

## Application Note

### Shrink Fitting Magnetic Steel Pistons

- Objective:** To heat magnetic steel pistons for shrink fitting onto a chrome shaft; the client was using an unreliable handheld induction system and wanted a higher quality induction solution.
- Equipment:** Ambrell EASYHEAT™ 2.4 kW, 150-400 kHz solid state induction power supply with a workhead and coil specifically designed for this application.
- Frequency:** 164 kHz
- Material:** Magnetic steel
- Temperature:** 1,100 °F (593 °C)
- Testing:** A custom-designed single position multiple-turn pancake coil was built to generate the required heating for this shrink fitting application. Initial tests were conducted to optimize the power delivered to the part. An optical pyrometer was used to monitor one of the pistons as the two were heated. The pistons were heated with a ¼" (6.4 mm) gap between the part and the induction coil. It was observed that the piston reached 1,100°F (593 °C) within one minute.
- Benefits:**
- **Speed:** Induction is usually a faster heating method for shrink fitting than other heating options.
  - **Efficiency:** Induction only heats the portion of the part that needs to be heated, so it tends to be more efficient than other common heating methods.
  - **Reliability:** The client was having issues with an inexpensive handheld induction unit, and Ambrell systems deliver consistent, repeatable and reliable results.



The test setup for this shrink fitting application.