Pre-heating a Titanium Rod for Hot Forming

Objective  To heat a titanium rod to 1700°F (926.7°C) within 60 seconds for hot forming.

Material  Titanium rods, 1.25"(31.8mm) diameter, 5"(127mm) length

Temperature  1700°F (926.7°C)

Frequency  170 kHz

Equipment  
- Ambrell 20kW induction heating system, equipped with a remote workhead.
- An induction heating coil designed and developed specifically for this application.

Process  A specially designed thirteen-turn helical induction coil is used to heat the titanium rod to 1700°F (926.7°C). Two optical pyrometers are used to measure the temperature at the surface and center of the part. Both the surface and center of the titanium rod are heated to 1700°F (926.7°C) within 60 seconds.

Results/Benefits  Induction heating provides:
- Improved production rates with minimal defects
- Improved mechanical properties
- Even distribution of heating