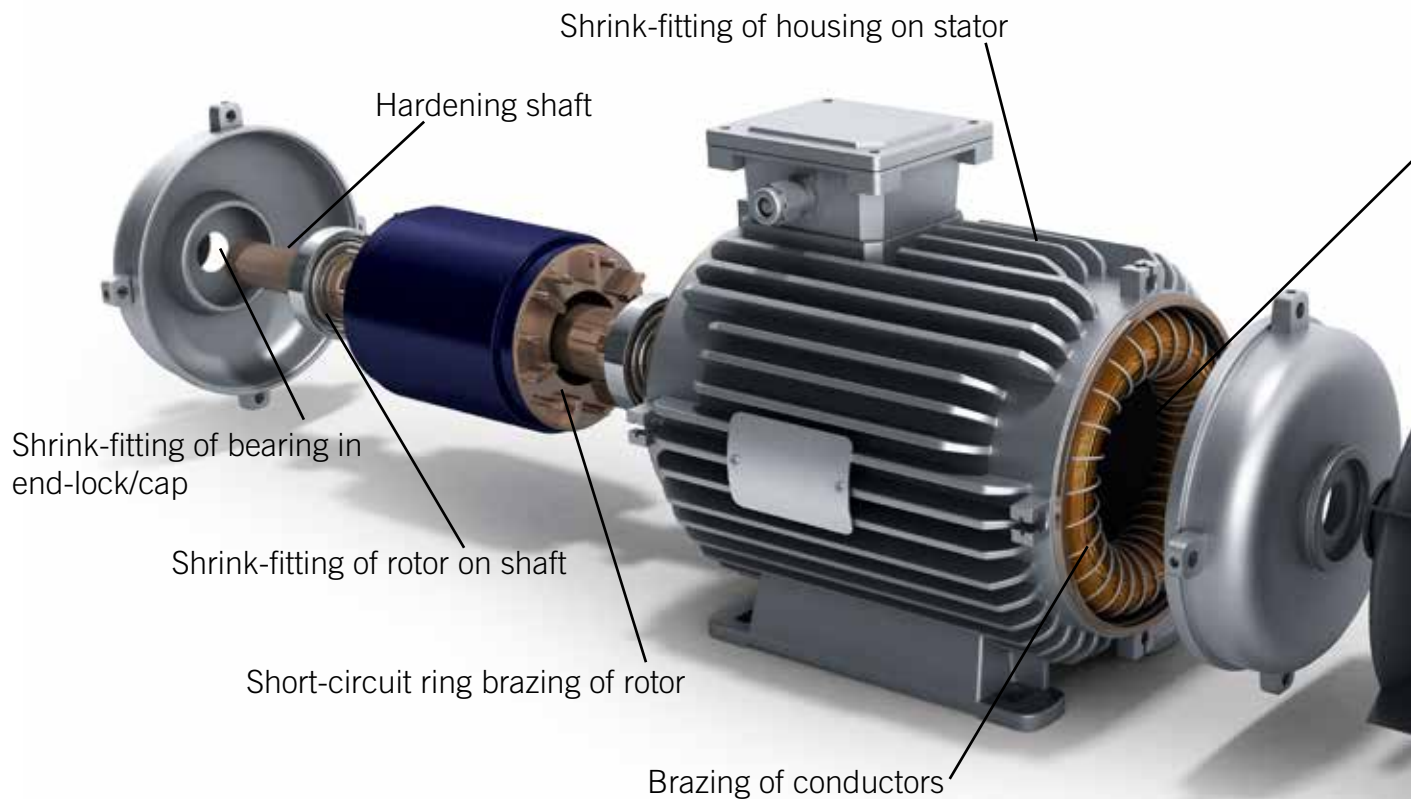


Induction shrink-fitting
Ideal for electrical motors and pumps

Fast, accurate and controllable

Why induction is ideal for electrical motors



WHAT IS SHRINK-FITTING?

