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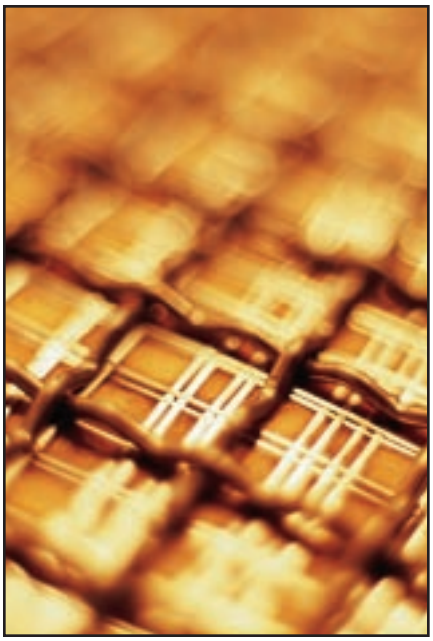

Catalytic Infrared Heaters—Reducing Cost, Increasing Speed

Technology posts big gains for thermoformers and coaters.

Natural gas catalytic infrared heaters currently are reducing costs up to 80 percent and increasing line speeds up to 50 percent in curing applications. In curing coatings and finishes, they can act as a preheat or booster oven to speed the curing process or as a curing system that will reduce overall energy usage. In thermoforming, they replace electric infrared heaters to decrease operating costs.

Cost benefits for thermoforming

Vulcan Catalytic first introduced catalytic infrared heaters to the thermoforming industry over ten years ago. Since then, the word has spread, and now over 500 retrofit kits or systems are in place in thermoforming machines.

Thermoforming traditionally requires large amounts of electric power to soften the plastic prior to the forming action. With catalytic technology, however, more cost-effective natural gas can replace electricity while maintaining precise control and cycle

times. The benefit is a reduction of up to 80 percent of the electric cost to operate the machine. In most cases, the cost of a retrofit to catalytic infrared is paid back in about a year.

Other benefits for thermoformers include:

- better wave-length absorption;
- improved product quality; and
- improved product consistency.

Further, the ovens require minimal maintenance.

Natural gas catalytic infrared can save you money.

- → Reduces energy costs up to 80 percent.
- → Reduces cycle times up to 50 percent.
- → Improves product quality.
- → Improves product consistency.
- → Provides payback in one year.
- → Requires minimal maintenance.
- → Requires little space.

Advanced controls assure temperature accuracy.

- Gas Pulse Technology incorporates a recipe-based menu.
- Operators can call up recipes on a touch-sensitive screen.
- System automatically sets the zone controls.
- Heater panels have multiple heat zones.

Increased speed for curing

Convection ovens typically are used to cure powder- and water-based finishes. By installing catalytic infrared heaters as preheat or booster ovens before the convection oven, curing is done faster and better. Because the powder is reduced to a gel before it enters the convection oven, lower temperatures and less time are required in the curing process. Further, powder does not blow around in the convection oven and contaminate other parts. Increases in line speed of 50 percent or more are common.

In some applications, catalytic infrared heaters are used to completely cure coatings. Among these applications are curing powder coatings on metal, wood, MDF board, and plastics.

How it works

The flameless catalytic heaters emit medium- to long-wave infrared energy. The heat source can be controlled from 450°F up to 1000°F. A catalyst composite chemically oxidizes natural gas to produce the infrared energy. The catalyst is preheated with a low wattage electric element to initiate the reaction. Once the catalyst reaches 400°F, safety devices are activated and gas is dispersed into the catalyst from the back of the heater. Oxygen for the reaction enters from the front. After the gas enters the heater, the catalytic reaction is established and the preheater is turned off.

The reaction is controlled by varying the gas flow as it enters the heater. Vulcan's advanced Gas Pulse Technology uses a percentage timer to control an on/off valve and permit small amounts of gas to reach the reaction site. As more heat is required, the valve is held open for a longer period of time. Process control can be maintained through simple percentage controls or through more sophisticated PLC-based systems that allow

heating profiles to be stored and individual zones to be controlled via a touch screen. Vulcan is currently developing controls for heating plastics that have very poor hot strength during the later part of the thermoforming cycle.

Is catalytic infrared right for me?

Wherever electric infrared heaters are being used to heat objects up to 450°F, natural gas catalytic heaters can be installed as a complete retrofit. The heaters allow processors to take advantage of the lower cost of natural gas, avoid high electric demand charges, and free up electric service for other applications.

Find out more

Natural gas catalytic infrared is a proven technology that can reduce costs, increase production, and improve product quality in most applications where electric infrared heaters are used. To find out more about natural gas catalytic infrared heaters and what they can do for your application, call your local sales representative, visit our Web site, or contact:

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