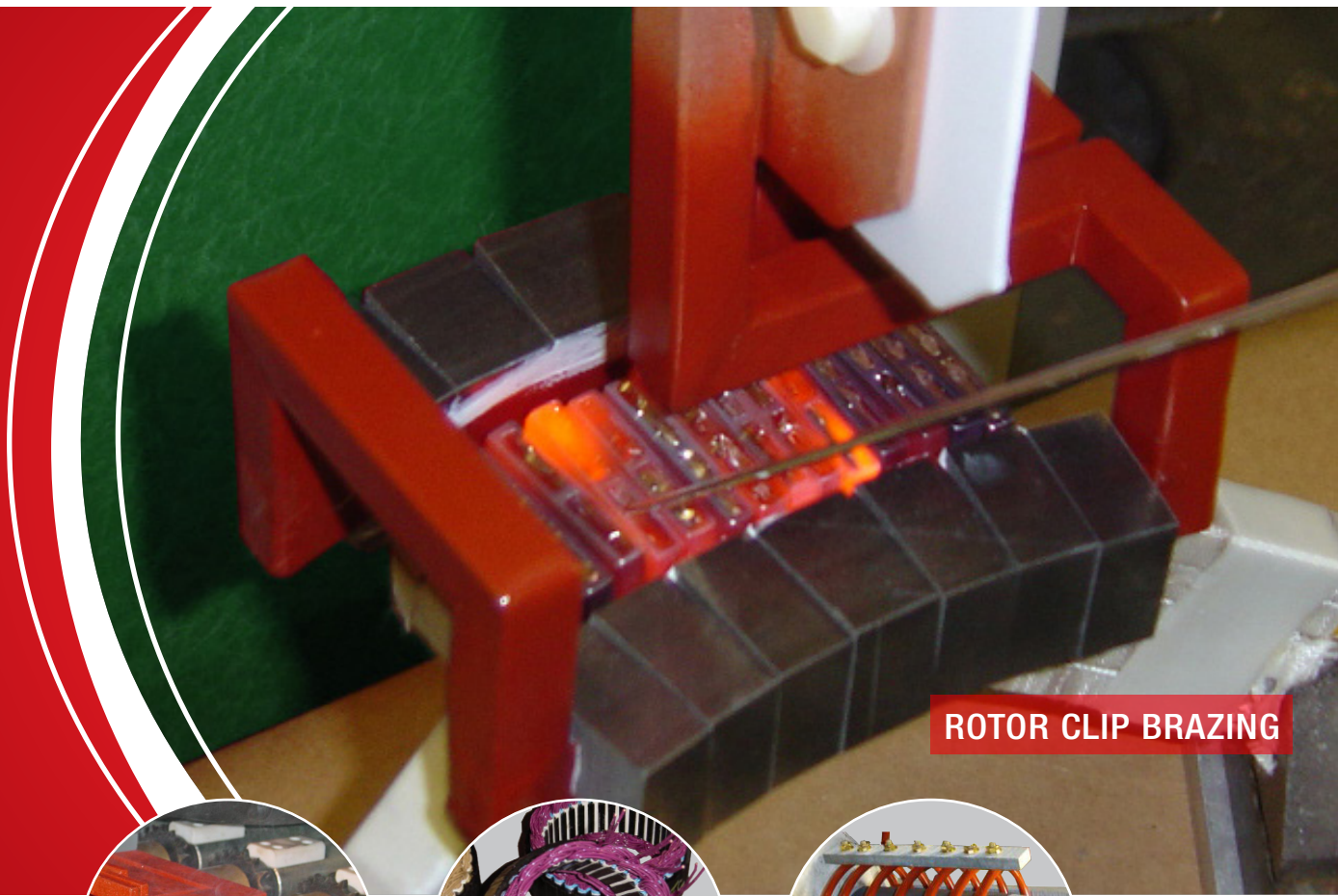
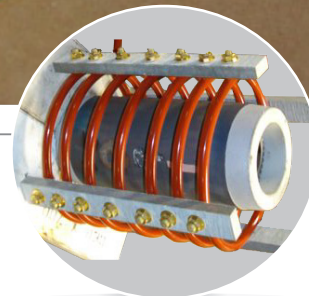
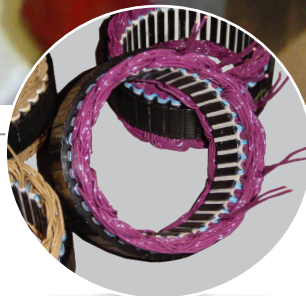


