Carbon Infrared Oven improves quality by powder coating screws

When building houses, halls or other buildings, on many positions you need screws. They are exposed to weather conditions like rain or sun, so they have to be coated to make them resistant against corrosion. A three-zone, carbon infra-red medium wave oven from Heraeus Noblelight is helping SFS Intec to improve the flexibility and quality of its powder coating operations. It has allowed the Leeds-based company to change powder curing from a continuous to a batch operation, so that it can now respond more quickly to customer requirements for corrosion-resistant screws and fasteners. In addition, the new pyrometer-controlled oven requires considerably less space.

SFS Intec is part of a Swiss-owned international group, which is involved in a range of activities, from the manufacture of solar fastenings to hinge systems.

Screw fasteners for the construction industry represent an important product line at SFS Intec. The heads of these screws must be coated to resist corrosion in use and the powder coating was formerly cured using an electrically-heated oven, through which the screws were passed continuously on a conveyor belt. However, this was very energy-intensive, as the oven had first to be heated up to temperature and then held at that curing temperature for some time. More importantly, this continuous operation lacked flexibility as it could not respond quickly to changes in colour or to customer demands for fast delivery of limited numbers of screws. To solve both of these problems, SFS Intec contacted Heraeus, who designed, manufactured and installed a carbon infra-red medium wave curing system. This is a three-zone oven with seven 4kW medium wave infra-red emitters in each zone. Medium wave radiation is readily absorbed by powder coatings and allows rapid and efficient curing. In operation, trays of coated screws are now manually loaded into a selected zone and the emitters are switched on. The curing temperature of 180°C is achieved in a matter of seconds, rather than the 30 minutes or so required by the previous system.

All three zones are individually loaded and controlled so that three different batches of screws can be cured simultaneously, if required. “We very much pride ourselves on the quality of our customer service,” says Bob Mrozik, the technical services manager at SFS, “and the new batch processing with the infra-red oven now means we have improved this service by being able to respond more quickly to last minute customer requests - and often provide a next-day service. In addition, we have found that the pyrometer control of the product surface temperature, as opposed to merely controlling the oven air temperature, as was previously the case, has given a much more consistent quality cure.”

Features
- Conversion to batch operation
- Lacquer on screws for the construction industry
- Respond more quickly to customer requirements

Technical Data
- Medium wave Infrared heaters
- Oven with three individual zones
- Up-heating in within sec to 180 °C
- Digital timer to determine the dwell time
- Integrated pyrometer controls temperature