

Heating the joint area of two lead plates for a butt welding application

Objective To heat two lead plates to temperature for a butt welding application

Material

- Customer supplied 0.5" (13 mm) thick lead plates, 12" x 12" (305 x 305 mm).

Temperature 640 °F (338 °C)

Frequency 39 kHz

Equipment

- Ambrell EKOHEAT 50 kW, 15-45 kHz induction heating power supply with a remote workhead containing four 6.3 µF capacitors
- A multi-turn helical induction heating coil designed and developed for this application

Process The end of the two plates were fluxed, placed on a ceramic plate and butted together. Ceramic blocks were placed at the ends of the joints. A steel weight was placed on top of the lead to hold it in place.

Induction power was turned on and the plates were melted at the joint/seam area within a 1" (25 mm) melt zone and then the jointed areas were removed from the coil.

Testing proved the viability of the application, while the client will develop fixturing to hold the lead in place during heating and perfect the process.

Results/Benefits

- Speed: The client was using a torch, which took five minutes; induction takes just one minute
- Increased production rate: Faster heating means an improved production rate
- Repeatability: Induction, unlike a torch, is precise and repeatable
- Energy savings: Induction is a targeted, precise heating method which saves users energy



The lead plates prior to heating



The lead plates after heating