Heating stainless steel inserts for an insertion application

Objective To heat stainless steel inserts for an insertion application for the automotive industry

Material
- Stainless steel metal inserts (3/8"/9.5 mm long, an OD of ¼"/6.4 mm and an ID 0.1875"/4.8 mm)

Temperature 500 °F (260 °C)

Frequency 230 kHz

Equipment
- Ambrell EASYHEAT 2 kW, 150-400 kHz induction heating power supply with a remote workhead containing two 0.17 µF capacitors for a total of 0.34 µF.
- A six position three-turn helical induction heating coil designed and developed for this application

Process The inserts, with temperature indicating paint applied, were placed inside the six position helical induction heating coil and the power was turned on. The parts heated to 500 °F (260 °C) within ten seconds. The client had been using ultrasonic heating to press in the inserts which took 90 seconds.

Results/Benefits
- Speed: Induction offers dramatically faster heating when compared to ultrasonics
- Increased production: Faster heating means there is the potential to dramatically increase production rates
- Repeatability: Induction is highly repeatable and easy-to-integrate into manufacturing processes
- Energy efficiency: Induction offers fast, flameless, instant on/instant off heating

An insert with temperature indicating paint applied inside one of the coil positions

The six position coil with inserts placed inside each position