

## Brazing copper tubes to a brass manifold block

**Objective** Heating a brass block and two copper tubes to 1400 °F (760 °C) for a brazing application

- Material**
- Brass block (diameters of .25"/6.35mm and .375"/9.5mm)
  - Copper tubes
  - Braze pre-forms
  - Flux

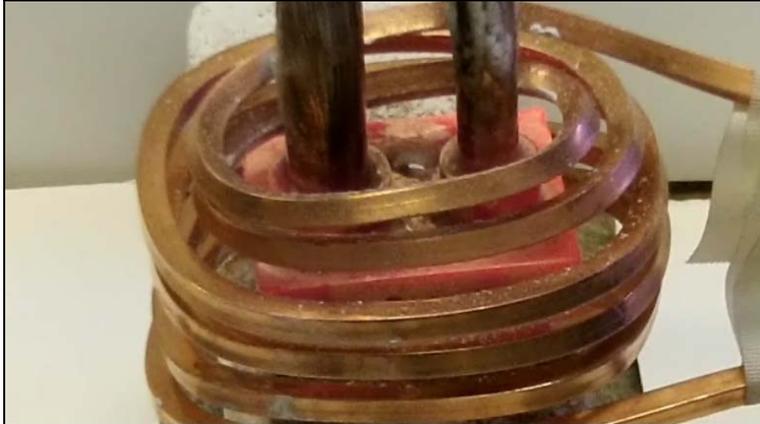
**Temperature** 1400 °F (760 °C)

**Frequency** 106 kHz

- Equipment**
- Ambrell EKOHEAT 15/100c, 15kW 50-150 kHz induction heating system equipped with a remote heat station containing four 1.5 µF capacitors
  - A single-position six-turn helical induction heating coil designed and developed specifically for this application

**Process** The copper tubes and brass block were fluxed, assembled, and placed into the induction coil. There were two assemblies. The .375"/9.5mm copper block assembly had more mass and required 90 seconds to bring it to temperature. The .25"/6.35mm copper block assembly was heated to temperature within 60 seconds. Faster cycle times were tried in both cases, but localized melting occurred.

- Results/Benefits**
- Speed: The proposed process met the client's time objective, and is faster than oven heating
  - Part quality: The client was suffering from part quality issues and rejects while using an oven; induction offers a good quality braze joint
  - Floor space: Induction uses less floor space than an oven
  - Energy efficiency: Ovens take time to warm up and use more energy than induction, which has instant on/off



The assembly inside the coil being heated



The assembly after brazing