

Application Note

Annealing the End of Metal Stamp Sets

- Objective:** To heat the opposite end of a metal stamp so that it mushrooms instead of cracks/splits when struck by a hammer.
- Equipment:** Ambrell EASYHEAT™ 7.5 kW, 150-400 kHz solid state induction heating power supply with a workhead and coil specifically designed for this application.
- Frequency:** 175-224 kHz
- Material:** S-7 steel of varying rectangular cross-sectional sizes
- Temperature:** 1400-1800 °F (760-982 °C)
- Testing:** One five-turn and two four-turn helical coils were used to heat the end of the stamps to the required temperature. Two stamp sizes can be run in each of the coils using the same system settings except for cycle time. Cycle rates were dependent upon the cross-section size. The 3/8" (0.9525 cm) square size had a rate of below 10 seconds. The rate for the middle size, 1/2" – 1 1/2" (1.27 - 3.81 cm), was 30 to 60 seconds. A 1" (2.54 cm) square part took approximately two minutes to heat to temperature. Fixturing can influence the length of the cycle time required. If a faster heating time is ever required, a higher power system will achieve that objective.
- Benefits:**
- Rapid heating that boosts throughput
 - Hands-free heating that requires no operator skill for manufacturing, unlike the torch this client was using
 - Flameless process which lends itself to a safer manufacturing environment
 - Pinpoint accuracy which only heats that area that requires annealing and is repeatable cycle after cycle



Stamps of varying geometries

