

Metal-to-plastic insertion of threaded magnetic steel inserts

Objective Heat magnetic steel inserts of two sizes to 500 °F (260 °C) in two seconds per part for a metal-to-plastic insertion application. The steel inserts are part of a car door handle.

- Materials**
- Large steel insert (0.375"/9.5mm OD)
 - Small steel insert (0.275"/7.0mm OD)
 - Threaded brass rod

Temperature 500 °F (260 °C)

Frequency 197 kHz

- Equipment**
- Ambrell EASYHEAT 0224, 2 kW induction heating system equipped with a remote heat station containing two 0.66 µF capacitors.
 - A single position, four-turn helical coil designed and developed to generate the required heat for this application.

Process Testing was conducted to optimize the power delivered to the parts. A threaded brass rod was inserted into the smaller part and the part was heated for two seconds to achieve the targeted temperature. The brass rod was used to handle the heated part so it could be immediately inserted into the mating plastic part, and it was then removed. The larger part also heated to temperature within two seconds and the same process was followed.

- Results/Benefits**
- Heating speed: The client targeted a heating time of two seconds per part, which was achieved
 - Repeatability: This process is repeatable and can be integrated into a production process
 - Responsiveness: Outdated equipment and poor responsiveness drove this customer to a new vendor who could help them with new or improved processes for new or enhanced solutions



The small steel insert inside the coil with a threaded brass rod inside it.



The small and large steel inserts inside their respective mating plastic pieces.