Low-E Glass

Monitoring of One-side Coated Flat Glass

Q
Question

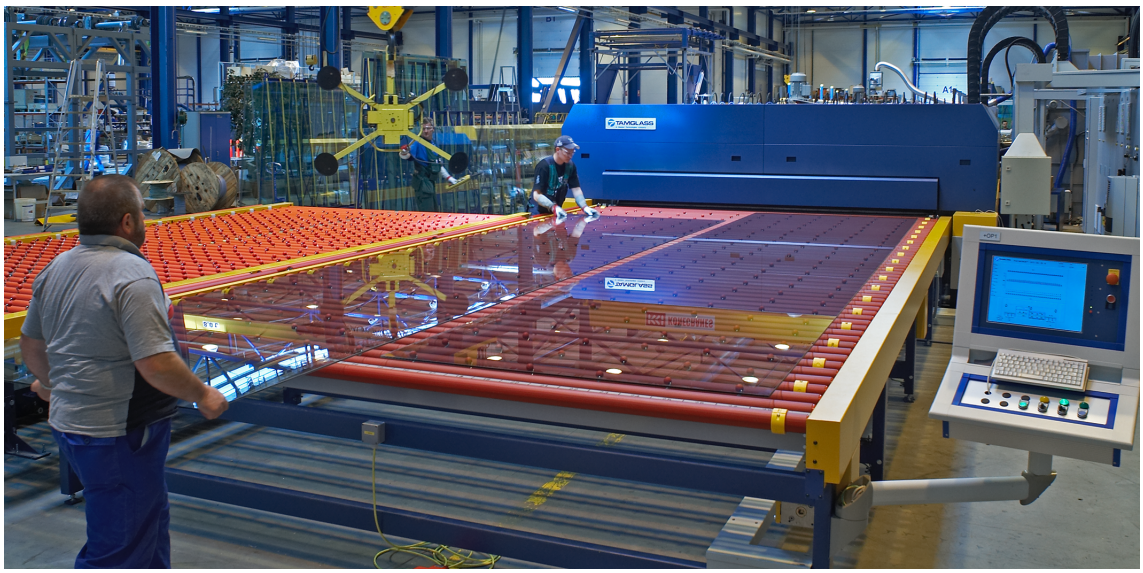
How do you monitor the temperature at low and changing emissivities during the tempering process of Low-E Glass?

A
Answer

Situation Analysis

Low-E Glass stands for low emissivity glass. It is increasingly used in the building industry. One side of the glass has a special thin metallic coating, which increases the energy efficiency of windows by reducing the transfer of heat through the glass. In the tempering process the glass surface is heated homogeneously to a temperature around 650°C. Uniform heating is a crucial factor for the glass quality. Thermal tensions, optical distortions and glass breakage can be the result of uneven temperature distribution during the tempering process. The changing emissivity of the coated glass surface is a big problem for temperature measurement and can lead to inaccurate measurement results.

- Measurement temperature range: 600 to 650°C
- Distance to measurement object: 1.5 to 2 m



*Low-E Glass before the tempering oven. The coated side is on top.**

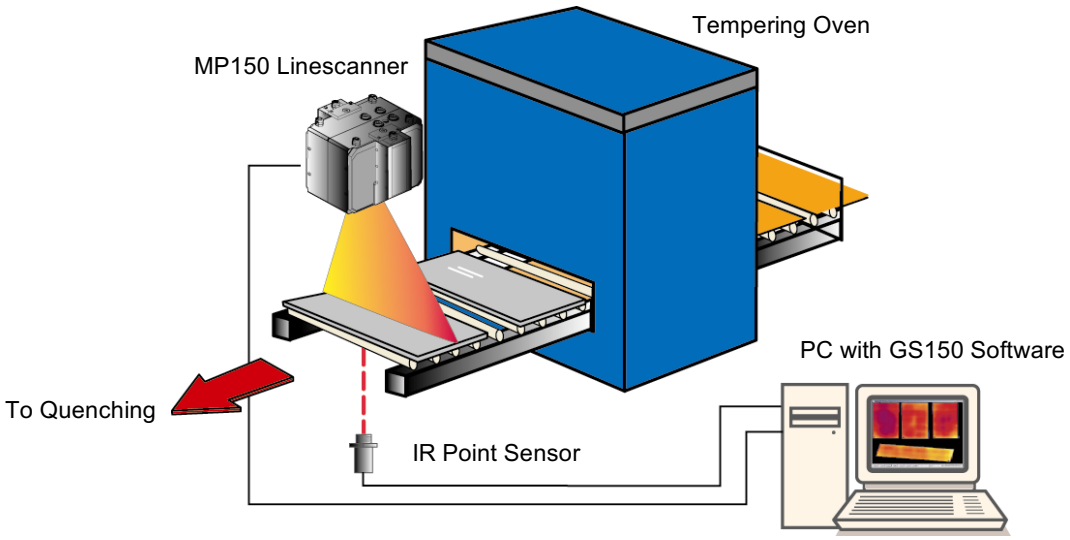
Raytek®
Fluke Process Instruments

A

Answer

Solution and Improvements

The Raytek GS150LE System works with an additional point sensor which measures the temperature of the uncoated bottom side of the glass, which has a well-known and high emissivity. These temperature measurements are needed to adjust the error-prone measurements of the MP150 linescanner, which monitors the coated Low-E side at the top. It can take up to three new glass loads before the automatic emissivity correction will occur. To increase the product quality, it is absolutely necessary that the glass planes are heated homogeneously. The GS150LE System reduces scrap by detecting thermal tensions, which could lead to broken glass. An alarm is triggered when deviations of the temperature are recognized and a corrective action can be taken to adjust the heating. The configuration of the GS150 System grants quick adaptation to changing parameters (i,e. glass thickness).



Installation sketch of the GS150 System for temperature measurement at a tempering oven

Raytek Product

- **GS150LE** System includes: MP150 Linescanner, IR Point Sensor and GS150 System Software

Accessories

- Laser Sighting

Benefits

- Automatic Emissivity Adjustment
- Reduced Scrap
- Increased Glass Quality

References

- FGT Polska

For customized solutions to your process, please contact:

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www.flukeprocessinstruments.com

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* Photos courtesy of Tamglass, Tampere-Finland