



Infrared for keyboard manufacture

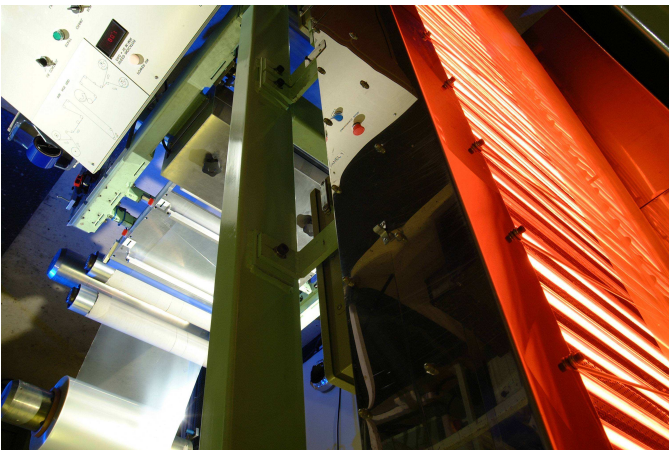
Infrared heating systems from Heraeus Noblelight are helping Cherry Electrical Products Ltd to ensure the excellent quality of their high performance computer keyboards, while at the same time reducing manufacturing costs. At its Harpenden factory, Cherry manufactures a number of high specification computer keyboards, incorporating its Full Travel Sealed Contact (FTSC) technology. This relies on a key module effecting a contact between two PET membranes, which are screen printed with the necessary electronic circuitry.

The screen printing of the two membranes is an essential part of the keyboard manufacturing process. It is also important that the screen printing is heat-cured in a convection oven after application, when it is vital that there is no shrinkage of the PET membrane, as this would adversely affect the circuitry.

Previously, Cherry had bought in special PET material which had been treated to prevent shrinkage. But this was expensive therefore and also for quality reasons, Cherry decided to investigate alternative techniques of achieving pre-shrunk PET material. Plastics can be quickly heated by irradiation with infrared emitters, as they absorb medium wave radiation particularly well and convert it efficiently into heat.

Following trials, it was determined that the optimum solution to the pre-shrinking task would be offered by carbon infrared technology, as it offers medium wave radiation at high power density with rapid response times. The compactness of carbon infrared was also an important consideration, as it was necessary that any system installed on the production line should have a small footprint, because of the limited space available.

As a result, a carbon medium wave system was supplied to Cherry and this was fitted before the screen printing station. In operation, the 430mm web of PET passes under a carbon infrared cassette, containing 34, 2.2kW emitters, giving a total power rating of 74.8kW. The web passes under the emitters at a line speed of 18m/min and it is uniformly heated to a temperature of 160°C, to achieve a shrinkage in the web of 3% in both the transverse direction and the machine (forward travel) direction. The temperature of the web is controlled by means of an optical pyrometer, which acts to regulate the emitter power, while power is also controlled in line with the web speed by means of a tachometer.



Features

- pre-shrinking of PET
- increased quality
- reducing manufacturing costs

Technical Data

- carbon medium wave infrared system
- 74,8kW total power rating
- 18 m/min
- PET web heated up to 160°C

Germany
Heraeus Noblelight GmbH
 Infrared Process Technology
 Reinhard-Heraeus-Ring 7
 63801 Kleinostheim
 Phone +49 6181 35-8545
 Fax +49 6181 35 16-8410
 hng-infrared@heraeus.com
 www.heraeus-noblelight.com/infrared

USA
Heraeus Noblelight America LLC
 1520C Broadmoor Blvd.
 Buford, GA 30518
 Phone +1 678 835-5764
 Fax: +1 678 835-5765
 info.hna.ip@heraeus.com
 www.heraeus-thermal-solutions.com

Great Britain
Heraeus Noblelight Ltd.
 Clayhill Industrial Estate
 Neston, Cheshire
 CH64 3UZ
 Phone +44 151 353-2710
 Fax +44 151 353-2719
 ian.bartley@heraeus.com
 www.heraeus-infraredsolutions.co.uk

China
Heraeus Noblelight (Shenyang) LTD
 2F, 5th Building 5
 No. 406, Guilin Rd, Xuhui District
 200233 Shanghai
 Phone +8621 3357-5555
 Fax +8621 3357-5333
 info.hns@heraeus.com
 www.heraeus-noblelight.cn