

Preheating a turbine blade for a welding application

Objective Heating a turbine blade to 1850 °F (1010 °C) for a welding application

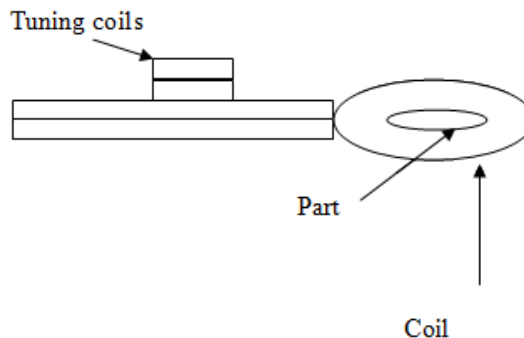
Material • Steel turbine blade

Temperature 1850 °F (1010 °C)

Frequency 305 kHz

Equipment • Ambrell EASYHEAT 5060 LI, 4kW 150-400 kHz induction heating system equipped with a remote heat station containing two 1.5 μ F capacitors
• A single position one-turn induction heating coil designed and developed specifically for this application

Process The single position one-turn induction heating coil was designed to heat the tip of the turbine blade. With a 6kW EASYHEAT power supply, the turbine blade was heated to temperature within the targeted time of one minute.



Results/Benefits

- Speed: The client wanted the part heated to temperature within one minute, which the process achieved
- Precision: The client desired uniform heating across the tip of the blade, which was attained with the proposed process
- Part quality: The end result is a preheating process that allows the part to move quickly to the welding step while meeting all quality requirements



The small turbine blade being heated within the induction heating coil