

Soldering a copper lug and a wire

Objective To heat a copper lug and a wire to temperature for a soldering application to create grounding connections

- Material**
- Wire
 - Lug
 - Solder
 - Flux

Temperature 370 °F (188 °C)

Frequency 109 kHz

- Equipment**
- Ambrell EKOHEAT 10 KW, 50 KHz to 150 KHz solid state induction power supply, equipped with a remote heat station containing (3) 1.4 uf capacitors for a total of 4.5 uf.
 - A single-position two-turn C-shaped induction heating coil designed and developed specifically for this application

Process The parts were fluxed and the solder wire was folded two times and twisted to enable a greater feed rate. The assembly was then placed in the coil and the power was turned on. The coil was designed to focus heat on the large lug and to keep solder from running over the wires. After 40 seconds, the assembly reached soldering temperature.

It was observed that the lug could easily be filled with solder when it's placed in a vertical direction and the solder will run out of the bottom when full. If the lug was oriented in a horizontal position the solder could be more readily kept in and around the lug.

- Results/Benefits**
- **Speed:** The heating process was completed within 40 seconds
 - **Repeatability:** Induction is a repeatable heating process, so a consistent result is achieved each time
 - **Safety:** Induction does not present a flame, so it helps create a safer, cooler working environment than other methods



The joint made during the horizontal orientation.



The joint made during the vertical orientation.