Brazing automotive tube assemblies

Objective To braze a steel tube to a steel "T" fitting

Material 1" (25.4mm) diameter steel tubing, steel fitting, braze slug and black flux

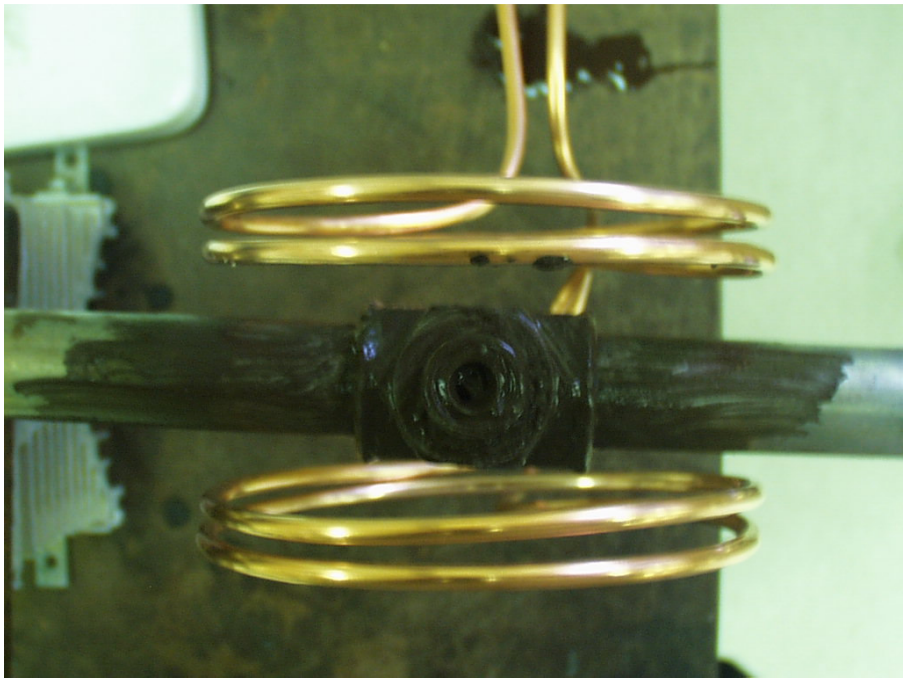
Temperature 1400ºF (760ºC)

Frequency 198 kHz

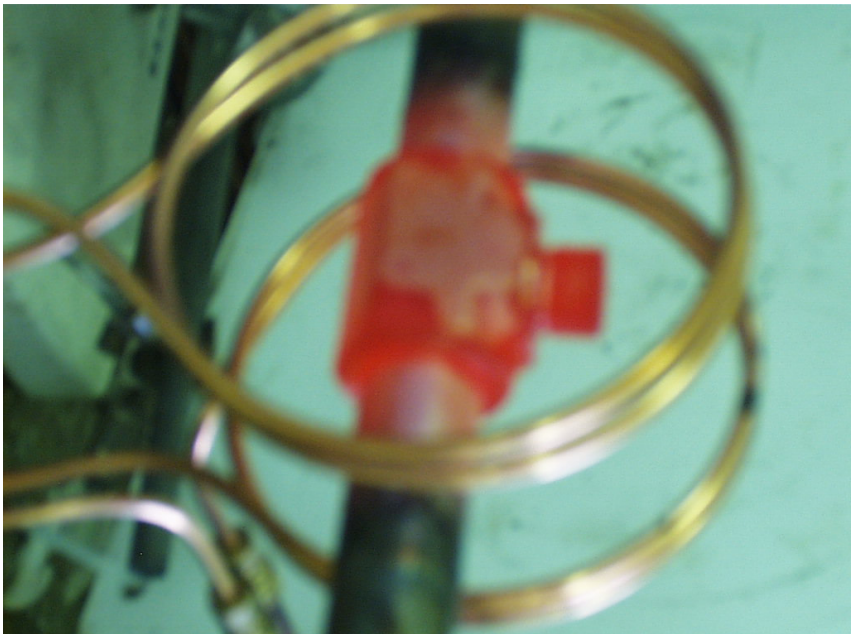
Equipment
- Ambrell 5.0 kW induction heating system, equipped with a remote workhead containing two 1.0µF capacitors for a total of 0.5 µF
- An induction heating coil designed and developed specifically for this application.

Process A four turn split helical coil is used to heat the steel assembly to 1400ºF (760ºC) for 85 seconds. The coil design allows for the steel fitting to expand away from the steel tube which allows braze to flow through the joint. The amount of braze alloy is controlled by the braze slug allowing for an aesthetically pleasing joint.

Results/Benefits Induction heating provides:
- Hands-free heating that involves no operator skill for manufacturing
- Precise and uniform distribution of heating
- The collection of flux on the coil is reduced due to efficient coil design.



Steel tube with Steel “T” coated with black flux before heating



Steel tube and Steel “T” heated