Induction Heating

FOR Electric Motor Manufacturing Applications



ROTOR CLIP BRAZING



STATOR HOUSING SHRINK FIT • VARNISH CURE • LIFE CYCLE TESTING • SENSOR BONDING
LOCALIZED HEAT TREAT • ROTOR SHRINK FIT • BEARING SHRINK FIT • MAGNET BONDING
CONDUCTOR BRAZING • RESIN IMPREGNATION • COATINGS REMOVAL • POWDER COATING

SHAPING THE FUTURE OF INDUCTION • GLOBAL SERVICE & SUPPORT • AJAXTOCCO.COM

Advanced Heating Technology for E-Motor Manufacturing

Induction heating is ideal for heating a wide variety of E-motor components and applications. Induction is a *direct, non-contact, controllable, efficient heat source* that allows parts to be heated *quickly and accurately*. Parts can be heated individually or in batches and heating times are measured in just seconds, eliminating preheat times and reducing energy costs. Any required process temperature is possible with repeatable and traceable results. Induction heating is highly adaptable thanks to custom engineered, interchangeable heating inductors, allowing a wide range of parts to be heated using the same Ajax TOCCO Magnethermic system.

Cutting Edge Technology

Ajax TOCCO's exclusive line of 100% air-cooled induction heating systems provide electric motor and power gen manufacturers with precise, robust, and simple to install heating solutions that are cost effective, repeatable, and energy efficient.



TOCCOTRON AC

Ajax TOCCO offers a wide variety of induction heating power supplies in both air cooled and water cooled configurations with power ratings from 3kW to 20MW and in frequency ranges from 50Hz to 500kHz.



INDUCTION COIL ASSEMBLY

HEATLINK CONTROLLER



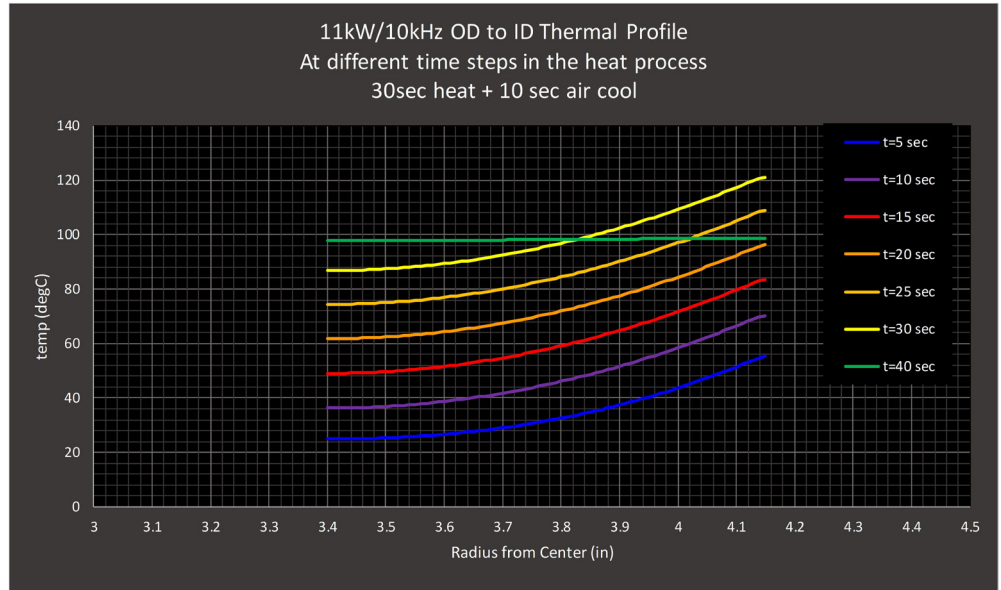
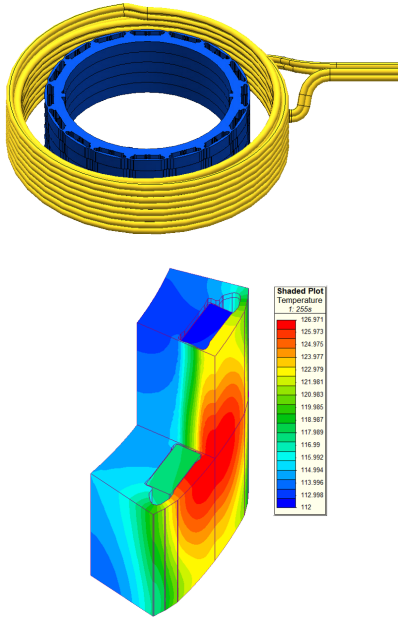
Precision Process and Quality Control

