Heating a steel chain for tempering

Objective
Heating a steel link chain for tempering after hardening process

Material
Steel link chain, links are .33" (8.38mm) round stock, 1.14" (29mm) wide and 1.91" (48.5mm) tall

Temperature
1760 °F (960 °C)

Frequency
104 kHz

Equipment
- Ambrell 30 kW, 100 kHz induction heating system, equipped with a remote workhead containing four 1.5μF capacitors for a total of 6μF
- An induction heating coil designed and developed specifically for this application.

Process
A twenty turn helical coil is used to heat the chain. The chain is fed through the coil at a rate of 1 meter per minute to reach the desired 1760 °F (960 °C) for the tempering process.

Results/Benefits
Induction heating provides:
- Generation of heat directly into the part, saving energy and time
- Easy integration into production line to improve throughput
- Precise controllable heat
- Even distribution of heating
Chain passing through the coil