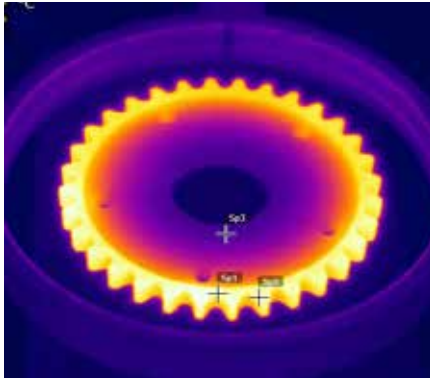
Typically, metals will expand in response to heating and contract when cooling. This dimensional response to temperature change is known as thermal expansion. Induction shrink fitting is where we use this effect to either fit or remove parts. A metal component is heated to between 150 °C and 300 °C which causes it to expand and allow for the insertion or removal of another component. When, for example, fitting two parts of pipe together, one part is heated until its diameter is expanded enough to be fitted over the other part. When the adjoining parts return to ambient temperature, the joint becomes strained and strong – ‘shrink-fitted’. Likewise, thermal expansion can be used to loosen the joint before disassembly.

A BETTER TECHNOLOGY

- **Quick.** The produced heat from a frequency converter is instant.
- **Accurate.** Just the right temperature, just where it is needed, and to just the right depth.
- **Controllable.** Complete control over the entire heating process.
- **Repeatable.** Induction heating lets you accurately repeat your desired heating cycle.
- **Clean, safe, compact.** No gas. No open flames. No noticeable increase in ambient temperature. No excessive floor space occupied by ovens.



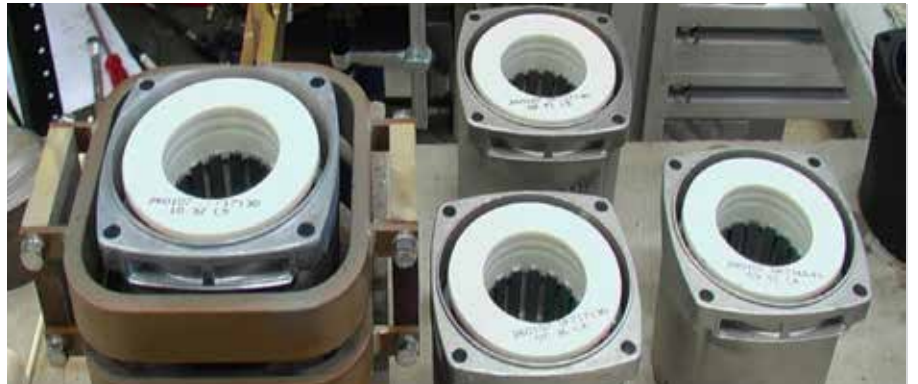
EFD Induction offers innovative solutions for shrink-fitting of motor houses.



We perform rigorous testing in our labs.



A correctly designed coil is crucial.



EFD Induction has delivered numerous solutions for shrink-fitting of stator housings.

- Varnish curing
- Magnet bonding
- Epoxy curing
- Connector ends coating removal



APPRECIATED IN MANY INDUSTRIES

- **Electric motors** - in home appliances, railway, marine
- **Generators** - in wind power, hydroelectric power, steam and gas
- **Pumps** - in water supply, agricultural
- **Transformers** - in general, starter and alternator in automotive, etc.

TRUSTED BY OUR CUSTOMERS

ABB | Dolmar | Aker Subsea | S:F. Kilde | Grundfos | Danfoss
Trenitalia | Rolls-Royce Marine | Vattenfall | Schneider Electric

A WORLDWIDE PARTNER

- **Applications knowledge.** Almost 70 years experience has given us unrivalled knowledge of diverse applications.
- **Equipment technology.** We design, build, install and maintain a complete range of induction equipment.
- **Coils capability.** A correctly designed, made and maintained coil is crucial to any induction operation.
- **Materials know-how.** We not only know more about induction heating than anyone else, we know more about how the technology affects your materials.
- **Global reach. Local presence.** Worldwide network of representatives, manufacturing facilities and sales and service companies.

The innovative EFD Induction shrink-fitting system can heat any size of motor house for electrical motors and pumps.



