



Pre-Gel Infrared System helps trailer manufacturer drive efficiency improvements

Gatormade Trailers, Kentucky, USA, manufactures a wide range of trailers from small utility up to their 53 feet long Gooseneck trailer. In 2011, Gatormade Trailers invested in a custom built, in-house powder coating facility.

Consisting of a 700 ft (214m) convection oven, running at 600°F (316°C), it helped the company transform the manufacturing side of the business. They now had full measure over their powder coating and curing processes. This provided a perfect way-point to drive further quality improvements on an already great product. The heaviest part that they put through the oven weighed in at 9000 lbs (4100 kg) and measured 53 ft (16 m) long. To achieve the required quality of finish, they found that the line speed required slowing from 3 f.p.m. to almost a standstill. This was the only way to ensure that the powder flowed correctly and gave a consistent gloss. As this was no acceptable, they needed to find a way to get their line speed back up to 3 f.p.m. and still maintain a high-quality finish. Gatormade Trailers got in touch with finishing systems integrator, Air Power Manufacturing Solutions (based in High Point NC), who suggested a Pre-Gel Gas Catalytic IR oven from Heraeus-Vulcan Catalytic.

The new solution is a giant, 3-section, 36 heater oven. The heating profile of each section is controlled by a PLC control system which enables different profiles to be created and stored for different product sizes. Each program can be called up as required. During production breaks the complete oven can be switched to a 'low fire' condition, which reduces the power output to a minimum, but still maintains the ability to ramped up to the desired output within 60 seconds. This is one of the key features of our ovens and helps to reduce the overall energy consumption.

This Gas Catalytic IR Pre-gel oven was placed directly in front of the convection oven, together with an 8' (2.5 m) vestibule. This configuration helps to raise the temperature of the powder extremely quickly to the point where it starts to gel. IR is absorbed very quickly by the powder and does not require the complete part to be heated up to the gelling temperature. By the time the part is leaving the Pre-gel oven the powder is at the gel stage. The part then enters the convection oven for the final cure. This process now takes considerably less time and uses less energy.



Efficiency Improvements

- A 16% increase in production
- Parts now enter convection oven at 100°F (38°C) higher temperature
- Convection oven now running 200°F (93°C) lower

Quality Improvements

- A smoother finish with less 'orange peel'
- Higher gloss
- Hard to cure areas have smoother finish

Running Costs Reduction

- Big decrease in energy consumption

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