



Achieving Uniform Hardness on Saw Blades

Objective Utilizing induction heating to draw back steel saw blades to a Rockwell hardness of between 50 and 52. The hardness should be within 1/2 to 1 point between the teeth and the back of the blade. Processing must be performed at a rate of 60 inches per minute

Material Steel band saw blade measuring 2.125" wide, 0.042" thick

Temperature 700 °F

Frequency 80 kHz

Equipment Ameritherm 7.5kW output solid-state induction power supply with a step down transformer and a remote heat station containing three (3) busses and eight (8) capacitors with a total capacitance of 0.66µF. A water-cooled coil was designed and developed specifically for this application utilizing single and double turns

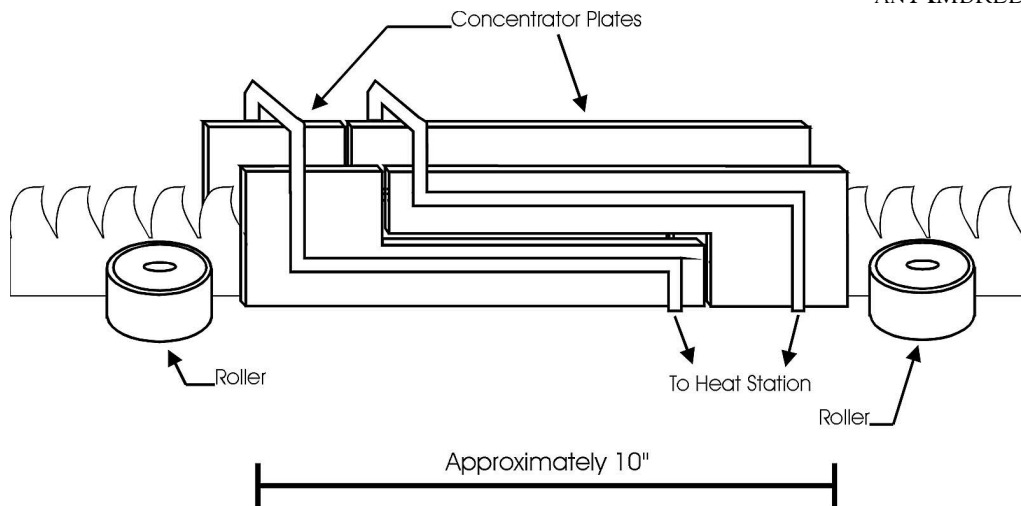
Process The Ameritherm equipment was used to achieve the following goals:

- The necessary heat pattern was accomplished through the use of a uniquely designed channel coil and a step down transformer to reduce the voltage
- A feed rate of 60 inches per minute was also met through the use of the unique channel coil and specifically designed fixture.

Results Resulting mean hardness of 50.3 Rc was measured for fifteen saw teeth on a Wilson Superficial Hardness Tester, fulfilling the ultimate goal established by the customer.

Application illustration on next page

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