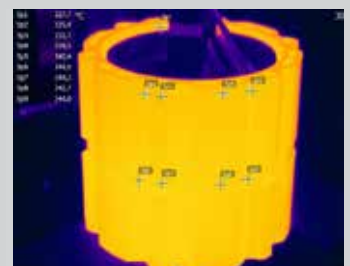
Turnkey systems ready to work

Shrink-fitting of motor house

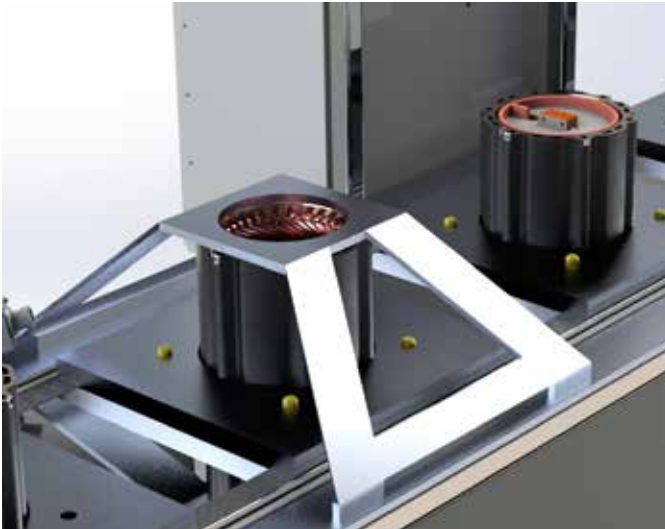
EFD Induction are experts at devising customized systems. Our systems integrate EFD Induction power sources with magazines, handling mechanisms and other features as needed. Our turnkey solutions are pre-assembled and ready-to-work. They come complete with induction heater, coil, fixtures, cooling unit and temperature control. The machines can be automated, semi-automated or manual.

Complete control

With an EFD Induction External Control Unit it is possible to control the heating process through a signal from a pyrometer or thermo element that measures the surface temperature and heat distribution.



Fully Automated, Semi-Automated or Manual: What system is right for you?



A semi-automated system with integrated conveyor belt for easy integration in production line.



A fully-automated system with robot handling.

The best equipment builder for a company is a partner that offers a full range of solutions. EFD Induction will be able to work with you to determine the best solution for your manufacturing goals and scale the system to your specific needs.

FULLY AUTOMATED

At EFD Induction, we see fully automated systems as solutions that require no human interaction. This means the product is loaded into feed systems or can be transferred from another system that will automatically load into the next step of the production process. The automated system then completes the entire heating process including testing, inspection and unloading.

A fully automated machine will typically include:

- Automated loading and unloading
- Automated temperature control
- Automated coil centering device
- Customized coil design
- Complete system diagnostics
- Touch screen, menu-based and multi-language control panels
- Advanced PLC control your specific production process.

SEMI-AUTOMATED

Semi-automated systems are probably the broadest part of the system spectrum. These can include the smallest help from an operator, such as manually loading and/or unloading. Or, it can include more labour such as having manual checks of each part. The key for this system is that it includes both manual as well as machine-aided functions.

MANUAL

For lower volumes and less need for integration, EFD Induction offers a wide range of frequency converters to fit your specific production process.



A semi-automated system with manual loading and unloading.

Systems built for any shrink-fitting task

'Minac' mobile converters feature output power of 10-220 kW (6-140 kW continuous) and automatic electronic matching. Highly versatile, Minacs perform practically any shrink-fitting task.

Some Minacs come in 'Twin' versions, meaning a single converter has two independent power outputs. Power outputs are also available as handheld 'power pistols'.



Minacs are versatile induction systems for heating of practically any electrically conductive material. They can be fitted with various coils and coil fixtures, single or twin output, flexible cables, closed or separate cooling systems, specially designed heating cables, etc. We equip the Minac to fit your heating need.

'Sinac' stationary generators feature power outputs up to 2000 kW. Sinac is a truly comprehensive range that includes parallel and serial-compensated converters suitable for virtually any induction heating application. Twin versions with two independent power outputs are also available.



Unique handheld transformer. The small, lightweight transformer saves space and gives higher efficiency as opposed to external heat stations. The EFD Induction Setpoint Recorder can be installed with all Minac and Sinac systems. The unique 'teach-in' solution lets you record and re-play your exact heating patterns.





Flexible heating cables are ideal for shrink-fitting of bearings and retaining rings.



Manual solution for shrink-fitting of motor house.



More and more automotive sub-contractors are opting for induction to shrink-fit gear wheels.



Induction shrink-fitting the shafts of an old bridge.



Our solutions are also ideal for induction brazing of bars, strands, rings and wires in motors, generators and transformers as well as for one-shot or segment brazing of short circuit rings.

EFD Induction

EFD Induction has to date installed thousands of heating solutions for a wide range of industrial applications—bringing the benefits of induction technology to many of the world's leading manufacturers and service companies. EFD Induction has manufacturing plants, workshops and service centers in the Americas, Europe and Asia.

