

Application Note

Forming a Large Steel Tube

Objective: Heating an area around elliptical hole in steel tube prior to forming; the client had been using a torch for this application.

Equipment: Ambrell EKOHEAT[®] 150 kW, 5-15 kHz solid state induction heating power supply with a workhead and coil specifically designed for this application.

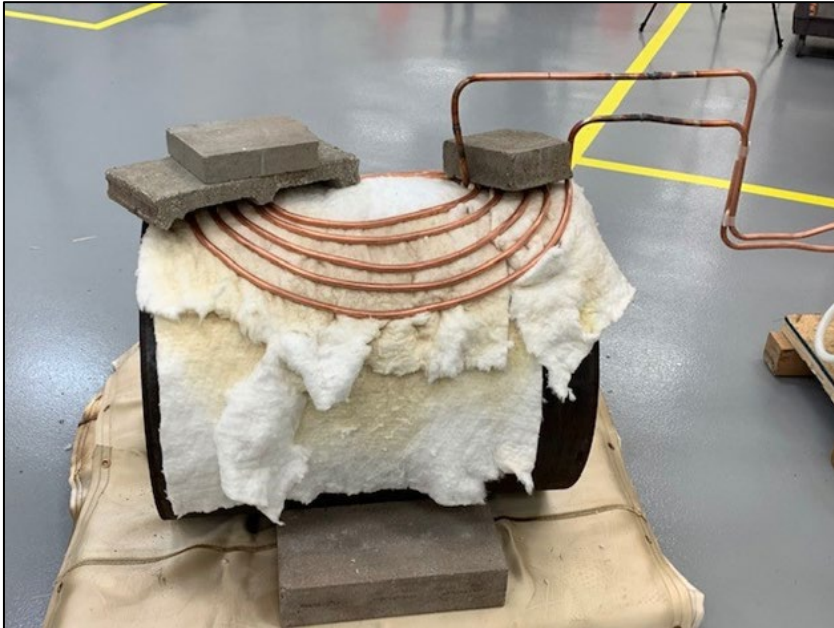
Frequency: 7 kHz

Material: Steel tube

Temperature: 1800 °F (982 °C)

Testing: A custom-designed single position multiple-turn pancake coil was built to generate the required heating for this application. Initial tests were conducted to optimize the power delivered to the part. The coil was separated from the part by two layers of insulating felt. The coil needed to be weighted down with cinder blocks to prevent levitation. An optical pyrometer was used to measure the temperature of the inside of the part. It took about 40 minutes to reach the targeted temperature of 1800 °F (982 °C).

- Benefits:**
- **Speed:** Induction met the client's time requirements and is generally faster than other heating methods.
 - **Precise Heating:** Induction can be applied almost exactly where it is needed without wasting heat where it isn't required.
 - **Repeatability:** The client can expect the same result in the same amount of time every single time with induction heating. Torch heating is often dependent upon operator skill.



The coil is positioned on top of the steel tube, and the cinder blocks prevent levitation of the coil.