

Application Note

Bonding Metal to Plastic for Dental Tools

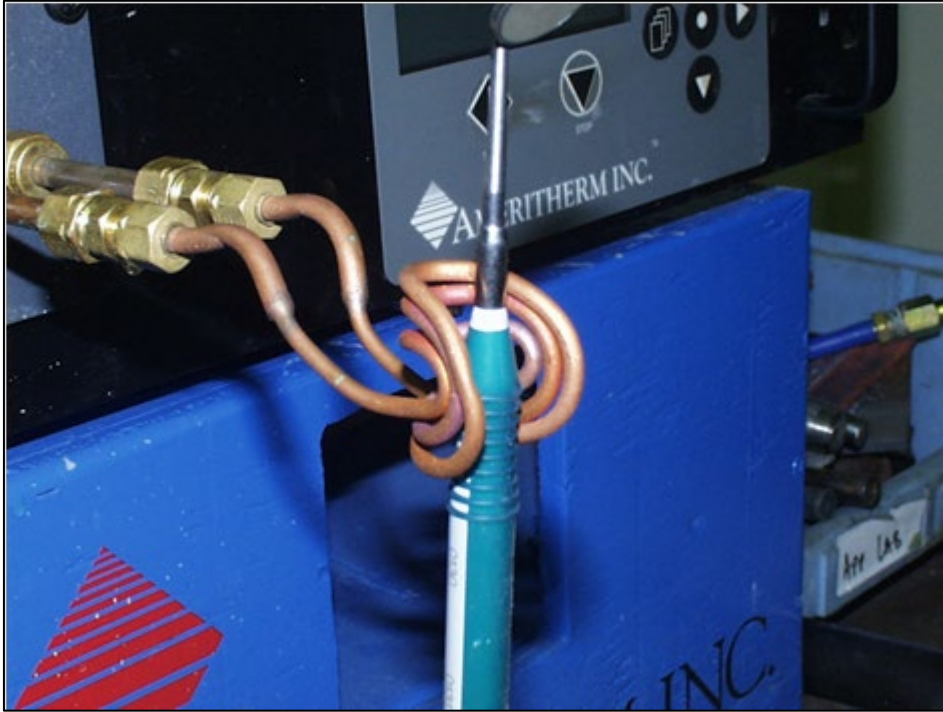
- Objective:** To heat a magnetic steel post to 300 °F (149 °C) for a bonding application in the dental industry.
- Equipment:** Ambrell EASYHEAT™ 1.2 kW, 150-400 kHz induction heating power supply with a workhead and coil specifically designed for this bonding application.
- Frequency:** 288 kHz
- Material:** Magnetic steel posts, plastic handle and temperature indicating paint
- Temperature:** 300 °F (149 °C)
- Testing:** Initial tests were conducted on parts without any plastic assembly. Temperature indicating paint was used to determine time to temperature and the heating pattern on the post. The plastic handle was slid onto the picks or mirror. The assembly was then placed inside the induction heating coil and heated. Parts were cooled in position before being removed from the coil.

When heating one end, vertical positioning is optimal. However, a dual coil design for simultaneous heating of both ends requires horizontal positioning.

Time and current required for the parts:

Mirror: 265 A @ 7.5 sec
Big hook: 205 A @ 7.00 sec
K Curve: 120 A @ 5.00 sec
Curve: 120 A @ 5.00 sec

Reliable bonds are produced when the diameters of the preassembled parts are consistent with little clearance before they are heated.



The assembly during heating.