



On track

Induction heating solutions for the railway industry

Heating solutions on track

The unrivalled accuracy, control and efficiency of induction heating makes it ideal for key tasks in the manufacture and maintenance of rolling stock and rails.

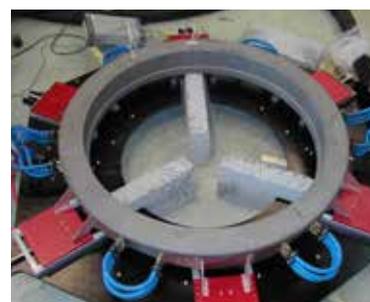
Disassembling and shrink-fitting bearing and lock rings

Shrink-fitting uses thermal expansion to either fit or remove parts such as rings, gears and bearings on shafts. The benefit of using induction for this process is that it is very fast and controlled. Bearing rings, for example, can be heated in a completely uniform manner and removed while the shaft remains cold.

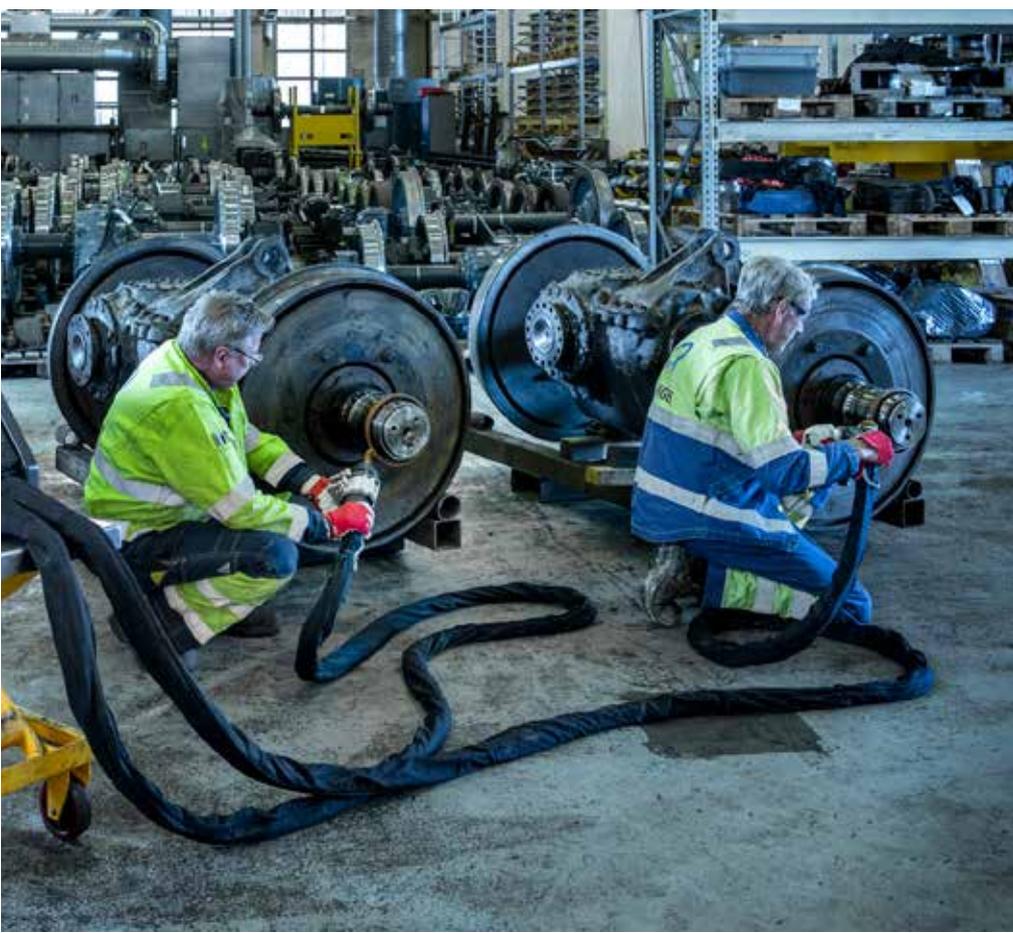
Fitting and replacing tyres

EFD Induction equipment makes replacing tyres a clean and easy task. A standard EFD Induction converter is fitted with a specially designed coil that heats tyres for quick removal. The same converter and coil is then used to heat the new tyres prior to shrink-fitting them on.

