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 μF 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