Stress relieving flat blanks of carbon steel to reduce wheel hardness

**Objective**
Stress relieving flat blanks of carbon steel at a rate of 30 feet/9.1 meters per minute to reduce hardness from the outer 2”/51mm on each side to eliminate cracking issues with the end product.

**Material**
- Carbon steel flat blanks (5.7-10.2”/145-259mm wide and 0.07-0.1”/1.8-2.5mm thick)

**Temperature**
1200 ºF (649 ºC)

**Frequency**
30 kHz

**Equipment**
- Ambrell EKOHEAT 200kW 10-30 kHz induction heating system equipped with a remote heat station containing eight 10 μF capacitors
- A multiple turn split induction heating coil designed and developed specifically for this application

**Process**
Carbon steel flat blanks will run through an induction coil at a rate of 30 feet/9.1 meter per minute to temper or stress relieve carbon steel. During this process, the carbon steel will heat to 1200 ºF (649 ºC). This will be sufficient to remove work hardening from 2”/51mm of each side of the width.

**Results/Benefits**
- Speed: Induction rapidly heats the carbon steel to temperature, which enables a rate of 30 feet per minute
- Efficiency: Induction’s rapid heating not only saves production time, it also saves energy costs
- Footprint: Induction takes up a modest footprint, so it can easily be implemented into production processes such as this one