

OMEGA VANZETTI®
**The Leader in Infrared
 Temperature Measurement
 and Control**

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CONTROLLING INDUSTRIAL OVENS

Large industrial fossil fuel fired or electric heated ovens typically employ thermocouples located in the oven to monitor and control the oven ambient temperature, as in Figure 1.

These industrial type ovens are used to heat treat metal parts, etc. at temperatures between 100°-2500°F. However, thermocouples monitor the oven temperature and not the part temperature, which is normally the most critical variable.

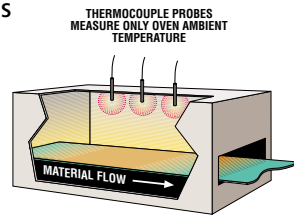


FIGURE 1.

An **OMEGA VANZETTI®** non-contact infrared Thermal Monitor system measures the actual part temperature inside the oven by the insertion of a suitable fiber optic probe in the oven to replace the thermocouples. Since the location of the fiber optics is usually several inches from the conveyor belt a focused fiber optic bundle is employed, giving a certain spot size at a specified target distance.

Figure 2 shows three common ways of installing a focused fiber optic probe. Figure 2a requires the user to install a thin sapphire window (sapphire having a high melting temperature of 2050°C) in the oven, with the probe located outside the oven's hostile environment and viewing the heated target through the window.

Figure 2b employs the use of a water and air cooled (purged) focused fiber optic probe to project down into the oven (max. operating temperature for fiber optics is 300°F without purging).

Figure 2c employs the use of a hollow pipe fitted into the oven extending far enough above the oven heat to allow insertion of an unpurged lens cell.

When parts are moving on a continuous conveyor belt it's best to use one of the following Signal Processing options (Peak, Sense, and Hold, – Valley, Sense and Hold, – Averaging or Fast Attack Variable Decay) to "lock" in on the part temperature as it passes through the view of the fiber optic probe.

\$2,800.00
BASIC SYSTEM

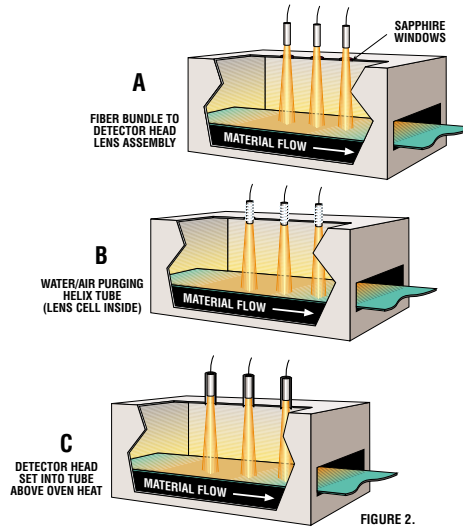


FIGURE 2.

Advantages of the fiber optic infrared approach as illustrated are:

- Fast response time to 10 mSec (0 to 63%)
- Non-contact part temperature
- Wide range of temperatures (in sub ranges)
- Ability to control temperatures with hi-low logic and/or proportional control options if desired
- Adjustable emissivity control



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