viscosity variations in the local melt streams across the width of an extruder flow channel can cause "wavy" or "running" edges, gaps, and edge-tears in the extruded film. Using the MP50 Process Imager, the EC100 System continuously monitors the temperature distribution and width of the extruded melt curtain to automatically detect such imperfections.



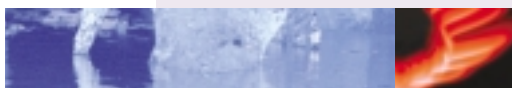
### Temperature Monitoring

The EC100 system continuously monitors the extrusion process allowing temperature data to be visualized as a line graph (profile) and a thermographic image. Profiles and images may be printed or archived for future analysis.

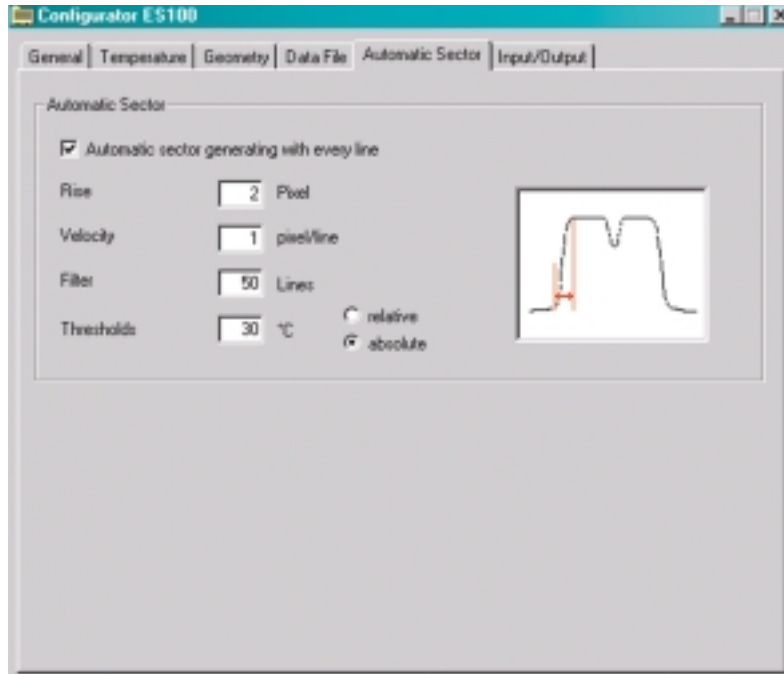


### Automatic Edge Detection

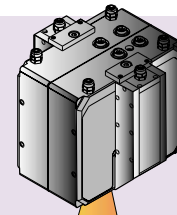
The "automatic sector" feature, *unique* to EC100, continuously monitors the melt curtain coming from the extruder die and provides automatic edge detection. The "automatic sector" automatically adapts to measuring a plastic sheet of varying width. Temperature gaps or unacceptable "waving" or "edge running" are detected automatically. Within the "automatic sector", temperature deviations are calculated. Unacceptable edge waving, edge running, or edge tears from one scanned temperature line to the next line are detected quickly and automatically. If a fault or defect occurs, an alarm is triggered to allow for quick corrective action.



The EC100 System features an easy-to-use "point and click" user interface



**Automatic Sector Configuration Screen**  
The screen allows specification of detectable edge positions and allowable rate of edge position change



MP50

## Processing Image

The MP50 Process Imager scans the surface of the extruded material and measures a line of 256 points using a rotating mirror that scans a 90° field-of-view up to 48 times per second. As the extruded sheet passes through the MP50's field-of-view, a two-dimensional thermal image or "thermogram" is formed. Thermal images are continuously displayed in real time as the sheet extrudes.

## Custom Configurations

DataTemp EC100 Software allows custom configurations for any type of product.

<b>General</b>	Specify MP50 scan rate, PC COM ports, baud rate, and native language
<b>Temperature</b>	Adjust emissivity, temperature range, and temperature units
<b>Geometry</b>	Specify MP50 distance, installation angle, thermal image dimensions, and units
<b>Data File</b>	Define product name, date and time stamp for storing images under alarm conditions, and data file storage path
<b>Automatic Sector</b>	Configure "automatic" sector/parameters. Specify desired signal processing and alarm conditions.
<b>Input/Output</b>	Specify alarm hold time

