



### Melting lead ingots to form battery posts and connectors

**Objective** Melting 30 lb(13.6 kg) & 60 lb(27.2 kg) lead ingots to form battery posts & connectors

**Material** 30 lb(13.6 kg) & 60 lb(27.2 kg) lead ingots and 5" (12.7cm) ID Zircar Ceramic Alumina tube

**Temperature** 620 °F

**Frequency** 10 kHz

**Equipment**

- Ambrell 50 kW induction heating system, equipped with a remote workhead containing three 26µF capacitors for a total of 80µF
- An induction heating coil designed and developed specifically for this application.

**Process** A five turn helical coil is used for this application. Lead ingots are placed inside the ceramic tube which is inside the coil. Different size ingots are melted at specified power, voltage and frequencies, see table below. As the lead melts and flows out of the tube the coil coupling decreases, a constant feed of lead is required for a consistent flow and coil coupling.

Weight	Power (kW)	Voltage	Frequency (kHz)	Time (Secs)
60 lb	26	375	9	300
30 lb	45	500	9	80

**Results/Benefits** Induction heating provides:

- Faster startup/shutdown time saves energy
- Cleaner process than furnace melting
- Safer and more cost effective
- Hands-free heating that involves no operator skill for manufacturing
- Even distribution of heating



Melted lead pouring from ceramic tube