

Vertical continuous sintering furnace for microwave ferrite material

Abstract

The utility model discloses a vertical continuous sintering furnace for microwave ferrite material, which comprises a furnace body and a fireproof sagger for carrying products, and is characterized in that the furnace further comprises a furnace tube sleeved outside the fireproof sagger, and a heating temperature control circuit used for controlling the sintering temperature; the fireproof sagger can move up and down in the furnace tube which is vertically mounted; a heating rod is arranged on the outer side of the furnace tube; an insulating layer is arranged at the outer part of a heating area formed by the furnace tube and the heating rod; an inner insulating layer is arranged at the middle part of the furnace tube, and is positioned between the insulating layer and the furnace tube; and a transmission mechanism used for controlling the speeds of moving and taking out of the fireproof sagger is arranged at the lower part of the furnace body. The sintering furnace is vertically mounted, heat emits upwards and downwards during the heating process, and temperature lapses from the middle to the top and the bottom, under the conditions, products complete the processes from preheating and drying to warming, heat insulation and temperature reduction automatically from top down, and the energy conservation is remarkable and therefore the production cost is reduced.

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Claims (10)

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1. A microwave ferrite material vertical continuous sintering furnace, the furnace comprising a refractory sagger and carrying products (1), characterized by: further comprising a sleeve in which a refractory sagger (1) outside the tube (2) and heating temperature control circuit for controlling the sintering temperature, refractory sagger (1) is movable up and down in the inner tube (2), tube (2) is installed vertically, the outer tube (2) is provided with heating means region by the external heating furnace tube (2) with a heating rod (3) provided with insulation made of (7), the central tube (2) is provided within the insulation (6), the inner insulating layer (6) is located between the insulation layer (7) and tube (2), the lower furnace body is provided with (1) a refractory sagger actuator for controlling movement speed and removal.

2. A microwave ferrite material as claimed in claim 1, the vertical continuous sintering furnace, wherein: said inner insulating layer (6) made of corundum brick building, said insulation layer (7) using alumina lightweight brick building, the outer periphery of the insulation layer (7) is provided using the fiber layer (5) of masonry silicate fiber cotton.

A microwave ferrite material according to claim 12 or vertical claim continuous sintering furnace, characterized in that: the heating temperature control circuit includes a transformer, SCR module for setting and controlling the temperature and the sintering temperature control meter, ammeter, voltmeter and protective devices, thermoelectric heaters and temperature corner (23) components.

A microwave ferrite material according to claim 12 or vertical claim continuous sintering furnace, characterized in that: said transmission mechanism comprises a pallet guide sleeve, guide rods, chains, sprockets, a speed reducer speed motor and a transmission mechanism for controlling a refractory sagger (1) moving speed of a gear transmission mechanism or a hydraulic actuator.

5. A microwave ferrite material as claimed in claim 4, wherein the vertical continuous sintering furnace, characterized in that: said gear reducer is equipped with a handle.

A microwave ferrite material according to claim 12 or vertical claim continuous sintering furnace, characterized in that: the heating rod U-type molybdenum disilicide heating element as a heating rod (3).

A vertical microwave ferrite material according to claim 3, the continuous sintering furnace, characterized in that: the heating rod is a U-type molybdenum disilicide heating element as a heating rod (3).

A microwave according to claim 4, wherein the ferrite material requires a vertical continuous sintering furnace, characterized in that: the heating rod is a U-type molybdenum disilicide heating element as a heating rod (3).

A microwave according to claim 5, wherein the ferrite material requires a vertical continuous sintering furnace, characterized in that: the heating rod is U-molybdenum disilicide heating element as a heating rod (3).

10. A continuous sintering furnace according to one vertical or microwave ferrite material according to claim 1, wherein: the refractory sagger (1) and tube (2) is made of a material made of corundum.

Description

translated from Chinese

A microwave ferrite material vertical continuous sintering furnace

FIELD

The present invention relates to a sintered ferrite material device, in particular relates to a vertical microwave ferrite material preparing a continuous sintering furnace.

Background technique

Microwave sintered ferrite material is a critical step in the preparation of the material, as the material recipe and other conditions unchanged, the changes in the sintering temperature will determine the final properties of the product. Domestic microwave ferrite sintered material are used bell furnace. Bell furnace temperature uniformity,

simple operation, but it is an apparatus for cyclically operating, i.e., each time to go through a warmed cooling a heat unloading a product, such work cycle. This mode of operation is adapted to periodically sample and small batch production. In the continuous mass production but there are large fluctuations in product quality problems. Since each heat sintering process to be periodically changed, so that the consistency of product performance is difficult to control. Such materials cause great difficulties in assembling microwave devices, but also the performance of microwave components such fluctuations. Accordingly, there is a significant defect sintered ferrite material bell microwave oven. Although a tunnel type continuous kiln push plate operation to solve the problems described above Bell furnace, but currently the industry is very small microwave ferrite materials, lower yields, but also reached the degree of use of a pusher kiln to sinter the . In addition, tunnel kiln push plate there is a large investment, supporting power, large area, the problem of higher technical requirements.

