

SCHAEFFLER

Induction systems with medium frequency technology

Rely on us and our innovative solution
for thermal mounting and dismounting of
metal components.



Schaeffler is your
all-in-one solution provider
for production and maintenance applications

The challenge

More and more, conventional methods are stretched to their limits due to growing requirements and increasingly complex applications, especially with large and heavy components

The challenge in detail



Energy efficiency
Of all equipment and all
processes in maintenance



Safety
for both man and machine



Limited time & budgets
In maintenance



Unplanned downtimes
15 to 20 % of all bearing damage is caused
by incorrect mounting

The solution



The environmentally friendly and innovative solution

Induction heaters with medium frequency technology are an innovative solution

Because: they can be used quickly and easily and heat more energy-efficiently than conventional methods.

Induction heaters with medium frequency technology



7/3/2023

One device, multiple application possibilities

- Thermal mounting and dismounting is possible
- Preheating of components
- Also suitable for large and heavy work pieces
- Mobile, easy to move on site

Induction units with medium-frequency technology

The sustainable solution



Energy efficiency
thanks to high efficiency



Safety
for the workpiece thanks
to controlled heating



Short heating times



Reusability
of parts that would otherwise be scrapped



Improved machine availability
and productivity



Longer lifecycle

Induction heaters with medium frequency technology – our customer sectors



Rail



Wind



Paper



Drive Technology



Aerospace



Raw Material Extraction
and Processing



Cement



Steel

Induction heaters with medium frequency technology – applications

Application examples



Gear wheels



Bearings



Bearings in housings



Bearing inner rings



Couplings

...and many other ferromagnetic components, e.g. steel, cast iron, other materials upon request.

Medium frequency induction heaters consist of:

Generator



MFT induction heaters consist of a generator combined with a flexible or fixed inductor.

Flexible Inductor



Fixed inductor



Flexible inductors

Flexible inductors offer excellent adaptability to components of different sizes and geometries.

Special features

- can be placed either in the bore or on the outside of the workpiece
- depending on the application, up to 40 m long, max. 180 C° and 300 C°
- unique flexibility to adapt to different workpiece shapes and dimensions
- also suitable for particularly large components such as bearings, gear wheels, housings etc.



Fixed inductors

Fixed inductors are more suitable for serial production, where short set-up times and high process reliability are important.

Special features

- Application-specific manufacture
- can be placed on the work piece easily and quickly
- particularly suitable for serial production, mounting and dismounting



Schaeffler has been the leading supplier of induction heaters for professional industrial use for years.

Our induction heaters with medium frequency technology are the solution for both mounting and dismounting.

Two models

MF-GENERATOR

2.5

compact design with 3.5" display



10
kW

22
kW

44
kW

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MF-GENERATOR

3.0-3.5

advanced functions and 4.3" resp. 7.0" display



3,5
kW

10
kW

22
kW

44
kW

MF-GENERATOR2.5



MF-GENERATOR 2.5

When the most important functions are sufficient

The fast, environmentally friendly and reliable induction heater for mounting and dismounting.

