

Soldering a fine copper wire to a connector assembly

Objective To solder a smaller copper wire (OD of 0.41mm/0.02") and connector assembly within one second, and a larger assembly (OD of 8.86mm/0.35") within two seconds for a battery cable and terminal application for the automotive industry.

- Material**
- Smaller copper wire (OD of 0.41mm/0.02")
 - Larger copper wire (OD of 8.86mm/0.35")
 - Connectors
 - Solder

Temperature 437 °F (225 °C)

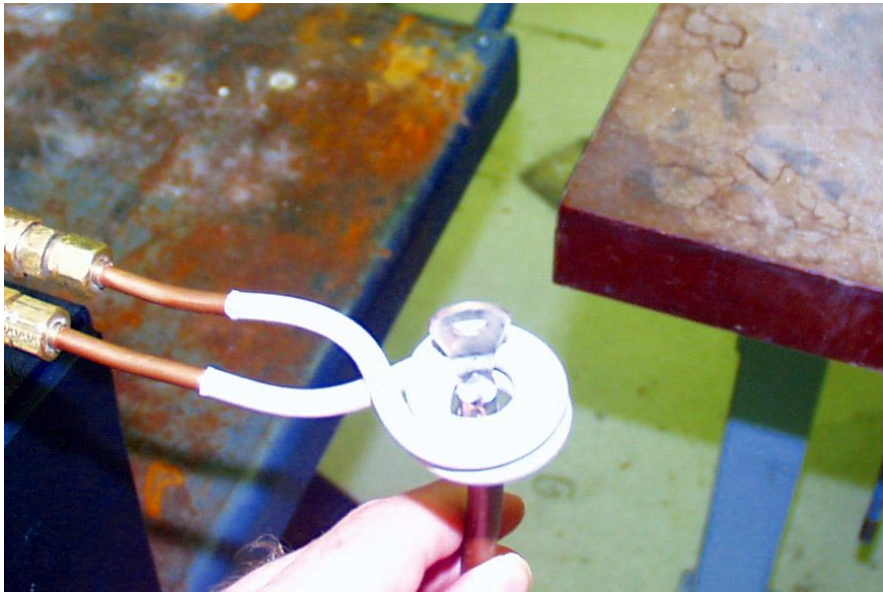
Frequency 273 kHz

- Equipment**
- Ambrell EASYHEAT LI 3542, 4 kW, 150-400 kHz induction heating system equipped with a remote heat station containing one 1.5 µF capacitor
 - A single position, three-turn helical induction heating coil was used for larger assemblies
 - A single position, four-turn double wound helical induction heating coil was used for smaller assemblies

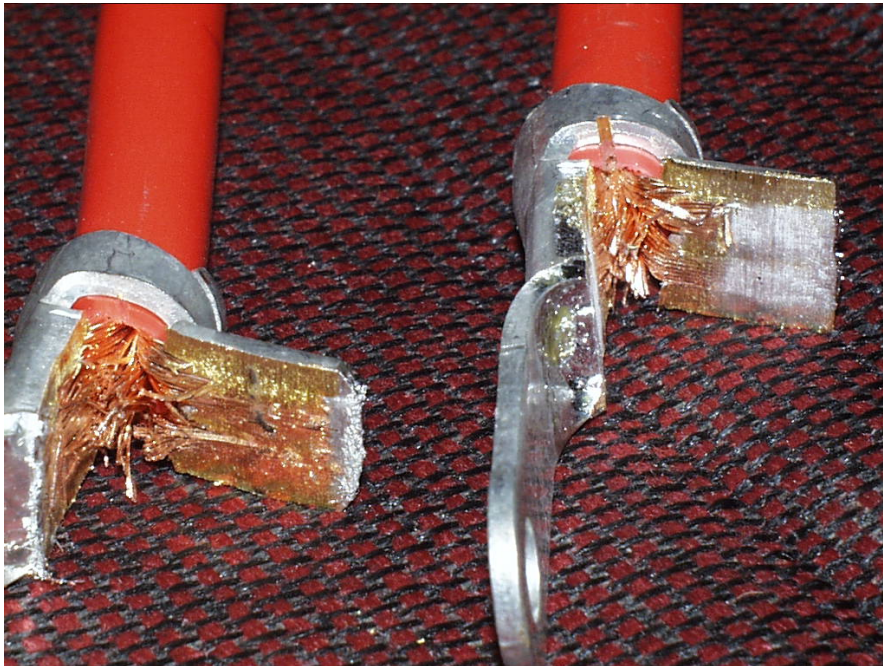
Process Initial tests were conducted to optimize power for the smaller and larger assemblies. The larger assembly was placed into the single position, three-turn helical coil and power was turned on. The assembly began to heat and the solder was applied as two solder sticks were fed simultaneously to complete the soldering application.

The smaller assembly was placed into the four-turn double wound helical coil and power was turned on. The assembly began to heat and the solder stick was applied to complete the soldering application.

- Results/Benefits**
- Joint quality: The EASYHEAT and its coils delivered higher quality joint, as can be seen in a picture on the next page
 - Superior energy efficiency: The EASYHEAT is more energy efficient than the outdated system that the client was using
 - Support: The company desired personalized, local support from their induction heating vendor, which Ambrell delivered



The assembly inside a four-turn double wound helical coil.



The part on the right was done by the EASYHEAT, and the part on the left was done by the previous induction heating system – the penetration of the solder is superior on the right.



Assemblies of various sizes soldered by the EASYHEAT.