Objective  Cure adhesives on the internal wall of a steel motor shaft to bond electronic stress/strain gauges into place.

Material  Steel shaft measuring 6.65" (168.9mm) OD, 5.5"(139.7mm) ID and 70" (1.8m) long. Aluminum shield plate and two end guide plates.

Temperature  285°F(140.6°C) > 300°F(148.9°C)

Frequency  160 kHz

Equipment  • Ambrell 1kW induction heating system equipped with a remote workhead enclosure for double capacitor/buss modules. Zone 1 needs a 0.25 µF capacitor, while Zone 2 requires 0.66 µF
• An induction heating coil designed and developed specifically for this application.

Process  A complex two coil system, shield and stud systems used to provide proper axial alignments of the shaft & coil while allowing the fixture to be open for removal of the shaft. The aluminum shield separates the two required heat zones. An average temperature of 290°F(143.3°C) is maintained for 1.5 hours.

Results/Benefits  Induction heating provide:
• Precise, accurate control of heat placement
• Minimized coating defects
• Repeatable results