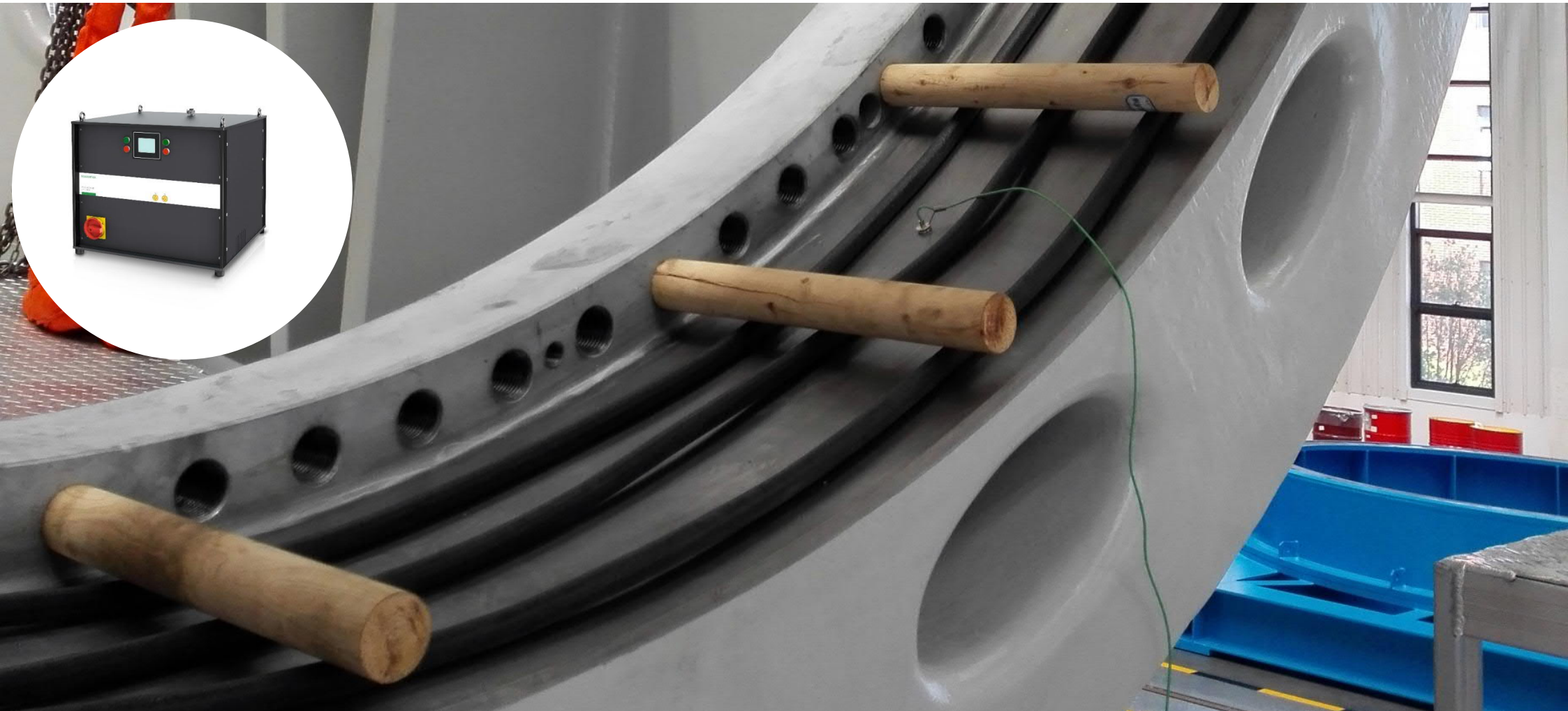
MF-GENERATOR2.5



What makes it different:

- compact design
- 3,5" touch screen
- user-friendly operation with touch screen
- smart electronics for optimum operating frequency
- adjustable output control
- dual temperature measurement with ΔT monitoring
- choice between fixed and flexible inductors

MF-GENERATOR2.5 in action



MF-GENERATOR3.0 – 10 to 44 kW



MF-GENERATOR 3.0

When more control is needed.

The fast, environmentally friendly and reliable induction heater for mounting and dismounting.

MF-GENERATOR3.0 – 10 to 44 kW



Additional benefits compared to the 2.5 model

- larger 7" touch screen
- heating possible according to pre-set temperature/time curve
- heating process is displayed with clear graphic
- creation of a work protocol as proof
- log function for data storage and export via USB port
- up to 8 generators can work together (leader – follower) to heat larger parts

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MF-GENERATOR 3.0 in action

Simultaneous heating of bearing inner ring and outer ring with 2 generators



MF-GENERATOR3.0 in action

Safety through controlled heating

The two generators communicate with each other.

A max. permissible temperature difference (Delta-T) between the inner ring and outer ring is set for the heating process.

Depending on the allowed temperature difference, the generators regulate the output during the heating process.

The clearance in the bearing is maintained by the controlled heating process. Consequently, damage to the bearing due to the heating process can be ruled out.

