

Induction Pre-heating Truck Axle

United Induction Heating Machine Limited

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Pre-heating Truck Axle Objective To pre-heat the seam of a truck axle to over 300°F within 15 seconds for a welding application and maintain temperature within the welding zone for 15 seconds after the power is turned off.

Material Steel truck axle; 350° and 400°F temperature indicating paint; 350°, 375° and 400°F temperature indicating "crayons"

Temperature 350°F

Frequency 35 kHz

Equipment Power of 45kW power supply, remote heat station with four 1.2 μF capacitors and a specially designed pancake induction coil.

Process A fixture was constructed to rotate the axle 400° in 15 seconds and the induction coil was placed above the axle. The circumference of the axle (beneath the coil) was painted with 350° and 400°F temperature indicating paint. While the axle was being rotated, RF power was applied for 15 seconds. All of the paint melted, confirming that the axle temperature was above 400°F. The RF power was shut off and the temperature "crayons" were immediately placed against the axle to monitor temperature. The 400°F crayon did not melt; the 375°F crayon melted for 15 seconds; the 350°F crayon melted for 30 seconds.

Results The steel axle was heated to over 400°F within 15 seconds and temperatures above 350°F were maintained for 30 seconds after power was turned off, meeting the requirements of the welding application. Pre-heating Truck Axle

