



Brazing a steel die into a wire drawing guide

Objective Braze a steel die with a Polycrystalline diamond (PCD) into a wire drawing guide without any voids

Material 0.5" dia (12.7mm) Steel die with PCD, steel die 1.25" OD (31.75mm), braze paste and diamond setting powder

Temperature 1382 °F (750 °C) for braze paste
1832 °F (1000 °C) for diamond setting powder

Frequency 201 kHz

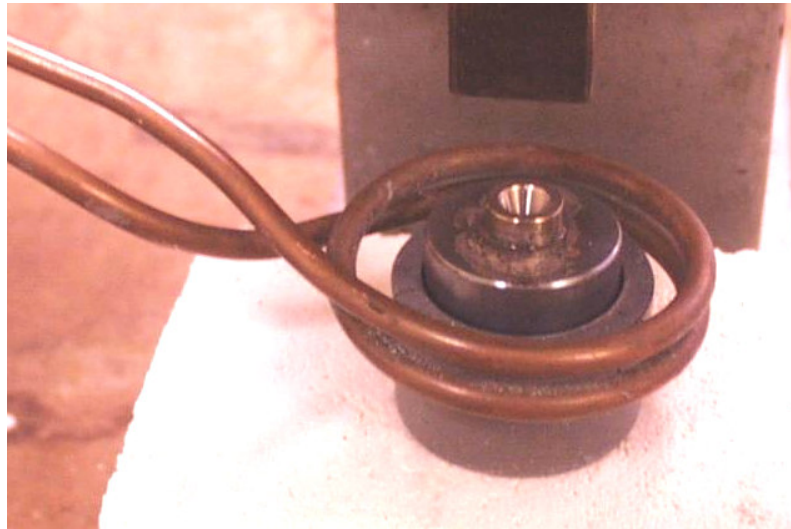
Equipment

- Ambrell 5 kW induction heating system, equipped with a remote workhead containing one 1.5µF capacitor.
- An induction heating coil designed and developed specifically for this application.

Process A two turn helical coil is used for brazing the assembly. Two different bonding agents are tested for the brazing application. The first bonding agent used is braze paste. The assembly is heated to 1382 °F (750 °C) and is brazed in 45 seconds. The second bonding agent used is diamond setting powder. The assembly is heated to 1832 °F (1000 °C) and the braze is completed in 5 minutes.

Results/Benefits Induction heating provides:

- Rapid localized heating
- Minimized oxidation
- Consistent and repeatable joints
- Even distribution of heating



Assembly in coil for brazing process