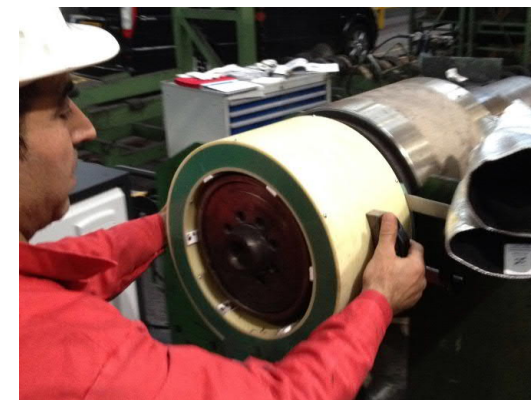
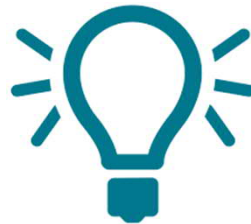


A consistently positive user experience

The configuration of an induction unit depends on the specific application. If required, we also design and manufacture fixed inductors custom-made to the application.

In short:

We have the solution
for customized demands.



MF-GENERATOR 3.0–3.5 kW



MF-GENERATOR 3.5KW

Small, mobile and powerful

- Compact dimensions, low weight
- Low cost
- Simple power supply (230V/16A)
- 4.3" touch screen
- Mobile and flexible use
- Usable in hard-to-reach mounting locations or where space is limited
- Ideal for small and medium-sized work pieces
- Economical solution also for smaller workshops
- Usage with flexible inductors only (5m, 7.5m 10m) (ordered separately)

MF-GENERATOR3.0-3.5KW in action

Economic inductive solution also for smaller repair shops:

The inner rings of cylindrical roller bearings, here mounted in pairs, are heated and dismantled one by one.

Time needed : < 2 min

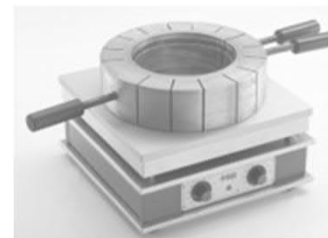
Temperature: 120°C

Compared to conservative thermal tools, such as aluminum heating rings with heater plate:

- Controlled and safe heating
- Easy handling
- No mechanical wear of the tool
- Suitable for different sized work pieces and not only one
- Energy-efficient and cost-effective heating



Inner ring dimension:
d = 120 mm
D = 150 mm
B = 80/65mm



Former method

MF-IDUCTOR



MF-IDUCTOR

Handy and easy to use

- Lightweight handheld without temperature control
- Usage with flexible or fixed inductors
- Various performance variants available
- Can be operated with one hand
- Ideal for small work pieces
- Low-cost tool for workshops

MF-IDUCTOR

MF-IDUCTOR with flexible inductor for various workpieces:

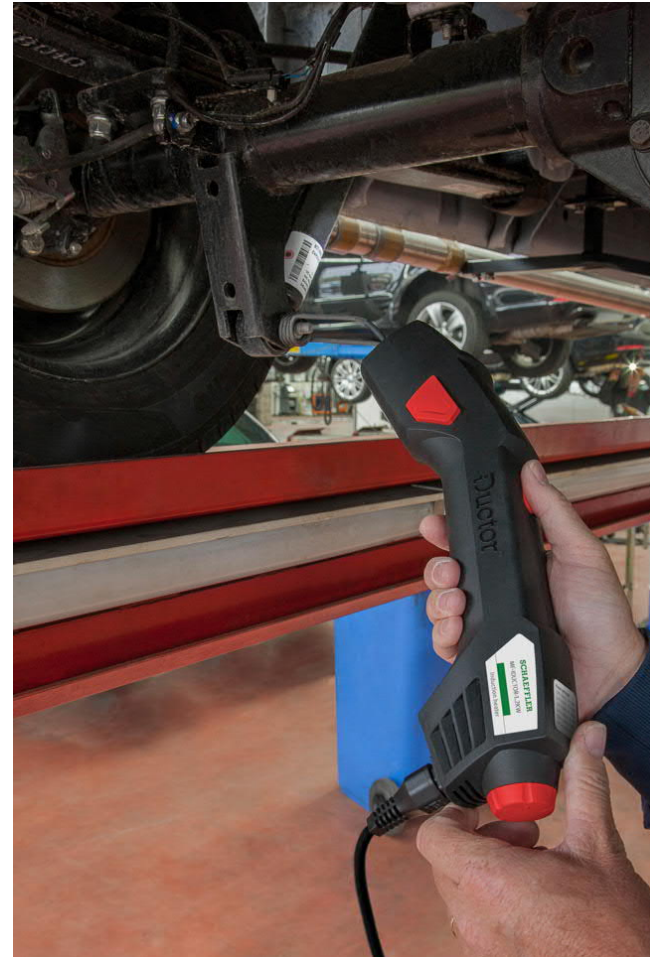
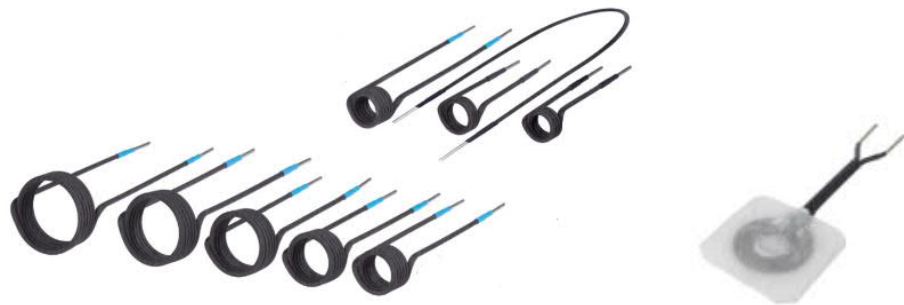
- For mounting and dismounting of bearings, housings, bushings, sleeves and many other components
- Flexible inductor is simply wrapped around the component or placed in the bore
- Usable for different sizes of workpieces
- For complex shaped components
- Energy-efficient and cost-effective heating



MF-IDUCTOR

MF-IDUCTOR with fixed inductors for small workpieces:

- 9 fixed inductors available as a set (option)
- Loosens stuck components such as nuts, rings, bushings
- Ideal for rusted screw connections, e. g. axles, exhaust systems and many other components of construction machinery and vehicles
- Inductive pad (option) for localised heating of surfaces, removal of decals, adhesives and coatings



