

Warm Punching of Floor Tiles

Vinyl Floor Tile Manufacturing



Q

Question

How is the quality of embossed floor tile controlled using thermal profiles and images?



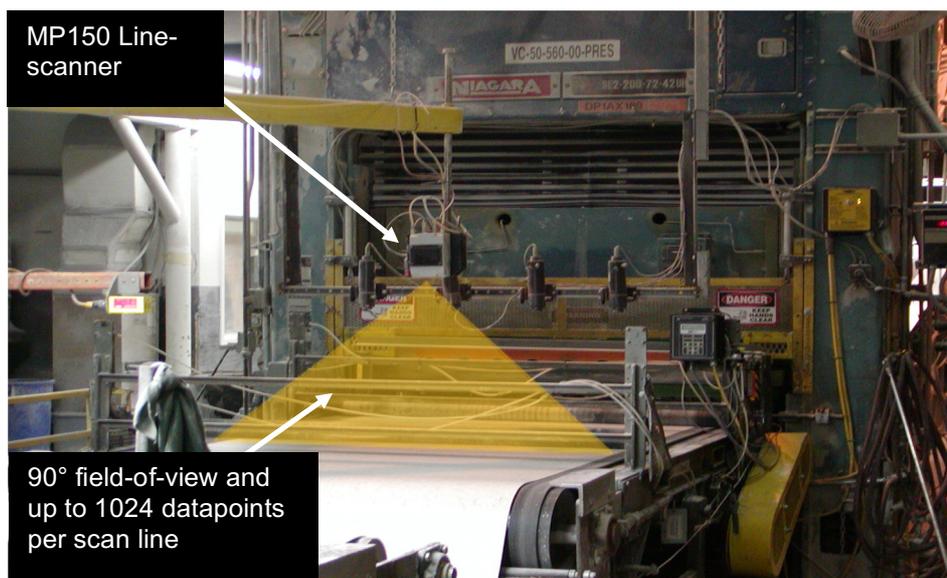
A

Answer

Situation Analysis

Every vinyl floor tile manufacturer has a similar process for punching material that slices the tiles to the exact size. Before being punched, the sheet has to be heated equally. Because the punched material cools to its final size, it is absolutely necessary that the sheet temperature must be uniform in temperature across its width. If there are hot spots, the tiles cool and shrink differently and this results in an off-sized tile. If hot spots are detected, then the process is checked further back before this operation to see if there is excess heat or lack of cooling in the equipment.

- Measurement temperature range: 40 to 200 °C
- Process speed: 30 to 48 m/min
- Distance to measurement object: 75 to 150 cm



ES150 system with MP150 Linescanner monitoring sheet before the punch press

A

Answer

Solution and Improvements

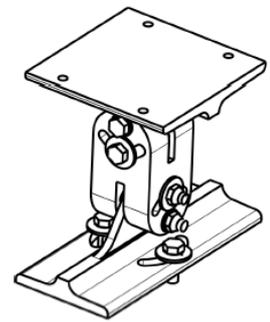
Hot and cold spots across the sheet can easily be identified immediately outside the exit of the oven with the ES150 system. Multiple fixed sectors can be defined within the software and configured to alarm whenever the temperature within any of those sectors goes outside the acceptable range. In case of an alarm, the associated thermal image is automatically saved indicating the date, time, alarm duration, and the defect position. Problem areas on the sheet can be determined quickly, allowing for immediate corrective action. Prior to this, it was common practice to wait for an hourly temperature check, which is no longer practical in today's flooring market.

With continuous temperature scanning, product quality improves and process capabilities increase since less rework is needed. The ES150 system continuously monitors the web process, allowing temperature data to be visualized as a line graph (profile) and a thermographic image. Profiles and images can be printed and archived for quality analysis purposes.

In the past, some manufacturers would use point sensors, which average the temperature over a broad area. This can result in undetectable hot or cold spots. With the Raytek MP150 linescanner, up to 1024 individual temperature measurements can be taken across the entire width of the sheet continually, which allows for more immediate and reliable detection of product defects.



MP150 Linescanner



Adjustable Mounting Base

Raytek Product

ES150 System includes:
MP150LT Linescanner and
DataTemp® Software

Benefits

- Improved Quality
- Increased Process Capability
- Less Outages
- Reduced Rework and Scrap

Accessories

- Line Laser Sighting
- Digital Output Module
- Analog Output Module
- Adjustable Mounting Base

For customized solutions to your process, please contact:

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