



## Braze a refrigeration tube coil assembly

**Objective** Braze brass fitting with o-ring to various diameters of copper tube.

**Material** Various copper tubes ranging from 3/8" to 7/8" diameter and 2-3' long, female brass fittings with o-ring, silver solder rings and glass beaker.

**Temperature** 1300 °F (704 °C)

**Frequency** 283 kHz for the 3/8" (9.6mm) diameter copper tube  
250 kHz for the 7/8" (19.8mm) diameter copper tube

**Equipment**

- Ambrell 10 kW induction heating system, equipped with a remote workhead containing two 1.5 µF capacitors for a total of 0.75 µF
- An induction heating coil designed and developed specifically for this application.

**Process** A three turn 1.5" ID helical coil is used to heat the junction of the 3/8" (9.6mm) dia. copper tube and brass fitting. The brass fitting is placed on a ceramic mandrel in a beaker of water and half of the fitting is submerged in the water to protect the o-ring from melting. Heat is applied for 30 seconds, making the solder ring flow evenly creating a strong aesthetically pleasing bond without overheating the fitting. The 7/8" (19.8mm) dia. copper tube is brazed with a slightly larger three turn coil.

**Results/Benefits** Induction heating provides:

- Ability to direct heat only to the required zone
- Coil size and geometry allows for easy loading and unloading of finished parts
- Ability of coil to be used with water bath process allows for stability of the o-ring



**Brass fitting partially submerged in water bath**