Advantages of the new induction heaters with medium frequency technology

More opportunities

Mounting and dismounting also of large work pieces

More flexibility

By using flexible or fixed inductors

More sustainability

Through energy efficiency and longer lifetime

More mobility

The MF-GENERATOR can be taken to the workpiece, not the other way round



More individuality

The best solution for every application

More efficiency

Through lower costs and higher productivity

More safety

For both man and machine

Application examples



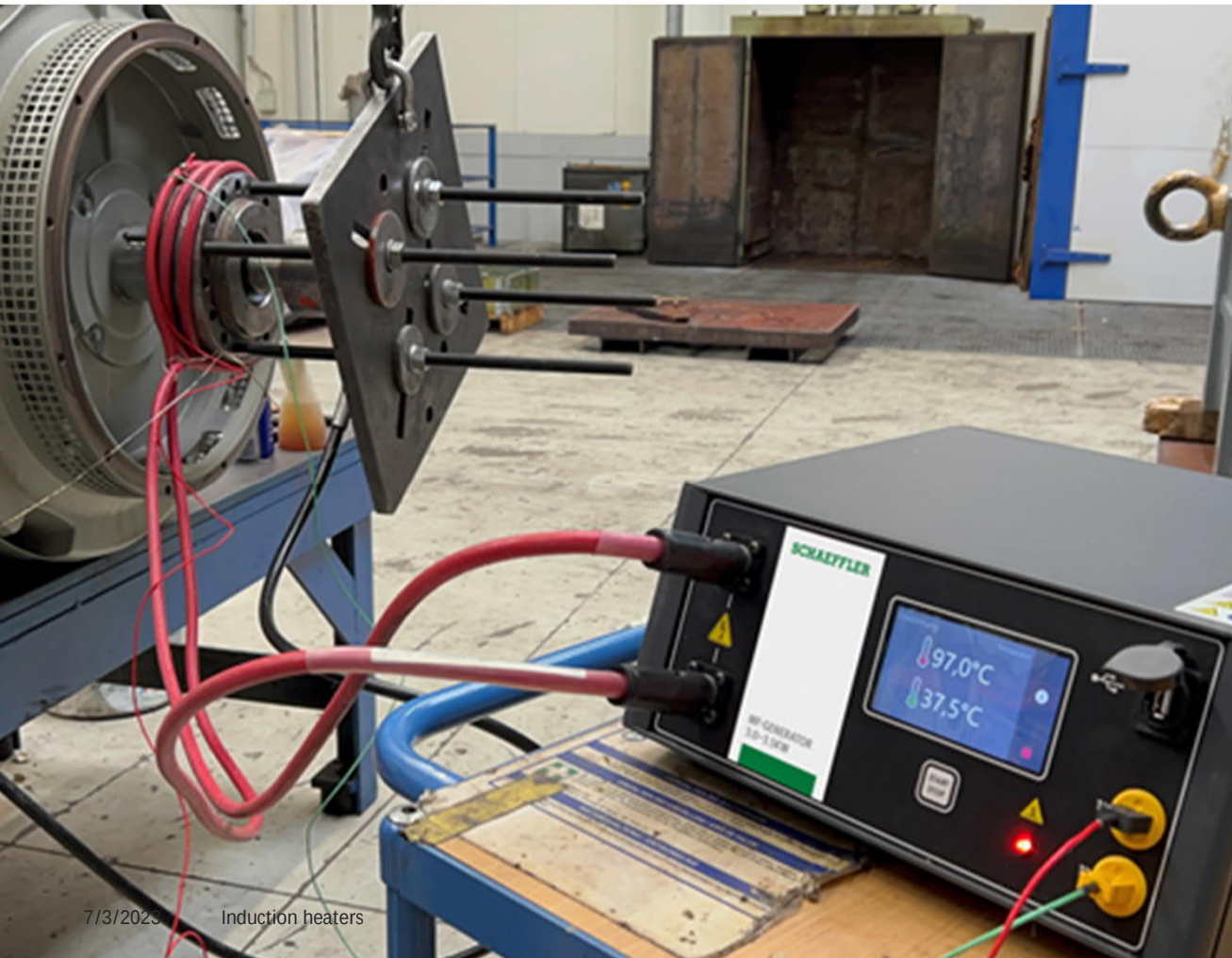
Construction machinery

Dismounting bushing from a pump

Time needed : 3.5 minutes

Temperature: 120°C

Application examples



Marine

Dismounting coupling from an electric motor (with mechanical support):

