

Application Note

Heating Aluminum & Carbon Fiber Coupons for Bonding

- Objective:** To heat aluminum and carbon fiber coupons for a bonding application for a research firm.
- Equipment:** Ambrell EASYHEAT™ 2.4 kW, 150-400 kHz solid state induction power supply with a workhead and coil specifically designed for this application.
- Frequency:** 272 kHz
- Material:** Aluminum and carbon fiber with adhesive in between.
- Temperature:** 392 °F (200 °C)
- Testing:** Three custom-designed single position multiple-turn coils were built to generate the required heating for this bonding application (helical, pancake and u-shaped coils). 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 the target temperature. It took 3 minutes to heat the sample to temperature.
- Benefits:**
- **Speed:** Induction met the client's time requirements.
 - **Repeatability:** The client can expect the same result in the same amount of time every single time with induction heating.
 - **Footprint:** Induction takes up a modest footprint compared to other heating methods, and the workhead can be placed away from the induction heating system.
 - **Safety:** There is no open flame with induction heating.



The assembly being heated inside the u-shaped induction coil.