## Installs in Minutes

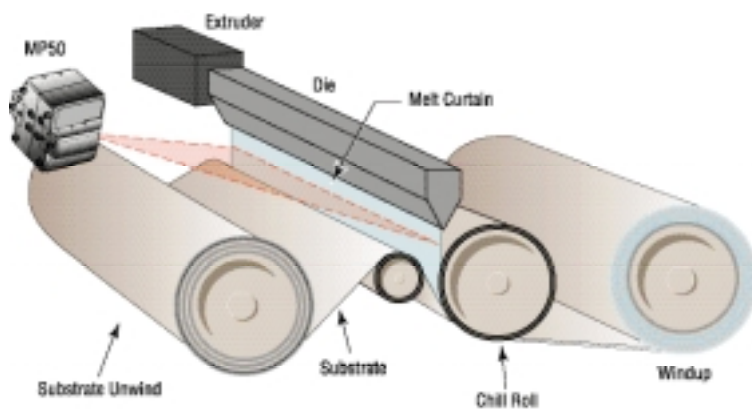
The MP50 installs easily - just like a camera - and views the sheet from above or below wherever it has a clear viewing path. Connecting the pre-wired cables (included) to a PC and entering installation dimensions in the EC100 Software completes the installation process.



## The EC100 System offers unique capabilities for monitoring film extrusion processes

As illustrated below, the EC100 System continuously monitors the melt curtain temperature distribution to ensure adequate film-to-substrate adhesion and automatically detects edge imperfections such as wavy or running edges, temperature gaps and edge-tears ... defects that are otherwise difficult to detect.

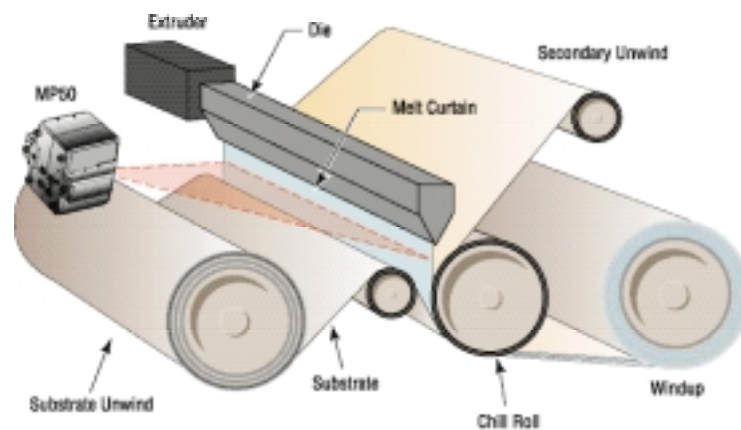
### Extrusion Coating



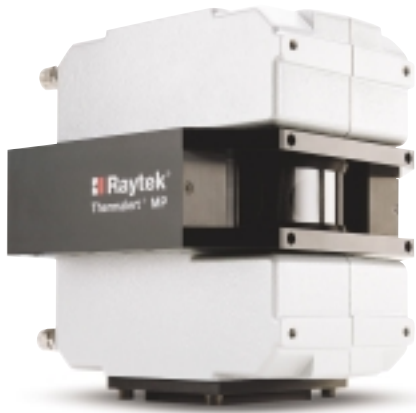
In extrusion coating, resin is melted and formed into thin hot film. The MP50 measures the extruded film as it is coated onto a moving, flat substrate such as paper, paper-board, metal foil, or plastic film. The coated substrate then passes between a set of counter-rotating rolls, which press the coating onto the substrate to ensure complete contact and adhesion. The extrusion coated layer may protect a printed substrate or act as a moisture barrier.

### Extrusion Laminating

Extrusion laminating (also known as sandwich laminating) is a process related to extrusion coating, but the extrusion-coated layer is used as an adhesive layer between two or more substrates. A secondary layer is applied to the extrusion coating while it is still hot. The MP50 monitors the melt curtain in front of the chill roll before the sandwich is formed. The sandwich is then pressed together by pressure rolls. In addition to providing adhesion, the extrusion-coated layer may also serve as a moisture barrier.



## MP50 Process Imager

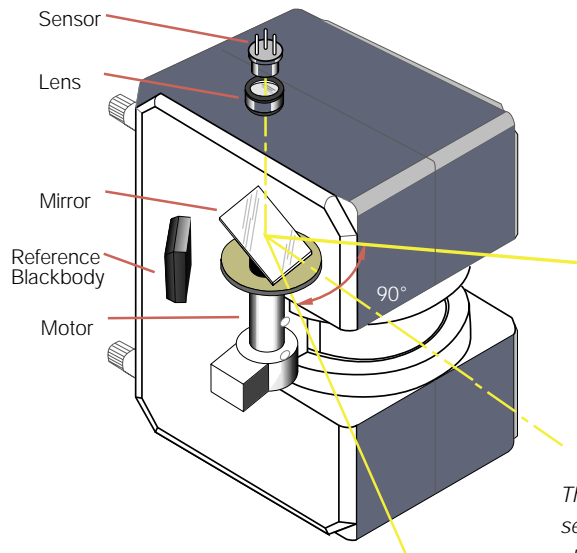


The heart of the EC100 system is an MP50 Process Imager. The MP50 Process Imaging Series is a family of advanced infrared linescanners providing accurate, real-time, thermal imaging for a wide variety of industrial applications, including continuous sheet and web-based processes.

