GS Process Imaging System

Quality Monitoring for Glass Processes

The GS Process Imaging System allows users to automate temperature measurements for glass bending, forming, annealing and tempering applications.

In the core of each GS Process Imaging System is the MP Linescanner – which can measure a line of up to 1024 points by using a rotating mirror, which can scan a 90° field-of-view up to 300 times per second. This high scan rate enables the rapid detection of temperature discrepancies and hot spots. Within glass applications, each glass part is scanned to create a two-dimensional thermal image, or "thermogram," in real-time. The final thermal image is displayed each time a scanned sheet is indexed.

In addition to the MP Linescanner, each GS Process Imaging System features exclusive software that can sub-divide thermal images into specific areas of interest or zones. Each zone, which is overlaid on the thermal image, represents the heating elements in the furnace and can be processed to read the average, maximum or minimum temperature. The software also allows users to save thermal images for later analysis as well as alarm capabilities to alert to any thermal defects.

By utilizing OLE for Process Control (OPC), the GS Process Imaging System can communicate with a variety of common process control systems. As a result, the system is more than a measurement tool and can be used as an integral part of your total process control system.

Photo: Courtesy of Glassrobots OY, Tampere, Finland

Features

- Detailed thermal images based on 76,800 pixels per second
- Automatic emissivity correction for low emissivity glass (GSLE system)
- Define product-specific configurations (recipes)
- Customize and display zones overlayed on thermal image
- Play back stored files as a "movie"
- 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

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**

Specifications

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Temperature Range	100 to 950 °C (212 to 1742 °F)
System Accuracy	±0.5 °C or ±3 °C (6 °F)
Repeatability	±1 °C (2 °F)
Optical Resolution	170:1 (90% energy)
Ambient Temp	0 to 50 °C (32 to 122 °F), with internal water cooling 180 °C (356 °F)
Field of View	90°
Points per Line	up to 1024 pixels
Scan Rate	up to 300 Hz

The System Designed for Low Emissivity Glass

An extension of the GS System, the GSLE System was designed specifically to read low emissivity glass and incorporates all of the features of the original system. It is best suited for monitoring and optimizing glass treatment processes (e.g., tempering and one-sided coated glass). Because coated glass has very low emissivity values (high reflection), knowing the exact emissivity value is essential for infrared temperature measurements. By adding an IR point sensor that measures the temperature of the uncoated side of the glass (bottom) where the emissivity is know, the thermal image created by the MP Linescanner is automatically corrected.
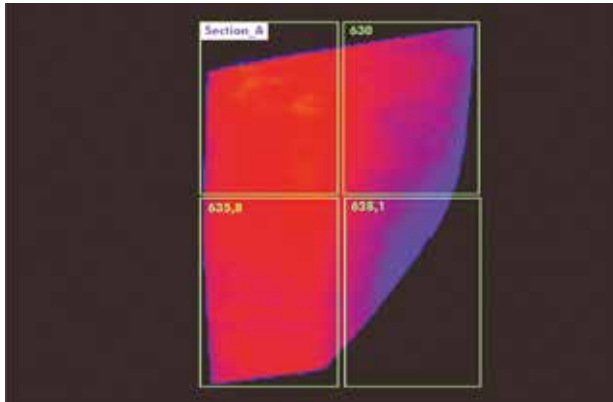
Glass window thermogram showing heater zones

By quickly detecting thermal irregularities within the glass process and by identifying defective heating elements, the GSLE System allows users to improve product quality and uniformity, as well as reduce scrap. If an irregularity is detected, however, an alarm is triggered for corrective action. The GSLE System also allows users to setup predefined recipes that can accommodate frequent product changes, such as loads with differing thickness.
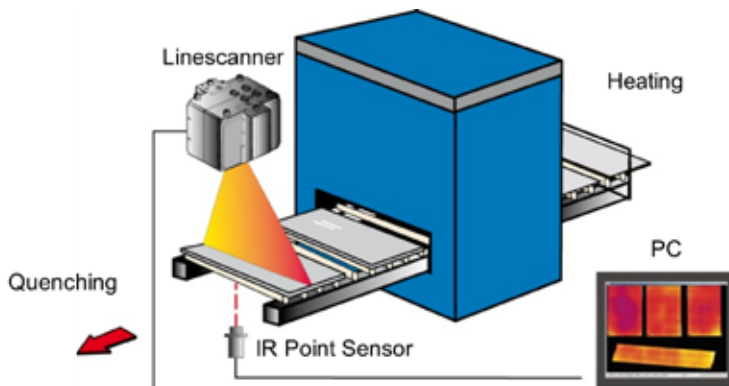
Scope of Delivery

- **MP-SYS-GS** System including:
  - System Software
  - Industrial Power Supply
  - Optical Data Carrier (Operator's manual, DataTemp DP software)
- **MP-SYS-GSLE** System includes:
  - MP-SYS-GS System (see above)
  - MP-SYS-G5 Software
  - Specialized MI3 Sensor
  - Air-purge Jacket
  - PC connection Kit

Accessories

- Adjustable mounting base (A-MP-RMB)
- Ethernet Fieldbus Coupler (A-IO-BASICKIT)
- Relay Output Module (A-IO-2R-NO)
- Analog Output Module (A-IO-2AOC-4)
- Digital Output Module (A-IO-16DO)

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