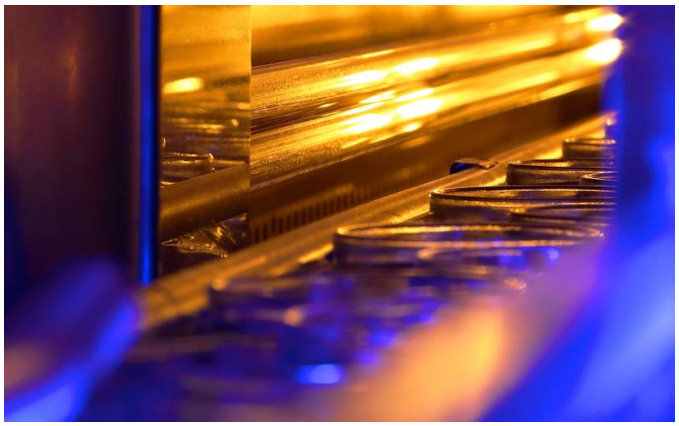
Infrared oven helps jam-maker to fill jars with quality preserves

A purpose-built carbon infrared oven has been instrumental in allowing Duerr's of Manchester to change from a hot water rinse system to a cold air rinse system at their Wythenshawe jam-making site. Duerr's is especially proud of its range of jam jars, which are filled in a continuous process with hot jam on a bottling line. Before filling, jars need to be rinsed, and this was previously carried out by a hot water rinsing process. Heat was necessary to prevent thermal shock and possible breakage of the glass, as jars are stored at temperatures as low as -5°C and jam is at temperatures up to 97°C during filling. The glass manufacturers recommend a maximum temperature difference of 84°C. With the hot water rinse, the jars were pre-heated by the hot water. However, the hot water rinsing plant, which had been in use for many years, was becoming increasingly inefficient, resulting in high water usages and costs. Consequently, it was decided to replace the aging water-rinsing plant with a modern air-rinsing plant, bearing in mind that this would require a separate jar-heating system. After rejecting steam heating for this task, as it would have involved further water consumption, it was decided to investigate the potential of infrared heating and David Costello, the projects manager at Duerr's, contacted Excelitas to ask them to carry out tests at their Neston Applications Centre. These proved so successful that a 50.4kW carbon medium wave oven was eventually installed. The oven fits over an existing conveyor belt and comprises two 25.2kW zones, each fitted with three carbon medium wave emitters. The emitters can be switched on according to the height of the jars being heated, with two emitters per zone switched on for jars up to 100mm high and three emitters per zone for jars higher than 100mm. An optical pyrometer measures the temperature of the jars as they leave the oven. In manual operation, the operator can manually adjust the delivered power of the oven via a potentiometer to achieve the required temperature. In automatic operation, the measured exit temperature of the bottles is fed back to a PID controller, and the emitters are then automatically regulated to maintain the set temperature. In the event of a line stoppage, the emitters are automatically switched to a stand-by level at an on/off speed of response of around one second. Duerr's David Costello is very pleased with the installation, saying, "We have now saved over £8,000 Per annum on water consumption costs. In addition, we have a rinsing and heating plant which is much more flexible, much easier to control and offers a better working environment to the workforce."



Features

- Reduced water usage and water-heating bills
- More effective control over the total jar heating and rinsing process
- Flexible rinsing and heating plant which adjusts to the height of the jars

Technical Data

- 50.4kW Carbon infrared oven with two zones and 3 CIR emitters each
- Optical pyrometer measures temperature of the jars as they leave the oven
- Manual and automatic operation possible

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