Preheating steel garden tools for press stamping

Objective
Preheating various size blades and knives for garden tools

Material
Steel pieces of various size 0.16” (4mm) thick

Temperature
1562 ºF (850 ºC)

Frequency
57-80 kHz

Equipment
- Ambrell 15 kW induction heating system, equipped with a remote workhead containing six 1.0 µF capacitors for a total of 6.0 µF
- An induction heating coil, designed and developed specifically for this application.

Process
Three different coils are used for this heating application
- A two turn pancake coil for the blade
- A eight turn rectangular helical coil for the knives

Pieces are placed in their specific coil for heating. For the blades, the center hole must be heated to 1562 ºF (850 ºC) and for the knife 2/3 of the blade must be heated. Depending on the piece, the steel reaches 1562 ºF (850 ºC) in 13-19 seconds. After the metal is preheated it is press stamped.

Results/Benefits
Induction heating provides:
- Hands-free heating that involves no operator skill for manufacturing
- Configurable heating profiles
- Faster process times
- Even distribution of heating
Heating center hole of blade.
70 kHz, 17 seconds

Steel knife in coil, 57 kHz,
13 seconds