

Annealing Copper Wire Connectors

- Objective:** To heat different crimp contacts for an annealing application.
- End Product:** Copper wire connector
- Equipment:** Ambrell EASYHEAT[™] 3.5 kW, 150-400 kHz induction heating system with a workhead and coil specifically designed for this application
- Material(s):** Copper
- Temperature:** 1400 °F (760 °C)
- Frequency:** 280 kHz
- Testing:** A custom-designed multiple-turn pancake coil was built to meet the heating requirements for this annealing application. Initial tests were conducted to optimize the power delivered to the part. Temperature indicating paint was then applied to the part, which dissolves when the part reaches target temperature. It was observed that it took 0.5 seconds to heat the sample in a 0.1875" ID coil to temperature. This heating was sufficient to heat the smaller two samples at the desired rate. The plated samples were heated to a slightly lower temperature than 1400 °F (760 °C) as the plating was damaged at 1400 °F (760 °C). The feasibility of this application was confirmed during application testing.
- Benefits:**
- **Speed:** Induction achieved the client's speed requirements.
 - **Repeatability:** With induction you can expect the same result every time, leading to enhanced quality.
 - **Expertise:** The client took advantage of THE LAB's expertise to prove out their process in a way that met their time, quality and budgetary requirements.



The pancake coil heating the wire sample.