

Application Note

Annealing a Metal Plate

- Objective:** To heat a metal plate for an annealing application; the customer wanted to improve the heating time they were seeing with an open flame/torch.
- Equipment:** Ambrell EASYHEAT 2.4 kW, 150-400 kHz induction heating power supply with a workhead and coil specifically designed for this application.
- Temperature:** 1,300 °F (704 °C)
- Frequency:** 225 kHz
- Material:** Metal plate with a thickness of 0.125" (3.175 mm)
- Testing:** A custom-designed single position multiple-turn helical coil was built to generate the required heating for the application. Initial tests were conducted to optimize the power delivered to the part. It was observed that it took about 30 seconds to heat the plate to temperature. Once at temperature, the part can then be inserted inside to perform the required thermal processing.
- Benefits:**
- **Speed:** The heating process took five minutes with a torch, so 30 seconds is a significant improvement.
 - **Repeatability:** Torch heating is dependent on operator skill which can lead to variability. With induction, the same result is achieved every time.
 - **Safety:** With induction, there is no open flame, resulting in a safer, cooler work environment.
 - **Efficiency:** Switching to induction will move the client away from a gas heating method, resulting in efficiency and green benefits.
 - **Size of System/Workhead:** Induction will easily fit into their work process thanks to its modest size/required footprint.



The part inside the coil during heating.