



Preheating aluminum flanges

Objective Heating an aluminum assembly for a preheat application.

Material Aluminum flanges (2.35" by 4.83" / 60 mm by 133 mm) and (3.35" by 6.91 / 85 mm by 176 mm)
Aluminum tubes (.63" / 16 mm OD) and (.92" / 23mm OD)

Temperature 600°F / 315°C

Frequency 190 kHz

Equipment

- Ambrell 10 kW induction heating system, equipped with a remote workhead containing two 1.5 μ F capacitors for a total of .75 μ F
- An induction heating coil designed and developed specifically for this application.

Process A helical coil is used around the smaller parts, which are held in a vise while the flange is inserted into the coil. The small parts are heated in 20 seconds and reach the desired temperature at the joint area.

A larger helical coil is made to heat a larger aluminum assembly, which requires the same desired temperature. The coil heats the larger assembly with the same power supply configuration, but requires more energy. This assembly is heated for 20 seconds and reaches the desired temperature.

Narrative

- Two helical coils are positioned under the outer rim of each part. This will be needed to soak heat into the interior of the two parts.

Results/Benefits Induction heating provides:

- Higher quality end product vs. using an open flame convection furnace. Ovens are sensitive to ambient temperature and humidity variations and tend to produce uneven results
- Even distribution of heating
- Quick, clean precision heat for fast cycle times





Overhead view of smaller aluminum flange and tubes

Overhead view of larger aluminum flange and tubes