The segments of an EFD Induction coil are movable, so that it can be easily adjusted to fit different wheel diameters. A centering device ensures that the tyre is securely and accurately held in the centre of the induction coil.



Software built into the Minac allows the operator to pre-set the desired ramp-up times, power delivery and dwell times. This ensures that the correct surface temperature and heat pattern for the tyres are achieved while the wheels remains cold.



LOCK RINGS AND BEARINGS:The ring is heated up to a completely uniform temperature and removed while the shaft remains cold.



RAILWAY APPLICATIONS

- Shrink-fitting of:
 - Lock rings
 - Ball bearings
 - Brake pad centre hubs
 - Steel tyres on rims
 - Wheels on shafts
 - Loctite connections
- Pre-heating of rails
- Hardening of rails and hubs
- Welding of rails in field
- And many more

Fitting and replacing wheels

Traditionally, fitting or replacing wheels on shafts has required mechanical force along with hydraulics. The heavy equipment takes a long time to rig and there is a danger of scratching the shaft.

With induction heating, there is no need for a heavy mechanical pulling device when removing the wheel. The two-frame mobile solution is fast and accurate, and there is no risk of damage to the axle.

When fitting a new wheel, the entire wheel is heated with a multiturn cable fixed in a frame. To remove it, the outer diameter is heated before the inner hub of wheel. The whole process only takes about ten minutes.

Loctite connections

Slack adjusters for brakes and other joints which are fastened with red Loctite, need 250°C to release the lock. EFD Induction equipment brings the metal up to temperature in a fast and controlled manner. The process causes less fumes that are easy to remove with fume extractor.

Induction brazing

Rolling stock components must be brazed to the very highest standards, and solutions must meet the railway industry's exacting cost-control demands. Satisfying these demands has resulted in EFD Induction becoming the leader in brazing systems that are unmatched for productivity and reliability.

Induction straightening

Induction straightening uses a coil to generate localized heat in pre-defined heating zones. As these zones cool, they contract, "pulling" the metal into a flatter condition. Induction straightening is extremely fast. The precision of induction also boosts productivity. For example, when straightening steel chassis, there is no need to remove heat-sensitive components. Induction is so precise it leaves adjacent materials unaffected.

IDEAL FOR THE RAILWAY INDUSTRY



Our compact multipurpose Minac converter is particularly useful to railway maintenance divisions because of its flexibility, mobility and ease of use. Minac is an all-in-one solution ideal for applications like:

- Disassembling and shrink-fitting bearing and lock rings
- Replacing wheels and tyres
- Brazing of copper components
- Straightening of rolling stock

Rail welding with the Mirage Induction Rail Welding

EFD Induction works in close cooperation with Mirage Rail, providing the induction equipment to their groundbreaking patented induction welding plant.

Induction rail welding can be safely and efficiently done in situ. Forging and shearing of excess material is performed in one smooth operation. The automated process demands less energy than traditional welding methods and requires only one operator. It works extremely fast, providing joints that are just as strong as the base material.

Induction rail welding is a safe alternative where the remote control keeps the operator protected from any heat or exposure to molten metals.

There is very low fire hazard and the absence of spark, smoke and fumes means it can even be used in tunnels.



*Welded rail with excess material sheared off.
The joint is just as strong as a solid rail.*



A BETTER TECHNOLOGY

- **Quick:** The produced heat from an induction 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 and safe:** No gas. No open flames. No noticeable increase in ambient temperature.
- **Compact:** No excessive floor space occupied by ovens.

Global reach – local presence

Equipment from EFD Induction is supported by a global network of factories, workshops and offices. Wherever you are, after-sales service and support is never far away. You can also benefit from our program of operator training courses and component upgrades.

Visit our website to learn more about EFD Induction and our solutions that are boosting productivity for companies around the world.

www.efd-induction.com



PUTTING THE SMARTER
HEAT TO SMARTER USE