

Soldering a copper wire and contactor assembly

Objective To heat a copper wire and contactor assembly to 400 °F for a soldering application at a motor manufacturer

Material

- Rotor assemblies
- Solder

Temperature 400 °F (204 °C)

Frequency 360 kHz

Equipment

- Ambrell EASYHEAT 5kW 150-400 kHz induction heating system equipped with a remote work head containing two 1.0 µF capacitors
- A multi-turn helical induction heating coil designed and developed specifically for this application

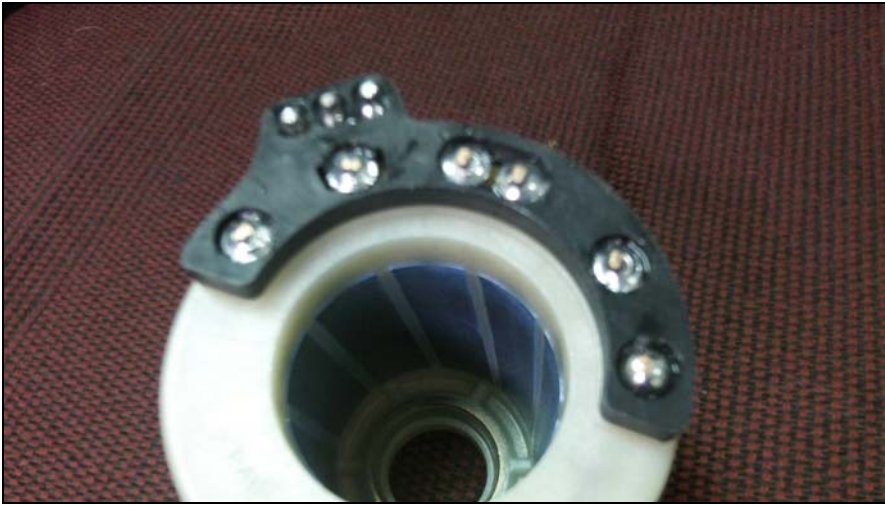
Process High intensity heat must be applied to the joint area for this application so that thermal conduction of the copper does not sink away the heat delivered from the induction process. High intensity heat enables this process to avoid excessive heat to the black plastic body that houses the connectors.

The multi-turn helical coil that was used to generate the heat pattern for this application maximizes efficiency. The result is a reduced cycle time.

A multi-turn solder wire preform was placed on the joint area. Power was then applied until the solder flowed and created a good joint. The end result was that induction dramatically reduced the cycle time which was four minutes per part with a soldering iron.

Results/Benefits

- **Speed:** Induction offers considerable time savings when compared to using a soldering iron, which results in increased production efficiencies
- **Production Rate:** Thanks to induction's faster rate of soldering, it allowed the client to enjoy an improved production rate
- **Precision:** Induction is precise, and should resolve the client's quality issues that it was seeing with a soldering iron



The copper wire and contactor assembly