



ROTARY HYDROGEN REDUCTION TUBE FURNACE 1200°C - TT- HRTF-150-1200

The Rotary Hydrogen Reduction Tube Furnace 1200°C – TT-HRTF-150-1200 is engineered for high-efficiency hydrogen reduction processes. It features a robust heating system with high-quality HRE alloy resistance wires and a durable quartz reactor tube, capable of continuous operation at 1100°C and reaching a maximum temperature of 1200°C. Designed for laboratory and industrial applications, the system operates on 380V/12 kW and includes an N-type thermocouple for precise temperature monitoring.

This furnace is equipped with an automatic rotation mechanism, allowing the tube to rotate 360° at adjustable speeds, ensuring uniform temperature distribution throughout the chamber. The tilting furnace body can be angled up to 15°, providing safe and convenient loading and unloading of materials, making it ideal for advanced hydrogen reduction research and production processes.

APPLICATIONS

- **Advanced Hydrogen Reduction** – Supports high-temperature hydrogen reduction processes with precise control. The furnace provides uniform thermal distribution through 360° rotation and tilting capabilities, ensuring efficient material processing for laboratory and industrial applications.
- **Nanomaterials & Catalyst Research** – Enables controlled hydrogen-based reduction of nanostructures, metal oxides, and catalysts. Ideal for R&D of functional nanomaterials, advanced composites, and chemical catalysts requiring precise temperature management up to 1200°C.
- **Semiconductor Materials** – Facilitates annealing and reduction processes on semiconductor substrates in hydrogen atmospheres. Ensures uniform heating critical for material consistency and defect-free processing.

- **Powder Metallurgy & Materials Synthesis** – Supports hydrogen reduction of metal powders and advanced alloys. Delivers consistent thermal profiles for research-scale synthesis and industrial production of high-performance materials.
- **Chemical & Energy Research** – Suitable for hydrogenation reactions, catalyst activation, and energy materials processing. Delivers reproducible results for chemical, energy storage, and battery research requiring controlled hydrogen environments.
- **Universities & Research Institutes** – Ideal for advanced studies in materials science, chemical engineering, and energy research. Offers programmable temperature profiles, robust safety features, and reliable performance for academic laboratories.
- **Industrial Process Development** – Supports small-scale process development and testing under controlled hydrogen atmospheres. Ensures operational safety with integrated hydrogen detection, automatic gas shutoff, and precise thermal management.
- **Safety & Compliance** – Equipped with a 3M hydrogen detector, over-temperature alarms, fault detection, and automatic shutdown systems. Conforms to ISO9001, CE, SGS, and TÜV standards, ensuring safe and compliant laboratory and industrial operation.

FEATURES

Furnace Shell

- Constructed from Q235 low-carbon steel, the shell features a corrosion-resistant, electrostatically coated surface. The durable double-layer metal frame is integrated with a heat-insulating fan system to maintain a low external temperature. The horizontal design and top-loading structure provide user-friendly operation.

Refractory Material

- The furnace features a multi-layer insulation system made of lightweight alumina ceramic fiber and high-grade insulation board backing. It is asbestos-free, ensures minimal heat loss, and supports energy-efficient performance.

Heating System

- Equipped with high-grade HRE spiral resistance wire heating elements, securely embedded on the inner wall for direct thermal radiation heating—resulting in excellent energy efficiency and extended service life.
- Ring-shaped resistance wire heating delivers uniform temperature distribution throughout the chamber.

Temperature Control Panel

- Features advanced controllers designed for demanding thermal processes.
- Supports up to 30 programmable segments for automated temperature profiling.
- Includes over-temperature protection and fault alarms for enhanced safety.

Rotary System

- The furnace tube uses a gear-driven electric motor to rotate 360° at adjustable speeds between 12–20 rpm, ensuring uniform heating of materials inside the tube.
- The furnace body can be tilted electronically, with an adjustable tilt angle to allow smooth loading and unloading.
- Includes a 304 stainless steel sealing flange for creating a vacuum or controlled atmosphere inside the tube.
- Compatible with high-quality quartz, metal, or alumina ceramic tubes to suit various operational requirements.

TECHNICAL SPECIFICATIONS

Model	TT-HRTF-60-1200Q	TT-HRTF-100-1200Q	TT-HRTF-150-1200Q	TT-HRTF-200-1200Q
Reactor Quartz Tube	Φ60×1200mm	Φ100×1200mm	Φ150×1500mm	Φ200×1500mm
Heating Zone Length	440mm	440mm	600mm	600mm
Max Temp	1200℃			
Continue Temp	1100℃			
Heating Element	High quality Alloy Resistance Wire□ HRE□			
Chamber Material	Polycrystalline inorganic alumina ceramic fiber materials			
Temp Precision	±1℃			
Thermocouple	B-type national standard platinum rhodium thermocouple			
Temp Controller	Intelligent microcomputer PID temperature control instrument, SSR control, PID parameter self-tuning function; programmable 30 program segments, program temperature rise, program heat preservation, program cooling			
Heating Rate	1-20℃/min free adjustment			
Furnace Structure	Furnace temperature control integrated structure; double-layer shell, air circulation and heat insulation			
Equipment Protection	Modular control, sound and light alarm signal will be sent out for over temperature and broken coupler in the working process, and the protection action will be completed automatically			
Safety Protection	The equipment is equipped with a circuit breaker, which will automatically pop open in case of short circuit leakage, which can protect the safety of equipment and operators			
Furnace Shell	High-quality cold-rolled steel plate CNC machine tool blanking processing, after welding, grinding, polishing, phosphating, pickling, surface electrostatic spraying plastic powder			
Certification	ISO9001 CE SGS TUV			
The standard configuration	1. 1 furnace body 2. 1 temperature controller 3. Power cord 3 meters 4. 1 thermocouple 5. 1 manual6. One furnace hook 7. One pair of high temperature gloves 8. Two pipe plugs 9. One set of sealing flange			



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