Time needed: 2.2 minutes

Temperature: 100°C

Application examples



Steel

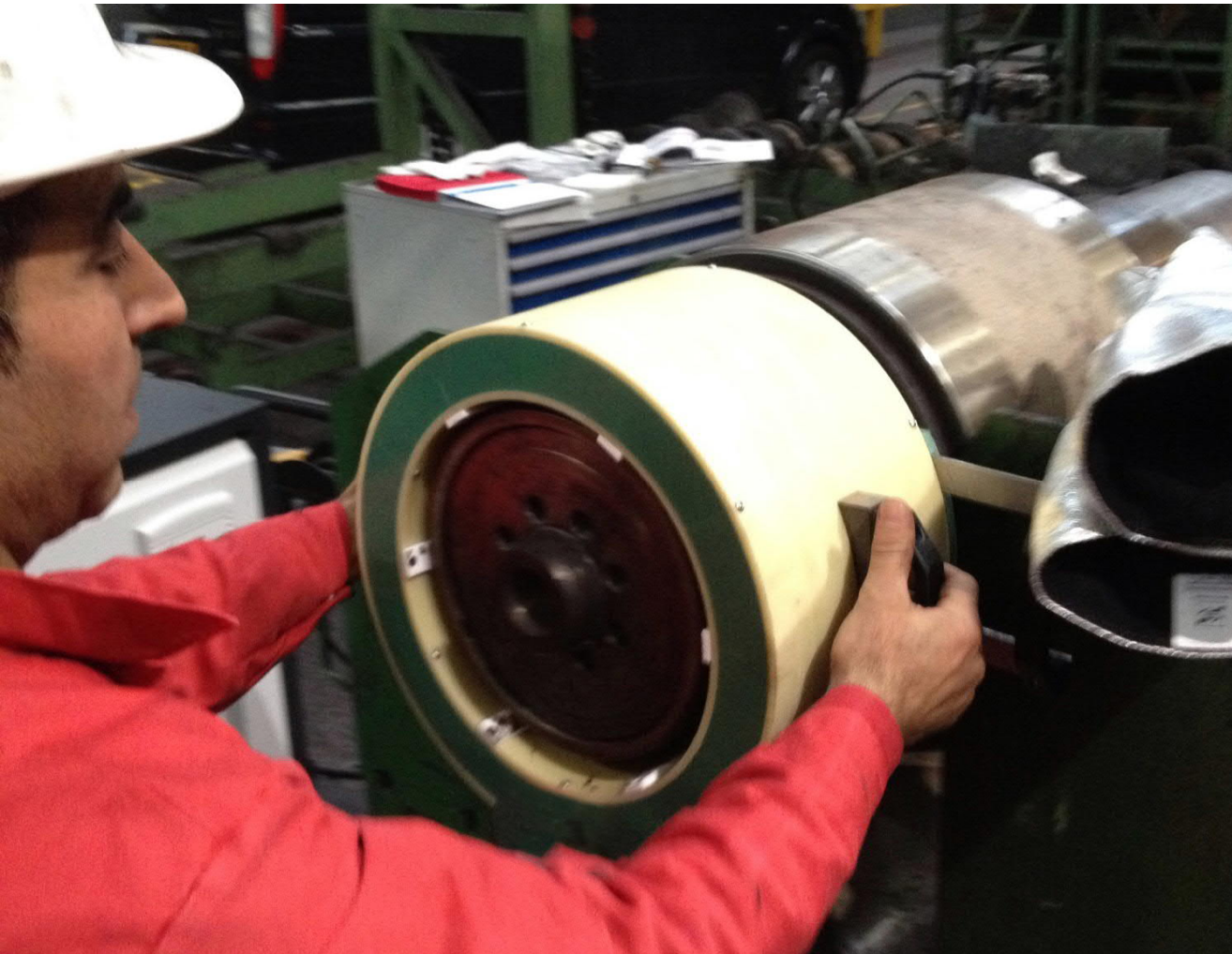
Dismounting bearing inner rings with a 22 kW generator and a flexible inductor:

