Hardening teeth on a steel motorcycle gear

Objective Hardening teeth on a steel motorcycle gear to a hardness of 48 – 55 HRC

Material Carbon steel gear 6.9" (175mm) diameter

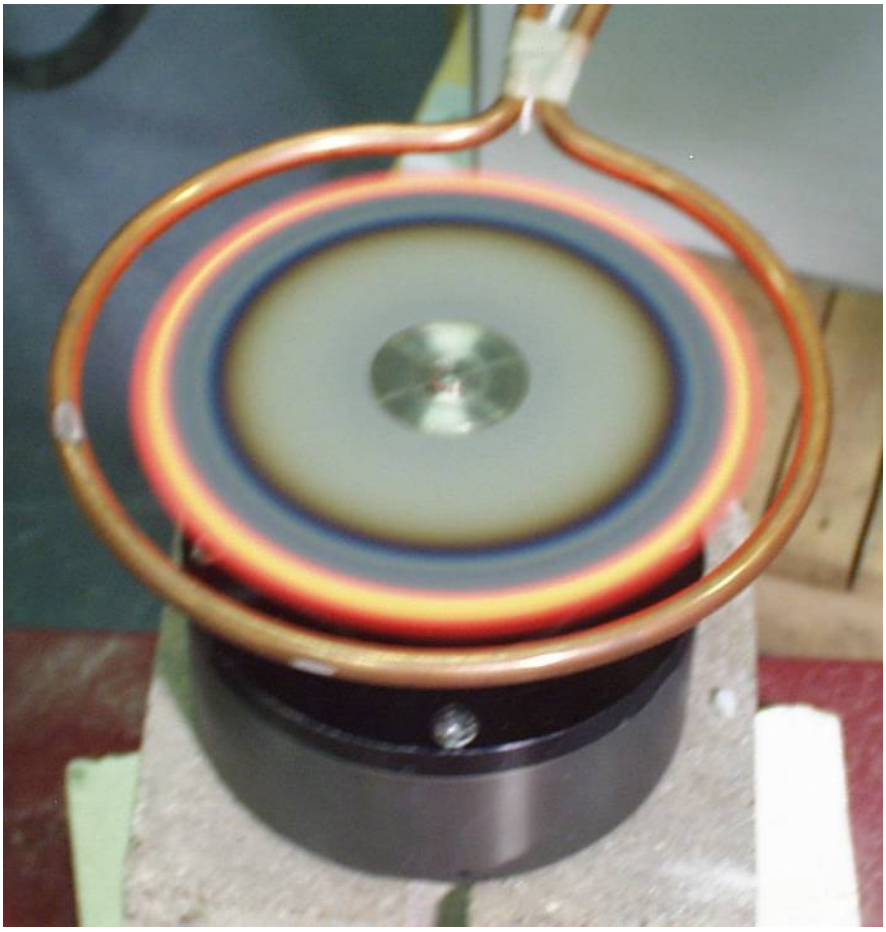
Temperature 2000 ºF (1093 ºC)

Frequency 78 kHz

Equipment
- Ambrell 90 kW induction heating system, equipped with a remote workhead containing eight 1.0µF capacitors for a total of 8µF
- An induction heating coil designed and developed specifically for this application.

Process A single turn helical coil is used to heat the gear. The gear is placed on a spindle and rotated at 300-350 RPM's. Heat is applied for 10 seconds to reach the desired hardness. The gear is immediately quenched to remove the heat, dried and then coated with a lubricant.

Results/Benefits Induction heating provides:
- Easy control of depth of hardness
- Energy savings due to efficiency of process
- Hands-free heating that involves no operator skill for manufacturing
- Even distribution of heating



Gear rotating in coil as heat is applied