



Bonding of electric motor shaft to nylon face fan

Objective To bond a motor shaft to a nylon face fan without effecting the motor

Material Steel motor, body 0.79" (20mm) OD, 1.18" (30mm) long, steel shaft 0.39" (10mm) long, 0.06" (1.5mm) OD and nylon face fan

Temperature 248°F (120°C)

Frequency 265 kHz

Equipment

- Ambrell 2 kW induction heating system, equipped with a remote workhead containing two 0.33 μ F capacitors for a total of 0.66 μ F
- An induction heating coil, designed and developed specifically for this application

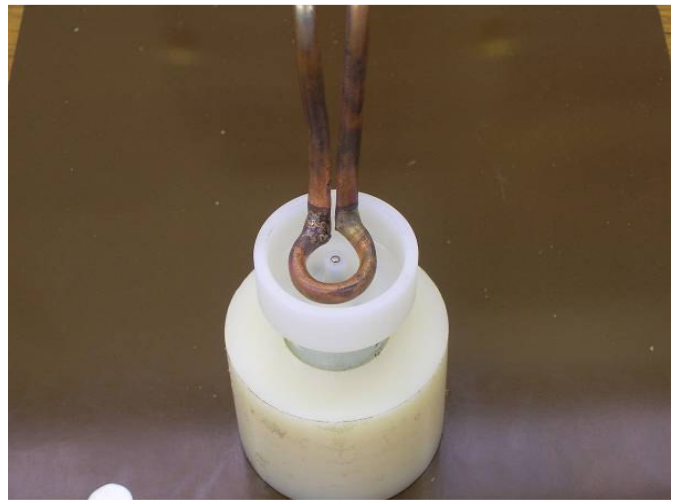
Process A one turn coil is used to heat the motor shaft to 248°F (120°C) for 1 second. The nylon will reflow and bond to the motor shaft.

Results/Benefits Induction heating provides:

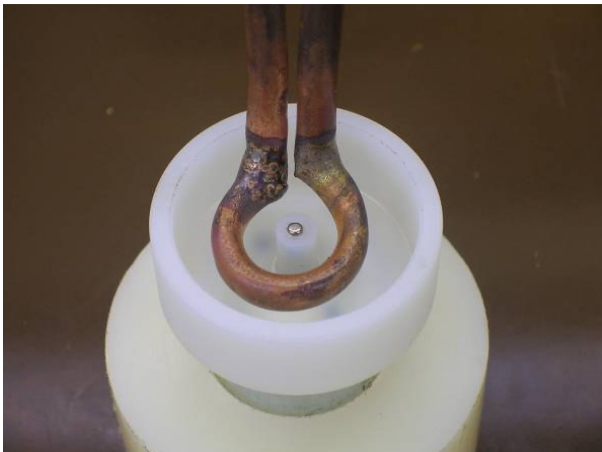
- Hands-free heating that involves no operator skill for manufacturing
- Only the metal shaft is heated so the motor is not effected
- Increased production due to rapid heating
- Decreased failure rate, originally used glue which ran into motor and caused failure
- Stronger bond



Motor with shaft that nylon face fan is bonded to



Reflowing of nylon to create bond



Up-close view