

Achieving 100% quality on automobile window heating grids with fixed thermal imaging

Introduction

The automotive industry boasts one of the most sophisticated—and increasingly complex—supply chains in manufacturing. Automakers, also referred to as OEMs, rely on suppliers of varying sizes to manufacture components that are assembled into a final vehicle. Strict quality requirements ensure that materials and manufactured systems, from Tier 3 to Tier 1 suppliers, result in a car that is safe to drive.

Fixed thermal imaging is a cost-effective way for suppliers to ensure that parts delivered to automotive companies meet those stringent quality requirements.



Prevent bad product moving downstream

To ensure the heating elements comprising the defroster grid meet specifications, glass manufacturers must test every rear window. Without proper evaluation, defective product could move downstream—potentially reaching the OEM and, eventually, the end customer, where additional cost will be incurred once the fault is discovered. Tier 1 backlight suppliers have several methods to test parts and maintain final quality, which eliminates the risk of damaging their relationship with the OEM.

Factors of infrared quality inspection

Competing technologies to test for potential backlight defects fall short in several areas. An older method is passing aluminum rollers over the grid to check electrical continuity, whereas another testing method may utilize contact temperature measurement on each grid element. These alternative methods are both mechanically cumbersome and take significantly more time to evaluate the product.

The ThermoView solution

Fixed thermal imaging, the functional technology within the ThermoView Backlight System, is a cost effective and easy way to inspect backlights before they move further downstream. Once a voltage is applied to the heating grid, tests are nearly instant, and they are far more comprehensive than the above methods. Image subtraction accounts for changing ambient temperatures,

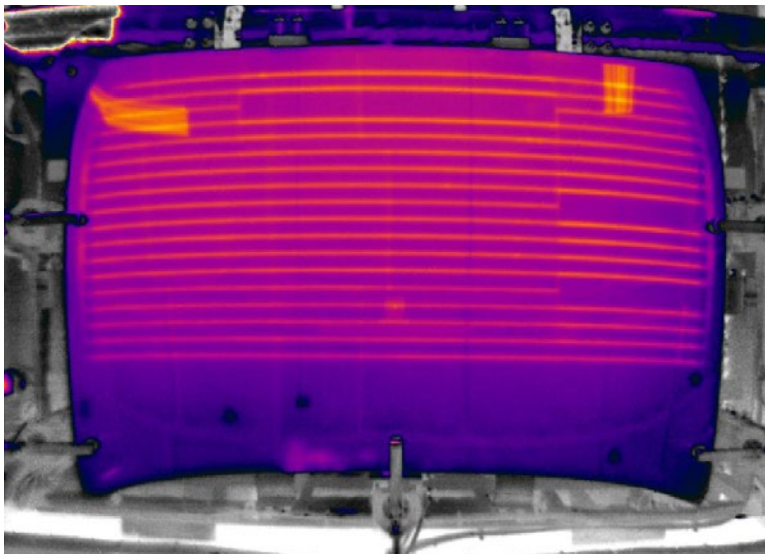


Figure 1: Bad part isotherm

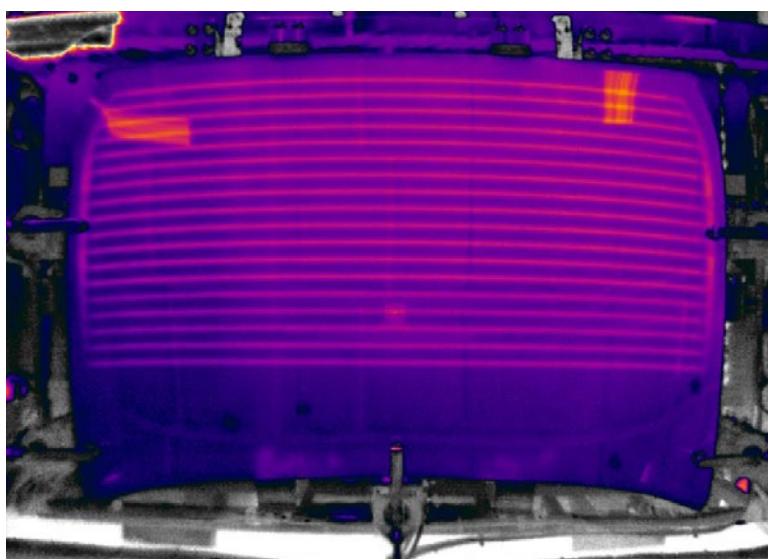
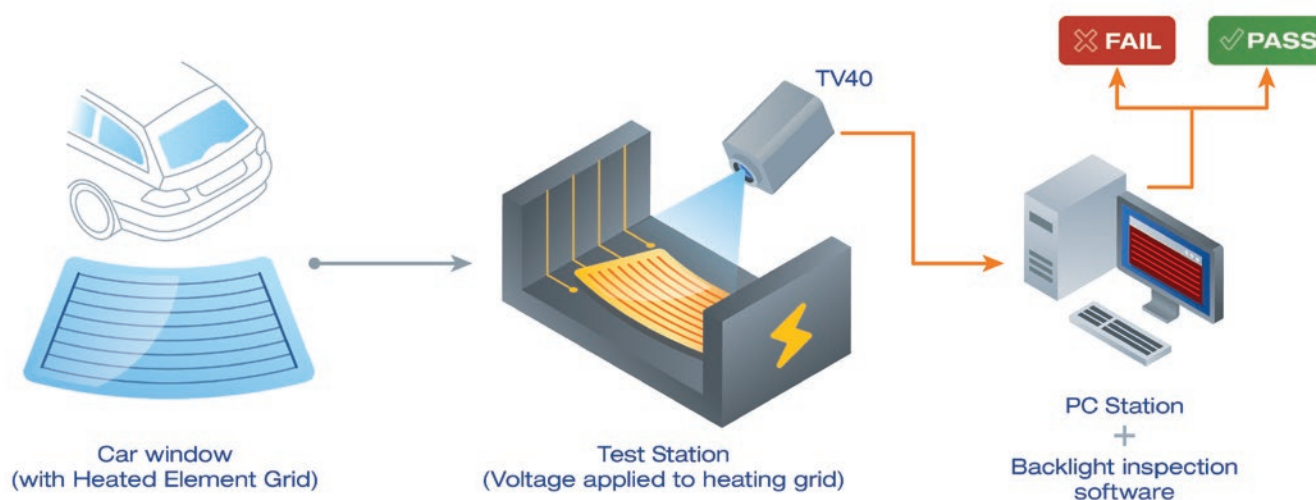


Figure 2: Good part isotherm

looking only at the temperature difference. Automatic snapshots on failed parts give operators the ability to quickly identify the faulty element. Project loading through digital inputs helps completely automate the inspection process.

The ThermoView Backlight Solution integrates with existing control systems through industry standard I/O modules and a comprehensive software solution. Pre-generated project files also allow users to quickly setup the system and create tests as new products are developed and manufactured.

Conclusion

Overall, the ThermoView solution offers Tier 1 glass suppliers a cost effective, easy to implement, and 100% confident quality inspection system for backlight manufacturing.