



Heat a steel shaft for metal-to-plastic insertion

Objective A knurled steel shaft is heated prior to staking into plastic

Material Steel shaft samples

Temperature 465 °F (240 °C)

Frequency 298 kHz

Equipment

- Ambrell 0224 2 kW induction heating system, equipped with a remote workhead containing two 0.66 μF capacitors for a total of 1.32 μF
- An induction heating coil designed and developed specifically for this application.

Process A single-turn channel style coil is used to generate the required heat pattern. The knurled end of the shaft is heated to required temperature in 3 seconds. The lower portion of the shaft does not exceed 200°F (95°C), a desirable result.

Narrative

- Shaft used in the hinge of a consumer device; control of the extent of shaft heating successfully preserves lubricant applied to unheated end

Results/Benefits Induction heating provides:

- Hands-free heating that involves no operator skill for manufacturing
- Even distribution of heating
- Localized application of energy limits temperature drift

