Ambrell
INDUCTION HEATING SOLUTIONS
an inTEST Company

Application Note

Brazing an Aluminum Tube Assembly

Objective: To heat an aluminum tube assembly for a brazing application to manufacture automotive parts; the client was looking to replace their torch heating process with induction.

Equipment: Ambrell EASYHEAT 10 kW, 150-400 kHz induction heating power supply with a workhead and coil specifically designed for this application.

Frequency: 223 kHz

Material: Aluminum tube and fitting

Temperature: 1100 ˚F (593 °C)

Testing: A custom-designed single position multiple-turn pancake coil was built to generate the required heating for this brazing application. Initial tests were conducted to optimize power delivery to the assembly. Temperature indicating paint was used to determine the heating time for the process. One braze ring and aluminum brazing flux was used for testing. It was observed that it took 45 seconds to heat the sample to temperature and melt the braze alloy. This result achieved the client's objective.

Benefits:

- **Speed:** The client was able to braze their parts faster than they would have with their torch heating process.
- **Safety & Efficiency:** There is no open flame with induction heating, and it also introduces less heat into the work environment. It is also more efficient than most other heating methods such as torch heating.
- **Repeatability:** The client can expect the same result in the same amount of time every single time with induction heating. Torch heating, on the other hand, is highly dependent on operator skill and consistency.
- **Lab Expertise:** THE LAB at Ambrell designed a solution that met the client's goals giving them peace-of-mind before investing in a system.

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The assembly in the induction pancake coil.