

Turn up the Heat with

# Induction

*A Cleaner and More Efficient Way to Heat*

One of the most advanced methods of industrial heating is induction, a proven technology for large production runs where superior precision, increased energy efficiency, low emissions, and high output are important. If your surface heating processes currently use fossil-fueled convection furnaces, a switch to electric induction heating could make your business more efficient, safer, cleaner and capable of providing a higher-quality product.

**How does it work?** Exposure to high-powered alternating electromagnetic fields rapidly heats and changes the chemical and physical properties of a conductive metal surface material without affecting the underlying layer of metal. This process improves the strength, wear and fatigue properties of the metal, which allows lower-cost material grades to meet more stringent hardness and durability standards. Because the power and frequency of the fields can be adjusted to regulate the depth and temperature of surface heating, you have more precise control of the heating process, resulting in a more cost-effective alternative to other hardening methods.

Other benefits of induction surface heating include:

**Increased energy efficiency:** No need for a warm-up or cool-down cycle – and because energy is directed only where needed, standby heating periods are practically eliminated.

**Improved precision and process control:** Eliminates product inconsistencies and quality issues since precise temperature control provides uniform results.

**Higher production rates:** Heating occurs almost instantly – 10 times faster – which speeds product throughput, yielding higher productivity.

**No site emissions:** No emissions at the point of use, compared to conventional process heating equipment, which emits combustion byproducts such as carbon dioxide, carbon monoxide, NO<sub>x</sub> and SO<sub>x</sub>, and other particulates.

**Enhanced safety:** No open flames, and reduced smoke, waste heat and emissions ensure safer working conditions.

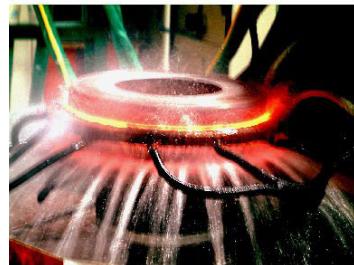
Induction is used for surface hardening, tempering, brazing, bonding, welding, curing, annealing, forging, straightening, coating and engraving in applications including:

- Steel product and fabricated metal manufacturing
- Foundries
- Machinery manufacturing
- Appliance, electrical equipment and component manufacturing
- Transportation equipment manufacturing
- Furniture manufacturing

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# Customer Questionnaire

Could your facility's processes benefit from the conversion to induction surface heating technology? Answer these questions to help determine if induction could improve your process.

1. Are you currently using induction heating?

Yes       No. What method of heating do you use? \_\_\_\_\_

2. What is the material of the object you are heating?

Alloy       Brass       Iron       Stainless Steel  
 Aluminum       Copper       Steel       Other: \_\_\_\_\_

3. What is the reason for heating?

Annealing       Forging       Melting       Sintering       Soldering  
 Brazing       Hardening       Quenching       Other: \_\_\_\_\_

4. What temperature do you need to reach? \_\_\_\_\_

5. a) How much time do you have for heating? \_\_\_\_\_

b) What is the current and projected annual production capacity? \_\_\_\_\_

6. Are any industrial gases used?

Form: \_\_\_\_\_ Size (diameter, length, width, height): \_\_\_\_\_ Weight: \_\_\_\_\_

7. Please provide the following information regarding the parts that you heat:

No       Yes. What type of industrial gases are used? \_\_\_\_\_

8. Has your company recently adopted innovative or new technology? \_\_\_\_\_

9. In the last five years, have you made any process heating changes to your production? \_\_\_\_\_

10. When do you expect to make capital investments to your production process? \_\_\_\_\_

11. *Optional:* Do you anticipate changes in your product line(s), including product mix, product modifications, new products, etc.? \_\_\_\_\_

Company Name: \_\_\_\_\_

Contact Name and info: \_\_\_\_\_

Latest year energy use in MWh\*: \_\_\_\_\_

Latest year peak demand in MW\*: \_\_\_\_\_

*\*Your FirstEnergy Customer Support Representative can assist in providing this information.*