Curing a coating on both sides of an aluminum piston

Objective  Curing a coating on both sides of an aluminum piston at a rate of 1” (25.4mm) per second

Material  4 aluminum pistons weighing 1lb (.45kg) each, 3.75” (95.25mm) dia and 2.5” (63.5mm) high

Temperature  225 ºF (107.2 ºC)

Frequency  6 kHz

Equipment  • Ambrell 50 kW induction heating system, equipped with a remote workhead containing three 26.8µF capacitors for a total of 80µF
          • An induction heating coil designed and developed specifically for this application.

Process  A three turn channel coil 19” (48.26cm) long is used to anneal 4 pistons running though the coil with a distance of 6” (15.24cm) between centers. The parts run at a rate of 1” (25.4mm) per second and the 4 parts reach 225 ºF (107.2 ºC) and are annealed in 40 seconds.

Results/Benefits  Induction heating provides:
          • Hands-free heating that involves no operator skill for manufacturing
          • Ideal for in-line production processes because of its ability to produce repeatable, rapid and accurate heating cycles
          • Improved throughput
4 pistons passing though the coil for annealing