Preheating oil drilling shaft before welding

Objective
To preheat a steel pipe to 500°F (260°C) before welding.

Material
Steel shaft assembly 5” to 8” OD (127-203.2mm) with a 2” (50.8mm) heat zone.

Temperature
500°F (260°C), if higher temperatures are required, heat time can be increased.

Frequency
83 kHz

Equipment
- Ambrell 45 kW induction heating system, equipped with a remote workhead containing eight 1.0 µF capacitors for a total of 8 µF.
- An induction heating coil designed and developed specifically for this application.

Process
A multi-turn two position channel “C” coil, adjustable on a busbar is used to heat the desired heat zone. The coil is adjustable to fit various diameter pipes. The shaft is rotated in a fixture and heated for 3 minutes to achieve a temperature of 500°F (260°C).

Results/Benefits
Induction heating provides:
- Preheating prevents shock to shaft which eliminates cracking in the welding phase.
- Hands-free heating that involves no operator skill for manufacturing.
- Even distribution of heating between the shank and the sleeve.
2 position channel “C” coil

Steel shaft on rotating device