TORONTECH

3 ZONES ROTARY TILTING TUBE FURNACE 1200°C -TT-RTF-120-1200 PRO

The 3 Zones Rotary Tilting Tube Furnace 1200°C – TT-RTF-120-1200 Pro is built for advanced thermal processing, integrating an automated rotation system, feeding and discharging functions, and a tilt-adjustable furnace body. Its furnace tube rotates a full 360° with adjustable speed to ensure uniform heating, while the feeding speed can be fine-tuned in real time for precise control. The body tilts up to 15° for easier material handling, and a collection unit at the tube's outlet enables continuous small-scale production, making it well-suited for research and pilot-scale testing.

This model comes with a Φ120×1200 quartz tube and three independent heating zones (200 mm each), offering stable continuous operation at 1100°C and a maximum temperature of 1200°C. Powered by 220V/13 kW (with a 110V option available), it utilizes high-quality alloy resistance wire (HRE) heating elements and an N-type thermocouple, ensuring accurate temperature control, efficiency, and durability for laboratory and industrial applications.

APPLICATIONS

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Advanced Ceramic Materials – Enables precise sintering, calcination, and densification of ceramics. Delivers uniform heating across three zones, ensuring superior mechanical strength and thermal stability for both research and industrial applications.

Nanomaterials & Functional Composites – Provides accurate, programmable thermal environments for synthesizing and modifying nanostructures, catalysts, and composites. Supports R&D in energy storage, electronics, and advanced coatings.

Semiconductor Processing – Facilitates high-temperature annealing, oxidation, and diffusion treatments for wafers and semiconductor substrates. Offers precise zone-controlled heating critical for microelectronics and optoelectronics.

Powder Metallurgy – Supports continuous small-scale sintering of metal powders into dense, uniform parts. The integrated feeding, rotation, and collection system makes it ideal for pilot production and alloy development.

Petrochemical & Catalyst Research – Suitable for catalyst activation, reforming studies, and thermal decomposition under controlled atmosphere or vacuum. Ensures reproducible performance for chemical laboratories.

Aerospace Materials Engineering – Enables processing of high-temperature alloys, ceramics, and composites used in aerospace applications. Validates thermal stability and mechanical strength under extreme thermal conditions.

Energy & Battery Materials – Provides thermal treatment for solid-state electrolytes, lithium-ion battery cathodes, and next-generation energy storage materials. Ensures consistency, purity, and high-temperature reliability.

Universities & Research Institutes – Ideal for multidisciplinary studies in physics, chemistry, materials science, and engineering. Combines automation, safety, and precision for advanced academic experiments.

Pilot-Scale Industrial Applications – Equipped with automatic feeding and discharging systems, it supports continuous small-batch processing for R&D-to-production transition. Perfect for scale-up testing and certification purposes.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel with a corrosion-resistant, electrostatically coated surface. A durable double-layer metal frame is integrated with a heat-insulated fan structure to maintain a low external surface temperature. Designed for horizontal operation, the furnace features a top-opening configuration for easy access.

Refractory Material

- The furnace includes a multi-layer insulation system made of lightweight alumina ceramic fiber and high-grade insulation board. It contains no asbestos and offers excellent thermal efficiency with minimal heat loss and reduced energy consumption.

Heating System

- Premium HRE spiral resistance wire heating elements are securely embedded in the furnace's inner walls, delivering radiant heat throughout the chamber for energy-efficient and long-lasting performance.
- Ring-type resistance wire heating ensures consistent temperature distribution.

Temperature Control Panel

- Equipped with advanced controllers designed for complex process requirements.
- Supports up to 30 programmable segments for automatic temperature curve control.
- Features over-temperature and fault alarms, along with automatic safety shutoff.

Rotary and Automatic Feeding System

- The furnace tube uses a gear-driven electric motor to rotate 360° at an adjustable speed of 12–20 rpm, ensuring even heat exposure. The furnace body is electrically tiltable, allowing for smooth material entry and discharge. An automatic screw feeder with adjustable speed delivers consistent material flow, and a collection unit at the tube outlet enables continuous processing.

TECHNICAL SPECIFICATIONS

Item	TT-RTF-60-12PRO	TT-RTF-100-12PRO	TT-RTF-150-12PRO	TT-RTF-200-12PRO
Tube Size	Φ60×1200mm	Φ100×1200mm	Φ150×1500mm	Φ200×1800mm
Heating Zone	440mm	440mm	600mm	800mm

Max Temperature	1200℃
Work Tempearture	1100℃
Heating Element	HRE high temperature alloy resistance wire
Chamber Material	Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration
Temperature accuracy	±1℃
Thermocouple	N type thermocouple
Temperature Controller	Intelligent microcomputer PID temperature control instrument, SSR voltage regulation control, PID parameter self-tuning function; programmable 32 program segments, program temperature rise, program heat preservation, program cooling
Heating Rate	1-20℃/min freely adjustment
Furnace Strcuture	Furnace temperature control integrated structure
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
Cerfiticate	ISO9001 CE SGS TUV
Standard Accessories	1、Furnace Body 1 set 2、Power cable 3 meter 3、Thermocouple 1 pc 4、Manual 1 pc 5、Furnace Hook 1 pair 6、High Temperature 1 pair
OEM	According to the output requirements of the actual material of the user, the customization of special specifications of the product can be realized

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