Standard time-based or temperature-based controls provide accurate user defined thermal profiles for optimal, traceable cure cycles to ensure superior quality, one piece at a time. Ajax TOCCO's induction curing systems are easily scalable - from a few parts per hour to thousands of parts per hour and for motor components ranging from fractional HP motors to Megawatt Class Power Gen Systems.



Cutting-Edge Thermal Modeling

Ajax TOCCO Magnethermic® employs the latest magnetics and thermal modeling resources to accurately predict heat profiles, optimize inductor design, and accurately specify induction heater design specifications to meet each customer's unique process requirements. FEA results and engineered system performance are verified in our process development lab prior to shipping.



Stators and rotors typically have a relatively large cross-sectional thickness. It is important to allow for adequate soak time in a curing process to minimize temperature differential and properly through heat without overheating the surface of the part. To estimate recommended soak time, use the formula below, where t = time in seconds, and D = cross-sectional thickness in millimeters. For example, a rotor with a 25 mm wall thickness will require approximately 47 seconds of soak time.

$$t = (D * 0.039)^2 * 50$$

**Minimum
Recommended
Soak Time**

Energy and Power Requirements

Approximately 85 kW-seconds per kg is required for a 120° C temperature rise within a rotor or stator. Total energy required can be calculated by multiplying the heated mass in kg by 85 kW-seconds.

For example, a 2 kg heated mass will require a 170 kW-seconds of energy. Dividing the required energy by the recommended soak time will determine a suitable power rating (kW) for an induction heating power source. Assuming the above rotor with a 25 mm thickness and a heated mass of 2 kg, the minimum recommended power supply kW rating would be 3.6 kW. The Ajax TOCCO 5 kW TOCCOtron AC (featured on the opposite page) would be an ideal fit for this process example.

**Exceptions to the rule always exist. Be sure to consult your local Ajax TOCCO Field Sales Engineer regarding individual unique process requirements.*

Ajax TOCCO Heating Applications



Ajax TOCCO has earned an outstanding reputation with OEM electrical component manufacturers. We partner with both OEM and systems integrators to provide optimized induction heating solutions that are reliable and repeatable. Our reputation carries on after the sale with outstanding service and support from highly-trained and dedicated field service engineers located strategically across North America and around the world. Ajax TOCCO is dedicated to maximizing the profitability of our customer partners. We are leading the way with new advanced process controls, data trending, and new induction power source designs that minimize energy consumption and maximize process adaptability.

Ajax TOCCO Magnethermic® Companies design and manufacture world-class induction heating and melting equipment for various industries and applications throughout the world. In addition, we provide a wide range of services including laboratory process development, preventive maintenance, parts, equipment service and repair, coil repair facilities, and installation services with locations in North America, South America, Europe and Asia. www.AjaxTocco.com



GLOBAL SALES, SERVICE & SUPPORT

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