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Heraeus Infra-Red Gas Catalytic Ovens Prove Fit For Purpose In Gym Equipment Manufacture

Double The Powder Coating Curing And Reduction in Energy Costs

Two gas catalytic ovens from Heraeus Noblelight have been installed at Life Fitness in Illinois, USA, where they are helping to double production and save costs in the manufacture of high quality gym equipment. They were fitted quickly and easily within a scheduled shut-down period, in the limited floor space available and were operational in less than a month.

Life Fitness has been offering high quality fitness solutions for over 45 years for installation in private homes, corporate fitness centres and gymnasia. Its range of equipment includes treadmills, exercise bikes and comprehensive multi-gyms and it employs more than 1700 people at twelve manufacturing facilities around the world, with a global distribution network. The facility in Illinois is the company's largest manufacturing plant in the US and an essential part of the manufacturing process is that the equipment is coated with a powder lacquer, which is then cured under heat. Historically, the curing process has been carried out in a convection oven. Some parts receive two powder coats and to do this, they are manually rehung onto the conveyor and then passed back through the oven. To prevent powder contamination, it was also necessary to create gaps between the one-coat and two-coat items. Effectively, the coating line was running at 2.4m/min but the re-hanging, this meant that two-coat throughput was down to 50%

However, growing global success of Life Fitness's business meant that production output had to be increased and that involved a significant expansion of the powder coating line. After discounting the installation of a second convection oven because of floor space limitations, the company contacted Heraeus and successful tests were carried out using gas catalytic ovens at Heraeus' Applications Centre in Burford, Georgia.

As a result, two pre-gel ovens have been installed. The coating facility has been slightly rearranged so that there are now two lines, one for one-coat parts and one for two-coat parts. Each line has a gas catalytic oven and a corresponding paint booth and for the final curing, both lines run through the convection oven.

The new system now achieves the desired 2.4m/min line speed but this can be increased to 3m/min. But, more importantly, the output of the coating plant has doubled, while there have been significant savings of gas and electricity costs. Adam Pederson, manufacturing engineer at Life Fitness, comments, "I have been truly impressed with the final result we achieved by working with Heraeus. The process of planning, testing and implementation has been smooth and we now have a very effective and efficient powder coating system, which incorporates the latest technology."

Heraeus specialises in the production and application of high quality energy sources covering the electro-magnetic spectrum from ultraviolet to infra-red. It has over 40 years experience in infra-red technology and offers the expertise, products and systems to provide efficient and effective solutions to drying, heating and curing problems throughout industry.

Note

Gas catalytic ovens are available in various sizes and can operate on natural gas or propane. They are flameless, as they rely on initially heating a platinum catalyst ceramic composite heater panel. Once the catalyst has reached a given temperature, the gas is switched on and flows evenly into the

back of the panel, where it intermingles with the hot platinum catalyst. This initiates a chemical reaction, which produces carbon dioxide, water vapour and infra-red radiation in the long to low medium wave band of the spectrum. Once the catalytic reaction is established, approximately five minutes after the gas is turned on, the electrical pre-heat is switched off and the reaction is maintained, without flame, until the gas is shut off, without any deterioration of the platinum catalyst. The surface temperature of the heater depends upon the gas flow and this is controlled by a precise gas pulse system (GPS).

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A Life Fitness Multi-Gym in Use