

## Curing a coating by heating a steel tube and an aluminum block

**Objective** To heat a steel tube and an aluminum block for a cylinder liner coating curing application

- Material**
- Rotating system
  - Steel tube (various sizes)
  - Aluminum block (4"x4"x4.5"/102 mm x 102 mm x 114 mm)

**Temperature** 400 °F (204 °C)

**Frequency** 73 and 89 kHz

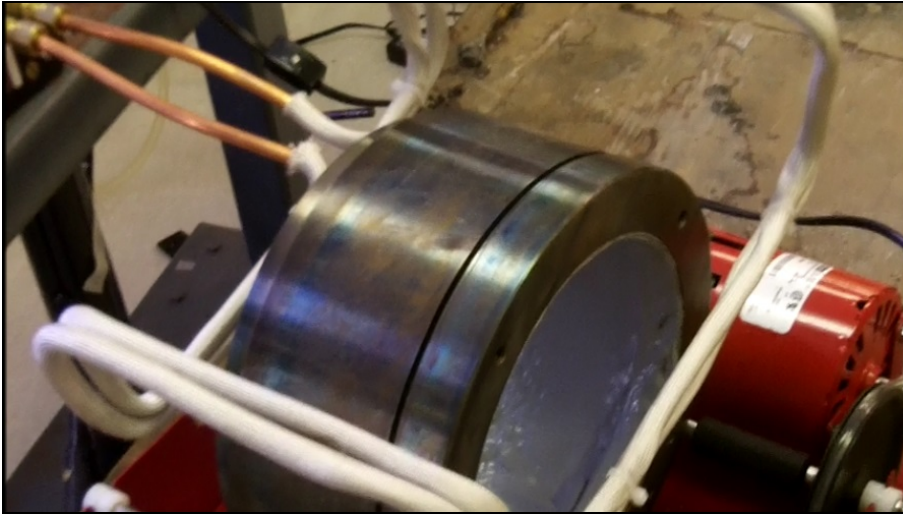
- Equipment**
- Ambrell EKOHEAT 30 kW, 50 to 150 kHz induction heating system equipped with a remote workhead containing eight 1.0 uf capacitors for a total of 2.0 uf
  - A single-position two-turn channel induction heating coil designed and developed specifically for this application
  - A single-position four-turn helical induction heating coil designed and developed specifically for this application

**Process** The steel tube was placed in the rotating system and then placed inside the channel coil. A temperature indicating paint was applied. The rotating device was turned on and then the induction power was turned on. After 90 seconds the temperature indicating paint had melted and the coating began to melt.

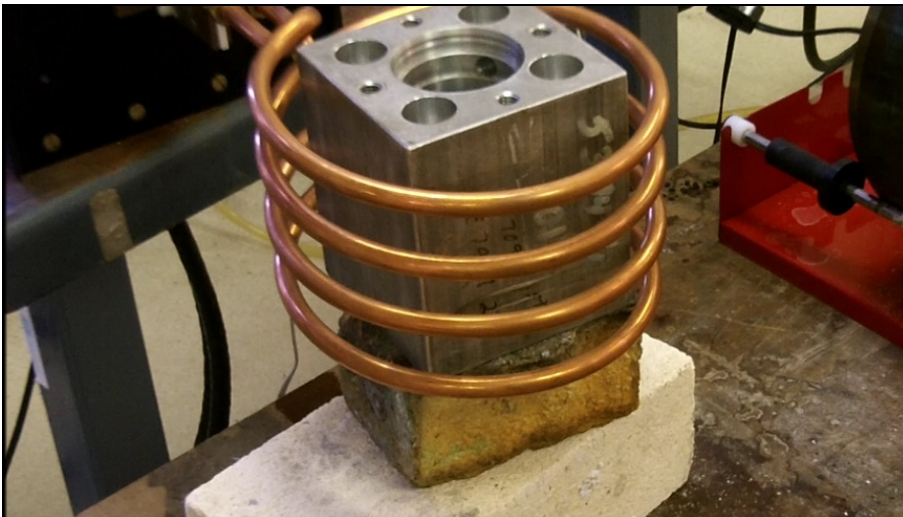
The aluminum part was placed inside the helical coil with temperature indicating paint applied to both the inside and outside of the block. The power was turned on and the part began to heat. After 90 seconds the temperature indicating paint began to melt.

Given that there is magnetic steel and aluminum parts with different coupling efficiencies, auto tap is recommended so the EKOHEAT can automatically select the correct tap.

- Results/Benefits**
- Speed: The client's oven had a heating time of 20 minutes, so the time savings are considerable.
  - Precise, repeatable heating: Induction is a highly repeatable process, unlike an oven.
  - Floor space: Induction takes up less floor space than an oven.



The steel tube inside the channel coil.



The aluminum block inside the helical coil.