

## SUCCESS STORY 100

### TEMPERATURE MONITORING AND OPTIMIZATION OF CATALYTIC IR CURE OVENS IN THE COATING OF PLASTIC COMPOSITES AND WOODEN CABINET DOORS



#### KEY FACTS

**Customer's End Product**  
Wooden cabinets and plastic composites

**Max Temperature Reached**  
Low bake solvent & water-based coatings  
20-100°C/68-212°F

**Duration of Process**  
Less than 10-15 minutes

#### PRODUCT AND BENEFITS



- Oven Tracker XL or XL2 multi-channel datalogger
- IR sensor with Type K output (temperature range 20-90°C/ 70-190°F)
- Exposed junction Type K thermocouple for monitoring ambient and product core temperatures
- Insight™ software fully certified and traceable validation reports for oven and product surface temperature verification

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**How can I monitor the thermal cure of delicate plastic composites and wooden cabinets in a catalytic infrared (IR) oven without contact errors from traditional thermocouples?**

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#### Situation and background

Production Systems, Inc. ([www.productionsystems-usa.com](http://www.productionsystems-usa.com)) in High Point, NC, USA provides complete finishing solutions for a vast range of wood, plastics and metal products. An invaluable tool used by the Production Systems team is the Oven Tracker® XL system. The XL system helps with the design, commissioning and servicing of various IR, convection and combination cure ovens available on the market today.

#### The winning solution

- Datapaq Oven Tracker XL and XL2 systems travel through the bake oven connected to a combination of traditional contact thermocouples and or noncontact IR optical sensors.
- The IR optical sensors monitor the actual coating surface temperature without touching the product, while contact thermocouples measure the ambient temperature close to the product including the product core.
- The IR sensor is mounted securely 30mm (1in ) above the surface being monitored using an adjustable wire assembly fixed to the conveyor product rig. The sensor can therefore be focused accurately on the surface being measured.

#### Benefits

- Rapid optimization of catalytic IR oven operation
- Identification of hidden product surfaces that are at risk of undercure, so additional convection heating can be used to fully cure the coating. It may also highlight a need to change the product orientation within the oven to increase IR absorption in key areas.
- Exposed junction thermocouples allow ambient oven and product core temperature monitoring. Thermally insulated external doors may suffer damage if the internal insulation material is overheated during the paint cure operation.
- IR Optical Sensor Benefits:
  - ✓ No damage to paint from thermocouples attached to the product surface
  - ✓ No temperature measurement errors when sensors attached to the product affect heating rates, especially for delicate materials
  - ✓ Minimal risk of the sensor actually shielding the product from IR radiation, which can change the heating characteristics of the product during testing
  - ✓ Accurate temperature measurement of the coating layer
  - ✓ No need for difficult, lengthy probe attachment with high temperature tape to pre-coated product or risk of probe detachment during run