



TORONTECH



INDUSTRIAL FURNACE - TT-IF-512-1200E

The TT-IF-512-1200E is a 1200°C manual-door industrial furnace designed for a wide range of heat treatment processes, including quenching, tempering, normalizing, and annealing of metal components. It is also suitable for sintering non-metallic ceramic materials, making it an excellent choice for laboratories, research institutes, and industrial facilities requiring pilot testing or small-scale production.

This model is built with a large 512-liter chamber capacity, providing flexibility for processing bigger batches while maintaining efficiency and reliability. The furnace operates continuously at 1100°C and can reach a maximum temperature of 1200°C, ensuring consistent thermal performance across demanding applications.

Powered by a 380V supply, the TT-IF-512-1200E is equipped with high-quality HRE heating elements that deliver stable, uniform heating and long-lasting durability. Its temperature control system utilizes an N-type thermocouple with a precision of $\pm 1^{\circ}\text{C}$, ensuring accurate measurement and dependable repeatability for all thermal processes.

APPLICATIONS

Industrial Furnace – TT-IF-512-1200E

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- **Metal Heat Treatment** - Enables quenching, tempering, normalizing, and annealing of steel, alloys, and other metallic components. Provides reliable and uniform heat distribution essential for mechanical strength, hardness, and microstructure control.

- **Ceramic Sintering** - Supports high-temperature sintering of non-metallic ceramic materials. Ensures structural densification, thermal resistance, and durability, making it suitable for advanced ceramic research and production.
- **Aerospace Materials Engineering** - Facilitates heat treatment of high-performance alloys and composites used in aerospace applications. Guarantees consistent thermal stability and validation of material strength under demanding conditions.
- **Automotive Component Manufacturing** - Ideal for treating engine parts, gears, and structural components. Ensures precise hardness and durability required in automotive production and testing.
- **Tool and Die Processing** - Provides controlled heating cycles for molds, dies, and cutting tools. Improves wear resistance, dimensional stability, and operational lifespan in industrial environments.
- **Energy and Power Industries** - Suitable for processing heat-resistant alloys and ceramics used in turbines, power generation equipment, and battery materials research. Ensures repeatability and reliability in energy-focused applications.
- **Universities and Research Institutes** - A valuable tool for academic and industrial laboratories conducting studies in metallurgy, materials science, and ceramics. Offers flexible programming, safety features, and dependable results for R&D.
- **Industrial Quality Assurance** - Delivers accurate, repeatable thermal processing for product validation, compliance testing, and certification. Conforms with international quality standards including ISO, CE, SGS, and TÜV.

Furnace Shell

- The shell is constructed from Q235 low-carbon steel and features an electrostatic, corrosion-resistant surface.
- It has a durable metal frame design that keeps the external surface temperature low.
- A side-opening door with a fixed left hinge ensures smooth and safe operation.

Refractory

- The furnace includes a multi-layer insulation system with double-layer lightweight refractory brick lining.
- Its high-strength, interlocking structure ensures excellent durability.
- Asbestos-free materials reduce heat loss and improve energy efficiency.

Heating System

- Uses high-quality HRE spiral resistance wires mounted on ceramic support tubes, delivering efficient, radiation-based heating within the chamber—designed for energy savings and extended service life.
- Heats from three sides (left, right, and bottom) to ensure even temperature distribution.
- The silicon carbide base plate shields the bottom heating element, offering strong mechanical support, high thermal conductivity, and horizontal load capacity.

Temperature Control Panel

- Features a PID controller with SCR output for accurate temperature regulation.
- Equipped with an international-standard N-type nickel-chromium-silicon thermocouple (0–1300 °C range) for reliable long-term performance.
- Includes a safety switch that cuts power when the furnace door is opened.

Program Controller

- Advanced controller supports complex process requirements.
- User-friendly interface for easy and flexible programming.
- Supports up to 30 programmable segments for custom temperature profiles.

- Built-in over-temperature and fault alarms for enhanced safety.
- Optional features include manual air intake and automatic exhaust venting.
- A rapid cooling system (optional) is available for cooling the chamber to below 400 °C quickly.

TECHNICAL SPECIFICATIONS

Model	Chamber size□ mm□	Volume	Rated Temperature	Working temperature	Voltage	Power	Heating Element	Temp control Accracy
TT-IF-45-1200	300×500×300	45L	1200°C	1100°C	380V	12KW	HRE	±1°C
TT-IF-64-1200	400×400×400	64L	1200°C	1100°C	380V	15KW	HRE	±1°C
TT-IF-80-1200	400×500×400	80L	1200°C	1100°C	380V	15KW	HRE	±1°C
TT-IF-96-1200	400×600×400	96L	1200°C	1100°C	380V	18KW	HRE	±1°C
TT-IF-100-1200	400×530×460	100L	1200°C	1100°C	380V	18KW	HRE	±1°C
TT-IF-150-1200	450×530×590	150L	1200°C	1100°C	380V	24KW	HRE	±1°C
TT-IF-200-1200	500×530×720	200L	1200°C	1100°C	380V	27KW	HRE	±1°C
TT-IF-300-1200	550×700×780	300L	1200°C	1100°C	380V	45KW	HRE	±1°C
TT-IF-450-1200	600×750×1000	450L	1200°C	1100°C	380V	50KW	HRE	±1°C
TT-IF-660-1200	600×1100×1000	660L	1200°C	1100°C	380V	60KW	HRE	±1°C
TT-IF-1000-1200	800×1000×1250	1000L	1200°C	1100°C	380V	80KW	HRE	±1°C
TT-IF-1500-1200	900×1200×1400	1500L	1200°C	1100°C	380V	95KW	HRE	±1°C



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