



10 Key Applications of Induction Heating for Thermal Disassembly and Assembly on Large Machinery

1. Mounting & Dismounting Large Bearings

- Application
 - Roller, spherical, taper bearings in gearboxes, generators, crushers, turbines
- Assembly
 - Uniform heating of bearing inner ring
 - Expansion enables easy shaft mounting
- Disassembly
 - Controlled heating releases interference fit
 - Protects shaft and raceways
- Key benefits
 - No hammering or heavy presses
 - Reduced bearing distortion
 - Faster changeovers and longer shaft life

2. Shrink-Fitting Gears on Shafts

- Application
 - Large high-torque gears and hubs
- Process
 - Induction heats gear/hub uniformly
 - Expansion allows slip-fit over shaft
 - Cooling creates secure shrink fit
- Key benefits
 - Precise, repeatable alignment
 - Less assembly time vs ovens/torches
 - No contamination from combustion

3. Mounting & Removing Couplings and Hubs

- Application
 - Couplings, pulleys, hubs in pumps, compressors, marine drives
- Process
 - Heats coupling/hub only, not shaft
 - Enables controlled expansion and removal
- Maintenance use
 - Frees seized or corroded couplings
- Key benefits
 - Protects shaft surfaces
 - Faster critical equipment turnaround
 - Effective in confined spaces

4. Thermal Disassembly of Stuck / Corroded Bolts & Fasteners

- Application
 - Bolts in turbines, press frames, offshore equipment
- Process
 - Concentrated heating of bolt or nut
 - Expansion breaks rust and corrosion bonds
 - Thermal cycling (heat-cool) for severe seizure
- Key benefits
 - Less cutting, grinding, drilling
 - Protects flanges and mating surfaces
 - Safer and quicker than oxy-fuel torches

5. Removal of Bushings, Sleeves & Bearing Races

- Application
 - Shrink-fitted bushings, sleeves, outer races in housings/gearboxes
- Process
 - Internal or external heating via custom coils
 - Differential heating breaks interference fit
- Key benefits
 - Minimizes housing/casing deformation
 - Lower mechanical stress, fewer scrap parts
 - Suited to thick sections and large diameters

10. On-Site Maintenance & Retrofit of Heavy Industrial Equipment

- Application
 - Field work on mining trucks, wind turbines, marine systems, steel plants
- Typical tasks
 - Removing large bearings and gears
 - Dismounting couplings on propulsion shafts
 - Heating pins, studs, flanges for removal
 - Shrink-fitting retrofit components
- Key benefits
 - Less teardown of surrounding equipment
 - Reduced transport to off-site workshops
 - Lower outage times and maintenance cost

9. Controlled Heating for Casing & Frame Alignment

- Application
 - Large casings, frames, welded structures
- Process
 - Localized heat lines/patterns
 - Induces predictable thermal expansion
- Uses
 - Alignment adjustment
 - Straightening and distortion correction
 - Stress relief in welded structures
- Key benefits
 - Non-contact, finely controllable heat input
 - Less overheating of adjacent areas
 - Reduces mechanical bending/re-machining

8. Turbine & Compressor Rotor Stack Assembly

- Application
 - Gas and steam turbine rotor stacks (disks, spacers, shaft sections)
- Process
 - Precision heating of individual disks
 - Controlled stacking and shrink fitting
- Industry requirements
 - Aerospace and power-generation standards
- Key benefits
 - Tight axial clearance and alignment control
 - Lower oxidation vs furnaces
 - Higher productivity in build and overhaul

7. Rotor & Shaft Component Assembly in Generators & Motors

- Application
 - High-power generators, traction motors, large electric machines
- Components
 - Rotor shafts, end rings, laminated cores
- Process
 - Controlled heating for shrink fits
 - Localized heating for disassembly without harming windings
- Key benefits
 - Protects electrical insulation
 - High repeatability for OEMs and service shops
 - Reduces risk of core distortion or misalignment

6. Assembly & Disassembly of Large Rings & Tires

- Application
 - Rings/"tires" on drums & shells (kilns, rolling mills, heavy wheels)
- Assembly
 - Rapid, uniform heating of rings
 - Quick mounting over drum/shell
- Disassembly
 - Controlled heating for safe removal (no cutting)
- Key benefits
 - Uniform expansion, precise fit
 - Shorter maintenance downtime
 - Higher safety vs flame heating