Brazing a small gas delivery assembly used to manufacture needles

Objective Brazing stainless steel housings to stainless steel tube for gas assembly used in the manufacturing of needles

Material 2 stainless steel housings .25” (6.35mm) dia, .675 (17.1mm) & .54” (13.7mm) in length, stainless steel tube .031” (.78mm) dia and braze preforms

Temperature 1450 ºF (787 ºC)

Frequency 223 kHz

Equipment
- Ambrell 1.2 kW induction heating system, equipped with a remote workhead containing one 1.2 µF capacitor.
- An induction heating coil designed and developed specifically for this application.

Process A two turn pancake coil and hydrogen atmosphere is used for this brazing application. Braze preforms are placed at the joint and the assembly is placed in the hydrogen atmosphere. Each joint is brazed individually for 60 seconds.

Narrative
- This customer came to Ameritherm through a lead from our website. This is a new part for the customer and they are developing the manufacturing process for it. The customer is interested in using induction heat for their process because they are looking for finished parts which are clean and not contaminated by any flux material. By using induction to braze the part and by doing the braze under a hydrogen atmosphere, the customer can produce brazed parts with no oxidation.

Results/Benefits Induction heating provides:
- Hands-free heating that involves no operator skill for manufacturing
- Repeatable, consistent heat
- Clean parts
- Even distribution of heating

One end of assembly in coil for brazing