

SUCCESS STORY 99

NEW PART OVEN ORIENTATION OPTIMIZATION IN CUSTOM COATING

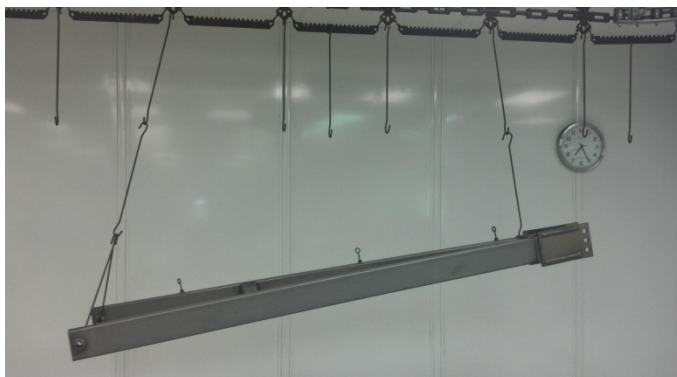


Photo courtesy Lou-Rich Inc., USA

Q

How can I guarantee that the paint cure on a large hitch assembly, made up of sections of differing metal thicknesses, is performed correctly in my conveyor oven?

A

Situation and background

Lou-Rich®, Incorporated, a custom coater located in Albert Lea, Minnesota, USA, is using the DataPac® EasyTrack®2 system to successfully optimize and validate the paint and powder coating cure processes for all new customer products. Supplying to multiple markets ranging from medical to farm equipment, Lou-Rich are challenged by a diversity of product sizes, masses and materials. The EasyTrack2 has been invaluable to allow correct selection of operating conditions for the oven to give the necessary cure quality for each and every product. A recent major challenge faced was the task of powder coating a large agricultural hitch assembly. The sheer size of the part was difficult enough, but the added problem of the mix of metal thicknesses used in its construction had to be addressed. The hitch was comprised of 1/8th inch tubing with 3/4 inch plates on the tongue. How could the tongue be cured without over curing the tubing? Employing the EasyTrack2 thermal mapping of the oven showed that there was a significant temperature difference between the hotter upper section of the oven and lower cooler section. Through careful orientation of the hitch assembly, it was therefore possible to locate the heavier metal sections at the top of the oven and thinner sections in the cooler bottom of the oven. After a series of trials with the EasyTrack2 with the part positioned at different angles, the perfect orientation was identified to guarantee consistent cure and hence, coating quality over the entire product.

The winning solution

- Thermally mapping the oven environmental temperature (6 points) to quantify degree of differential heating top to bottom.
- MicroMag magnetic surface probes attached quickly, yet securely to different parts of the product with differing thermal mass, monitoring the differences in heating rate within oven.
- Easy comparison of Time@Temperature data from individual trial runs to select best product orientation to give best match to paint supplier recommended cure schedules.
- Thermal barrier providing sufficient protection to allow rapid repeat profile runs during optimization studies.

Savings made

- Rapid efficient process set-up (part orientation) to allow safe product coating cure over entire product. Quicker start of production run (Less oven downtime), but with no risk of product reject, scrap or rework for an expensive individual product.
- No risk of product recall from customer, as EasyTrack2 provides complete certified and traceable record that the product was coated to match the cure specification.

KEY FACTS

Customer's End Product
Extensive diverse range of products ranging in size, shape and material

Max Temperature Reached
71–232°C /160-450°F
(dependent on part size and heating characteristics)

Duration of Process
20-50 minutes
(dependent on part size and heating characteristics)

PRODUCT AND BENEFITS



EasyTrack2 data logger

- 6 channel easy-to-use, rugged data logger with user replaceable PP3 battery

EasyTrack Insight™ software

- Quick and accurate cure analysis from run to run
- Traceable ISO9001 report

Thermal barrier TB0250

- 2hr protection @ 200°C/ 400 °F, yet only 5.7lbs / 2.6kg

Oven Probes

- Interchangeable probe types to match material type – Clip and MicroMag Magnetic.