Induction Brazing of Short-Circuit Rings in Electric Motor Production

Induction heating is an effective method for brazing short-circuit rings of squirrel cage rotors when manufacturing electric motors. The short-circuit rotor end ring is placed onto a ring inductor, which is about the same size as the end ring. Next the rotor with the longitudinal bars is fitted into the trough-shaped groove of the short-circuit ring and the filler metal is added in pellet form. Induction brazing is then initiated with a pyrometer controlling the temperature ramp up and soak time.

In the case of small to mid-size electric motors, eldec recommends using an ECO LINE medium-frequency generator (MFG) up to 150 kW, a pyrometer for temperature control, and a custom manufactured field-controlled ring inductor on a brazing bench that can be adjusted for various motor sizes.

eldec’s medium-frequency generators (both ECO and CUSTOM LINES) have a wide variety of configuration options that can be matched to specific applications for electric motors and generators including (but not limited to):

- Automotive and locomotive drives
- Large pump and industrial motor
- Wind generators
- Shrink fitting of motor housings
- Shrink fitting of motor shafts and rotors
These powerful and robust induction generators are available in the ECO LINE with power ratings ranging from 5 to 150 kW and frequencies from 8 to 40 kHz. eldec CUSTOM LINE medium frequency generators are built with power ratings up to 500 kW and larger for large industrial electric motors.

All MFG ECO LINE Generators may be built standard with a Power Boost feature that allows you to over-dive the 100% continuous duty rating by an additional 50% for up to eight (8) minutes. Strengths include igbt transistor technology, precise energy dosing and an efficiency rating of over 90 percent.

Virtually maintenance free, ECO LINE medium-frequency generators operate quietly, take up little space and can easily be integrated into a cell controller thanks to a standard high speed PLC and multiple control options. In addition, the generators are available with single output or multiple output transformers. These connection options allow energy to be delivered sequentially (one side at a time), simultaneously (power provided in parallel and individually controlled), or symmetrically (power provided in parallel and working together, not individually controllable).

Let’s get the conversation started.
At eldec every project, including process analysis, begins with a consultation with our knowledgeable application engineers. Contact us and learn how eldec can assist you.