High-temperature intermittent rotary kiln

The main structure of the equipment includes the furnace shell structure, furnace chamber structure, furnace tube structure, silicon carbide roller drive structure, control system, heating and temperature control system structure, and others.

Equipment Composition	Basic requirements
Furnace body structure	1. The furnace shell has good temperature resistance and will not deform due to high temperatures during long-term use. It is easy to clean and its color is also good. The color scheme is reasonable and aesthetically pleasing, and the paint is free of bubbles and paint drips. 2. The transmission components are fully protected to avoid safety risks, and the electrical protection is complete; 3. The furnace shell structure is reasonable, avoiding long-term damage to local components (electrical components, hinges, clips, etc.). Overheating will affect the service life; 4. The opening of the furnace door should consider ease of operation to avoid inconvenience during high-temperature material handling, which could lead to overheating and burns. Safety issues such as injuries; if designed as a lifting type, the lifting height of the upper part of the furnace body is greater than 1000mm; If other structural forms are used, the furnace door opening angle needs to facilitate the insertion and removal of the quartz tube; and as far as possible... It may improve sealing performance and prevent uneven temperature distribution; 5. Install 1-2 observation mirrors on the furnace body to observe the rotation of the quartz tube inside; 6. Within the operating temperature range, the surface temperature of the furnace shell during heating, heat preservation, and cooling processes shall be ÿ45ÿ;

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Furnace structure	1. The furnace lining is made of vacuum-formed high-purity alumina lightweight material. Areas prone to material handling (furnace opening, furnace bottom) utilize lightweight hollow spherical alumina plates. This material offers high operating temperature, low heat storage, and durability. 1. Resistant to rapid heating and cooling, does not crack or flaking, and has excellent thermal insulation performance; 2. Employs a three-layer insulation system: aluminum silicate fiberboard, alumina fiberboard, and alumina (polycrystalline) fiberboard. 3. Four to six silicon carbide rollers are inserted inside the furnace. 4. The thickness of the insulation material should be carefully considered to avoid heat leakage problems;
Furnace tube and roller structure	1. The furnace tube is a quartz tube with a cap; see the drawings for dimensions. 2. The rollers are made of silicon carbide, with retaining rings welded to both sides or a reducing diameter, used to fix the quartz tube. To prevent left and right movement of the rotating quartz tube, see the drawings for dimensions; the silicon carbide rollers need to be designed by the manufacturer. The supplier should handle the procurement and assembly; ideally, it should be made with two rollers whose spacing is adjustable. To adapt to changes in the diameter of the quartz tube in the later stages; 3. The quartz tube is equipped with a turning plate welded every 90°, with staggered welding to ensure efficient powder turning. To prevent powder from sticking together and clumping;
Rotary transmission structure	1. The furnace body is equipped with a rotary transmission structure on both sides, with the transmission mechanism mainly based on friction transmission. Silicon carbide... The rollers, under load, drive the internal quartz tube to rotate. The transmission method must ensure that the silicon carbide rollers are subjected to radial loads. The force is small, avoiding cracking due to radial force and affecting service life; 2. The motor is equipped with a variable frequency motor, adjustable from 1-5 r/min, and can be set to forward and reverse rotation; 3. Two sets of rotating mechanisms are designed to operate independently, with each transmission running synchronously on both sides, simultaneously carrying... Operating silicon carbide tube
control system	1. The temperature control process can save 5 or more processes, each containing 30 or more temperature settings. It can be edited online; 2. The temperature control system features continuous PID regulation, thermocouple failure alarm, over-temperature alarm, and equipment real-time monitoring. Features include power display, temperature compensation setting, real-time temperature monitoring, and temperature curve display. Record and export historical data; 3. The control panel can be either touchscreen or keyboard and mouse-based; 4. Set up automatic power consumption calculation to automatically calculate the power consumption for each furnace cycle; 5. Equipped with an emergency stop button;

Heating and temperature control system	1. Meets operating temperature requirements of 1200−1400ý, with an intermittent process cycle: room temperature heating ý constant temperature. 2−8h ý Cool down to room temperature. 2. The heating rate is freely adjustable, with an adjustment range of: fastest heating rate 10 degrees per minute, slowest... The heating rate is 1 degree per hour (1 degree/h). 3. Three or more temperature zones, with each zone requiring a minimum uniform temperature zone length of 1.3m for the furnace tubes. Temperature field uniformity within the temperature uniformity zone is ±5ý, and temperature control accuracy is ±1ý. 4. The furnace heating elements use silicon carbide rods, arranged in parallel around the perimeter or top and bottom, with wiring on one side for convenience. Installation and replacement; 5. The temperature control system uses a silicon controlled rectifier (SCR) voltage regulation method for temperature control; 6. The temperature measuring thermocouple uses an S-type thermocouple, with a separate thermocouple line, which can be used for constant temperature control. Intermittently measure the temperature of the homogenization zone inside the quartz tube and calibrate the temperature compensation value;
other	1. One copy of the equipment installation requirements (including water, electricity, gas, ground, etc.) shall be provided with the equipment. One certificate of conformity, one equipment instruction manual, one operation manual, and electrical drawings (electrical). One copy of the schematic diagram (including input/output terminals, with terminal annotations); one copy of the CAD assembly drawing. One copy of the list of consumable parts (including prices), one copy of the maintenance manual, and one copy of the brand and model of standard parts. One packing list and one delivery list are included; a test report will be provided upon delivery of the equipment. 2. The electrical cabinet components should be equipped with fans for cooling, and the wiring should be laid out with proper spacing; scrambled or loose wiring is prohibited. Cable tray fixing; 3. The device has a communication network port, which can read key data of the device via Ethernet communication. 4. Accessories provided with the equipment include one crucible tong, one pair of high-temperature gloves, and two silicon carbide rods.

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