

OMEGA VANZETTI®
The Leader in Infrared
Temperature Measurement
and Control

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CONTROLLING OF ELECTROMAGNETIC WELDING OF THERMOPLASTICS

We have successfully utilized our non-contacting Infrared Systems in controlling of the electromagnetic welding of thermoplastic components.

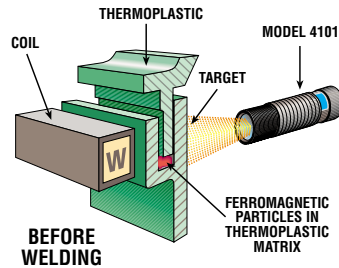
This process, while not new, is gaining widespread use in the bonding of critical components such as medical equipment and of late the automotive market.

Electromagnetic welding used the principle of inductive heating to create fusion temperatures within a joint area. To achieve this, a magnetically active material is formulated by compounding ferrous-magnetic particles within a thermoplastic matrix. This magnetically active material is placed at the joint interface and briefly exposed to an oscillating electromagnetic field developed by an induction heater. Heat is generated within the matrix and is transferred to abutting surfaces causing them to fuse together at the joint. Problems arise at this point, since it is not known how much dwell time is needed for good fusion bonding. In a production environment, over temperature and under temperature of the part would be needed to establish what is acceptable and what is not.

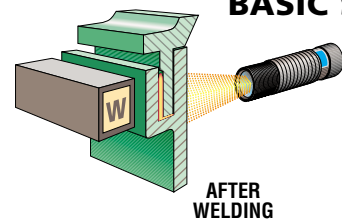
OMEGA VANZETTI® non-contacting infrared sensor is aimed at the side target opposite to the induction heater. We begin readings as the cycle starts and continuously provide output voltage to a controller that is regulating power to the heater.

By looking at the target, we are able to establish how much energy is imparted to the weld and based on good weld and bad weld information we can fine tune the total system. This reduces losses due to under and over temperature.

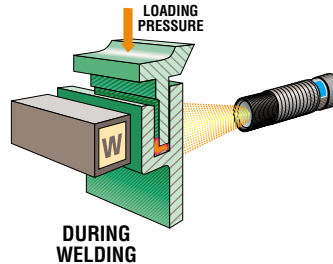
Overall we can design a system tailored to the individual needs of customers who want excellent, real-time control over their critical process.



BEFORE WELDING



AFTER WELDING



DURING WELDING

\$690.00
BASIC SYSTEM

Advantages of the infrared approach as illustrated are:

- Fast 10 mSec time constant
- Non-contact measurement
- 4-20 mA linear output
- Adjustable emissivity control
- Spectral response – 8 to 14 microns
- Wide field of view
- Temperature ranges from 0-1371°C (in sub ranges)



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