The MP50 is surprisingly easy to install.

Pre-wired cables allow for fast, easy installation and connection to a standard PC (Windows NT® or Windows 2000®). Many installations require less than an hour from start to finish. Versatile DataTemp® Software allows custom configuration of MP50 operating parameters and display of thermal images and temperature profiles. The MP50 is designed for reliable and continuous operation in harsh industrial environments. The MP50's rugged housing includes built-in provisions for water-cooling and air-purge.

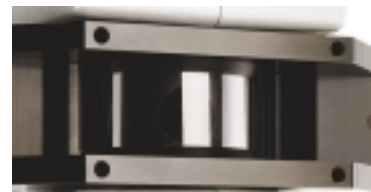
Offering best-value performance, the MP50 is the most widely used linescanner worldwide.



*The MP50 contains the scanning mechanism, infrared sensor, optics, signal processing electronics, electrical inputs/outputs, and data communications.*

The most widely used solution for real-time process temperature imaging and analysis

- Fast scan speed up to 48 lines per second
- Real-time color thermal images
- Accurate data analysis
- Rugged, waterproof housing
- 40000 MTB brushless scanning motor
- Field-replaceable window
- Models for specialized applications
- Two-way digital communications
- Built-in air purge and water cooling



*The MP50 features a rugged MICA window.*



## EC100 System

RAYTEC100P31	<ul style="list-style-type: none"> <li>- MP50P31 Process Imager<sup>1</sup></li> <li>- DataTemp EC100 Software</li> <li>- DTMP Software</li> <li>- Line laser sighting</li> <li>- Mounting plate for adjustable mounting base (or tripod)</li> <li>- Adjustable mounting base</li> <li>- Industrial power supply</li> <li>- RS232/485 Converter</li> <li>- Alarm/Trigger Box</li> </ul>
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<sup>1</sup> See MP50 Datasheet for other models.

## EC100 Specifications

Temperature Range <sup>2</sup>	100 to 350°C
System Accuracy <sup>2</sup>	±3°C
Repeatability <sup>2</sup>	±1°C
Optical Resolution <sup>2</sup>	180:1 (50% energy)
Ambient Operating Temperature	0 to 50°C
Field of View (FOV)	45° or 90° (selectable)
Number of Temp. Points	256
Scan Rate	36 Hz <sub>3</sub> 48 Hz <sub>3</sub>
Physical Dimensions	200 x 180 x 190 mm
Weight	7 kg

<sup>2</sup> Specifications for MP50P31 (see MP50 Datasheet for other models).

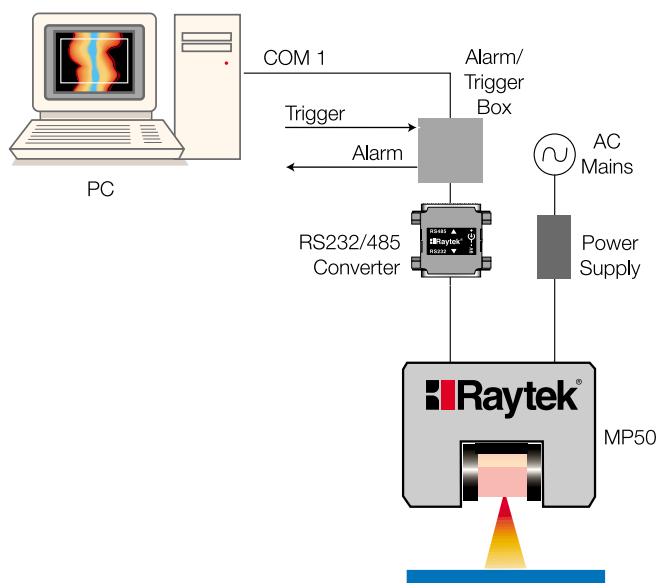
<sup>3</sup> Requires PC with 230 kBit/sec (or faster) serial interface.

## Options and Accessories

Part Number	Description
XXXTMP50ACCC	MP50 carrying case
XXXTMP50AC485CB	RS485 cable extension
XXXTMP50ACPCSB	Power cable extension

## Easy Installation & Maintenance

The small size of the MP50 Process Imager allows for easy installation. The MP50 connects to a standard PC operating Windows® NT4 or Windows® 2000. The system's RS485 digital interface insures reliable operation over long cable runs. The diagram below represents a typical system installation. The Alarm/Trigger Box is part of the EC100 System. This box provides one alarm output and includes a "trigger" input (e.g. push-button switch) to momentarily pause the measurement while maintenance is performed on the extruder. The PC never has to be opened to install the EC100 System.



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