

Application Note

Shrink fitting an automotive aluminum motor housing

- Objective:** To heat an aluminum motor housing to temperature to enable shrink fitting; induction will be used within an automated line.
- Equipment:**
- Ambrell EKOHEAT 45 kW, 50-150 kHz induction heating system equipped with a remote workhead containing eight 1.0 μ F capacitors
 - A single position nine-turn internal bore coil designed and developed for this application
- Frequency:** 71 kHz
- Material:**
- Aluminum housing (4"/102 mm tall with an ID of 1.9"/48 mm)
 - Temperature indicating paint
- Temperature:** 464 °F (240 °C)
- Testing:** The part was painted with temperature indicating paint that would melt to a clear color once it achieved the targeted temperature. The temperature indicating paint was also used to show balanced heating.
- With 0.125" (3.2 mm) radial clearance, the EKOHEAT met the temperature requirements within the targeted seven second rate. The key in the application is to maintain a modest radial clearance as an increase will require more power, increased water flow, and a more complicated coil.
- Benefits:**
- **Speed:** The client needed a rapid heating solution to enable high production levels
 - **Energy efficiency:** Induction is fast and it's instant on/off, presenting significant energy savings over an electric oven
 - **Footprint:** Induction requires a more modest footprint than an oven requires
 - **Integration:** Induction can easily be integrated into an automated process



The internal bore coil and the motor housing.