

Heating Steel Inserts for Metal-to-Plastic Insertion

- Objective:** Heat magnetic steel inserts into molded plastic without cracking the molded plastic
- Equipment:** Ambrell EASYHEAT[™] 2 kW, 150-400 kHz induction heating system with a workhead and coil specifically designed for this application
- Frequency:** 267 kHz
- Material:** Molded plastic and magnetic steel inserts
- Temperature:** 400 °F (204 °C)
- Testing:** A specially designed multiple turn, two position helical coil was developed for this heating application. Initial tests were conducted to optimize power delivery. Temperature indicating paint was applied to the part and it dissolved when the part reached 400 °F (204 °C). A plastic sheet was placed over the coil and the steel insert was then pressed into the plastic part and the induction power was turned on. It took 5 seconds with a 2 kW EASYHEAT to reach temperature, which melted the plastic for a solid bond without cracking the molded plastic.
- Benefits:**
- **Speed:** The client requested a system that would meet their time objectives which the 2 kW EASYHEAT easily did, boosting the client's throughput
 - **Footprint:** An EASYHEAT and a workhead requires a minimal footprint, saving the client floor space compared to heating alternatives
 - **Integration:** The compact EASYHEAT can be easily integrated into the client's manufacturing process



The client's assembly after conclusion of the metal-to-plastic insertion process.