Time needed: 8 minutes

Temperature: 120°C



Application examples



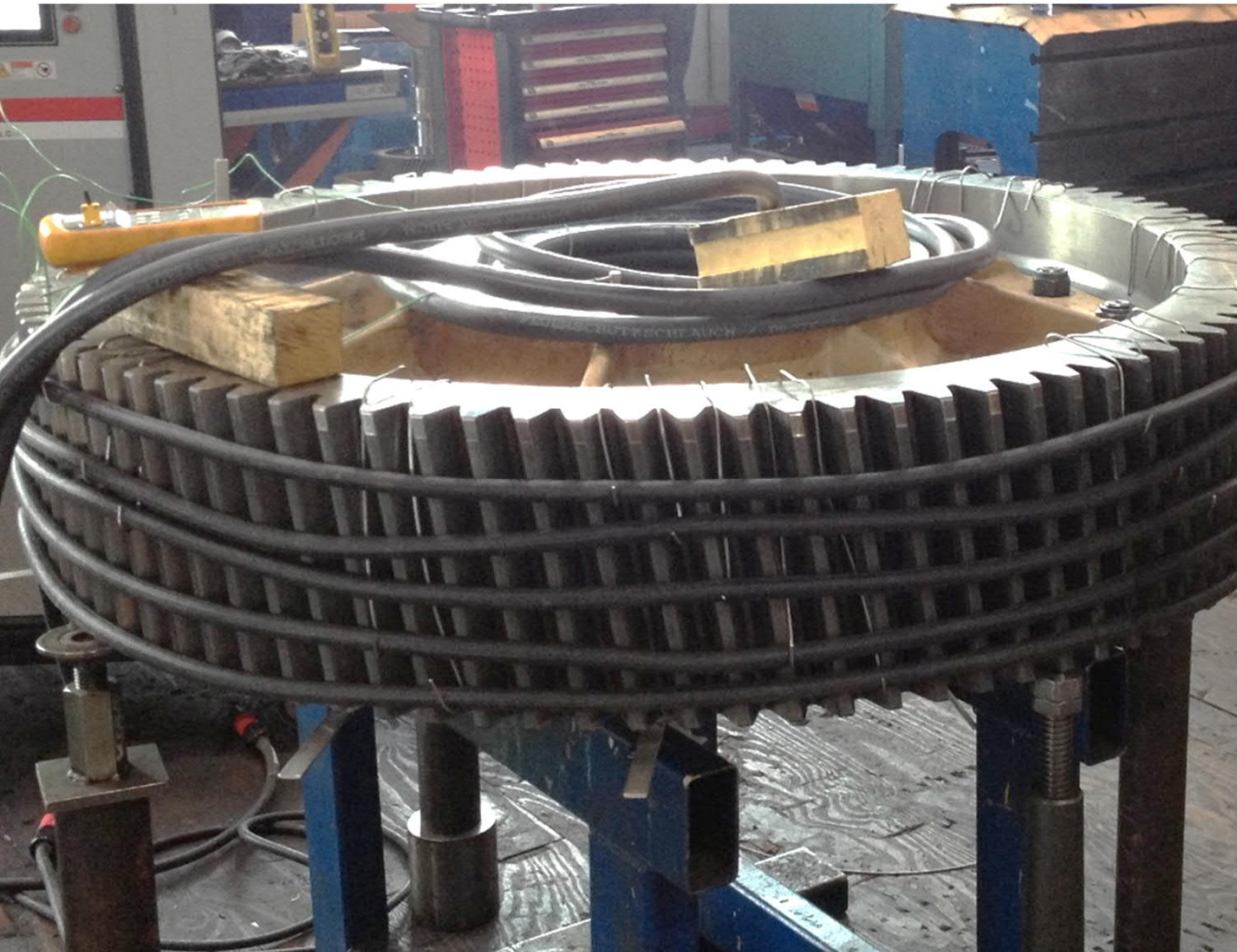
Steel

Serial dismounting of bearing inner rings with a 22 kw GENERATOR and fixed inductor:

Time needed : 3 minutes

Temperature: 120°C

Application examples



DRIVE TECHNOLOGY

Mounting of a gear wheel with MF-GENERATOR2.5–44 kW and flexible inductor.

Winding distribution over the circumference and face of the gear (± 2500 kg).

Time needed: 30 minutes

Temperature: 180°C



Application examples



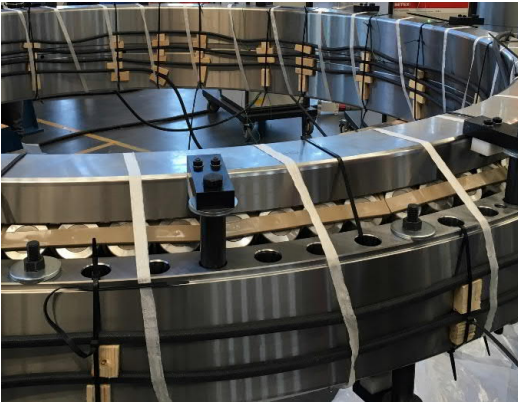
Drive Technology

Bearing seat heating for mounting the bearing in a cable wheel with a MF GENERATOR 22 kW and flexible inductor:

Time needed: 4 minutes

Temperature: 120°C

Application examples



7/3 Induction heaters

PUBLIC

Wind

Mounting a main bearing:

Step 1: heating the bearing (6800 kg) with 2 GENERATOR3.0-44KW generators simultaneously using flexible inductors:

- 1 generator heats the inner ring
- 1 generator heats the outer ring

Time needed: 120 minutes
Temperature: 110°C

Step 2: heating the bearing seat (11.000 kg) to mount the bearing in the housing:

Time needed: 60 minutes
Temperature: 80°C

Application examples



Laser Cladding

Preheating of components for laser coating with a MF GENERATOR 22 kW and a flexible inductor



When to use the innovative solutions for mounting and dismounting?