# Heating turbine engine fan blades for welding

**Objective**  
To uniformly heat jet engine turbine fan blades to 1800 °F (982.2°C) within five minutes for a welding application

**Material**  
Jet engine turbine fan blades with 2”(50.8mm) length tip

**Temperature**  
1800 °F (982.2°C)

**Frequency**  
216 kHz

**Equipment**  
- Ambrell 3.5 kW induction heating system equipped with a remote workhead.
- An induction heating coil designed and developed specifically for this application.

**Process**  
A four-turn helical coil with a kidney shape is used to provide uniform heat for this application. The turbine blade is placed inside the coil and power is applied for 5 minutes until the top 0.25” (6.35mm) of the blade reaches 1800 °F (982.2°C). An optical pyrometer is used to measure the temperature of the part.

**Results/Benefits**  
Induction heating provides:
- Even and consistent distribution of heat
- Faster production rate
- Reduces product waste through rapid heat-up and cool down cycles
Turbine blade heating in coil

**TOP VIEW**

**SIDE VIEW**

- Induction Coil
- Turbine Blade