



Thermoforming

Manufacturing of Car Interiors and Car Casings

Q

Question

How can you control the correct temperature treatment of car interiors and casings before forming?



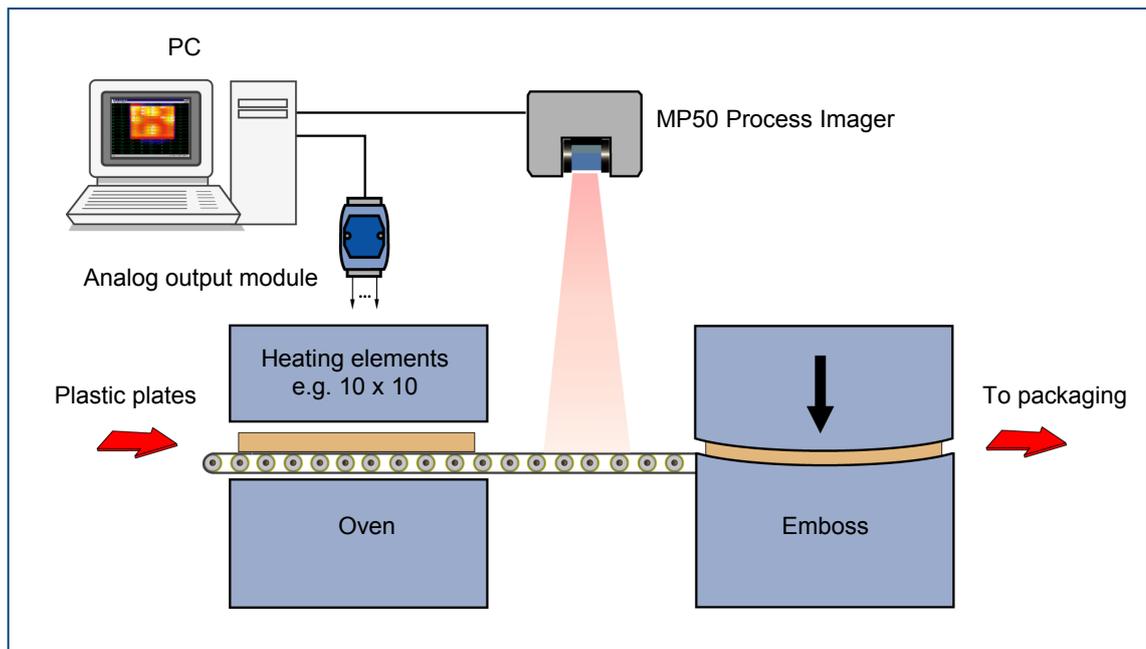
A

Answer

Situation Analysis

For processing car interiors and casings, thick coated plastic plates are heated in an infrared oven to approximately 180°C. The heated plates are transported with a speed of 1 to 2 m/s to the forming section. After leaving the embossing section, the curved car interiors and casings are ready for installation.

To ensure the optimal material properties, it is necessary to measure the temperature profile of the plates. Too high temperatures may cause burning of the material surface. Too low temperatures may cause breaking of the plate during forming. Irregularities in the temperature distribution during heating cause stress in the structure of the plate, which results in improper fitting during installation in the car.

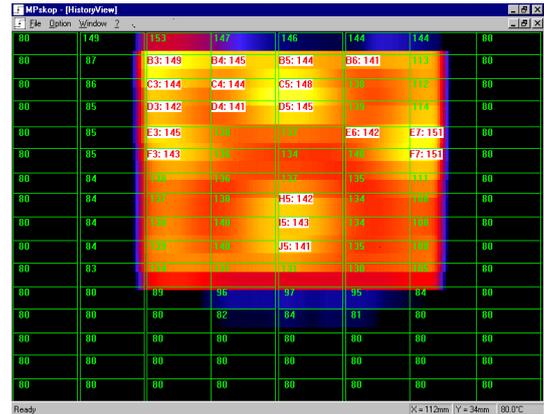


A

Answer

Solution and Improvements

The TF100 system allows thermoformers to visualize the temperature distribution of plastic plates. A zone grid overlay represents the infrared heating elements in the oven depending on heater size and location. For each zone the average temperature is calculated as a constant that is then output to an analog output module. One output channel controls the power of the corresponding heating element. For detecting failed heating elements, each zone can be monitored for lower and upper alarm thresholds. Alternatively an OPC software interface or a serial COM port can be used for controlling the heating elements remotely.



Actual thermal image with zone grid representing the heating elements

Raytek Product

TF100 System with
MP50LT Process Imager

Accessories

DataTemp TF100 Software
Analog Output Module
Digital Output Module

Benefits

- Detects defects and failed heating elements quickly
- Improves accuracy in fitting of interiors and casings
- Automates quality documentation (ISO 9000)

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