Chinese Utility Model Patent No. ZL95245034.8 provides a continuous vertical sintering furnace, comprising a housing, a housing disposed within the furnace, the furnace tube furnace with a centrally disposed, filled with fiber insulation between the housing and the furnace, the furnace is disposed two relatively independent of the temperature section, provided with three vents between two warm section, which solves the problems similar continuous sintering of ceramic ptc functions and simplifies the sintering process ptc, etc. so that once the firing element. However, this invention is only applicable to the sintering temperature and the need for secondary surge drop of insulation products, and therefore difficult to apply microwave ferrite sintered material. SUMMARY

The present invention aims to provide a high temperature stability, low power consumption, simple structure, convenient operation, investment savings Microwave Ferrite vertical continuous sintering furnace.

The present invention the above technical problem is solved by the following technical scheme:

A microwave ferrite material vertical continuous sintering furnace, the furnace comprising a refractory sagger and carrying the product, which is characterized in that: it further comprises a sleeve on the outside of the tube and a refractory sagger heating temperature control for controlling the sintering temperature circuit, a refractory sagger is movable up and down inside the tube, the furnace tube is installed vertically, the outer tube is provided with a heating bar, heating zone constituted by an external tube and the insulating layer provided with heating rods, tubes disposed in the central inner insulation layer, the insulation layer is located between the inner layer and the insulation tube, the lower furnace of a transmission mechanism for controlling the movement and removal of refractory sagger speed.

Advantageously, the inner layer is made of corundum brick building insulation, the insulation layer of alumina lightweight brick building, the outer periphery of the insulation layer aluminum silicate fiber cotton masonry. With the above materials facilitate the strength of the furnace body, increase the service life, improved insulation effect and reduce heat loss. Central heating zone furnace body is provided with holes for mounting the corner of the thermoelectric temperature.

Preferably, the heating temperature control circuit includes a transformer, SCR module for setting and controlling the temperature table sintering temperature, ammeter, voltmeter and protective devices, thermoelectric heaters and temperature corner group

to make. Wherein the temperature controller with pid automatic adjustment, temperature control accuracy of soil rc.

Preferably, the transmission mechanism comprises a pallet guide sleeve, guide rods, chains, sprockets, a motor speed reducer, and a refractory sagger for controlling the moving speed, the transmission mechanism is a gear mechanism or a hydraulic actuator. Refractory sagger pallet carrier fastened to the tube, the guide rod guide set, driven by the driven pallet chain down motion; by moving the pallet and the motor speed reducer by active chain drive sprocket, the drive axis, the driven sprocket and the driven drive chain composition; the pallet in fixed guide sleeve, the guide bar can be moved up and down at the bottom of the furnace tube; moving speed of the pallet with the motor speed setting and control; controlling the sintering temperature is set and controlled by the electronic control instrument box temperature table. After setting the temperature of the sintering process without adjustment to maintain constant temperature sintering, is controlled by the movement speed of the lift is set, the length of the cooling rate and holding time.

Advantageously, the gear reducer is equipped with a handle, in a case where the motor speed is stopped, the control handle may shake up and down movement of the pallet.

Preferably, the heating rod U-type molybdenum disilicide heating element as a heating rod 3, the heating temperature is conducive to the stability and improved temperature uniformity.

Preferably, a refractory sagger and tubes are made of a material made of corundum, help to improve life and reduce failures.

When using the present invention, the product contained in the refractory sagger, the tube into the furnace from above the furnace, the heating zone is accomplished by the middle after the sintering furnace tube was removed from the furnace tube under repeated movement into and out of a refractory sagger can not change in the temperature, the sintered product is continuous without stopping the furnace. Because, from the center of the product through the furnace tube, a heating furnace tube four weeks, good temperature uniformity, within ± 3 °C, the sintered product to improve consistency. Because of vertical installation, the heating process for distributing heat in the vertical, and the intermediate temperature is automatically decremented down and up, under such conditions the products from the top down of a pre-heating a heat drying a cooling process process, significant energy saving, reducing the production cost.

Accordingly, the present invention has: 1, rational design, simple structure, small footprint, low power matching, the effect is obvious; 2, uniform heating, the temperature difference is small, the heat of the heating process has been fully utilized, significant energy saving; 3, simplified temperature control program, reducing the temperature fluctuations, the increase rate of qualified products; 4, without the need of changing the heating temperature and shutdown to achieve a continuous sintered product to improve the stability and consistency of product performance. 5, the present invention and the same power bell

Unit energy consumption compared to furnace 6 can save more than 60%, the yield increased by 6 times, greater reduction of the sintered product cost.

BRIEF DESCRIPTION

1 is a schematic structural diagram of a novel present invention. Detailed ways

The following Examples, in conjunction with the accompanying drawings, the present invention will be further specifically described technical solutions.

Example:

1 A ferrite material vertical continuous microwave sintering furnace, comprising a furnace, a refractory sagger product carrier 1, set on the outside of a refractory sagger heating furnace tube 2 and the sintering temperature for controlling

Temperature control circuit, a refractory sagger movable up and down inside the furnace tube 2, and a refractory sagger tube 2 is made of a material made of corundum. Furnace tube 2 is vertically installed, the outer tube 2 is provided with a heating bar, heating rods embodiment of the present embodiment employs a U-shaped molybdenum disilicide heating rod 3. Cold heating rod 3 is fixed to the end of the heating rod 4 in the sleeve. External heating zone 2 consisting of the heating furnace tube is provided with insulation rod 7, the central tube 2 is provided with internal thermal insulation layer 6, the insulating layer 7 and the insulating layer 6 is located between the furnace tube 2, a lower furnace provided for controlling the furnace tube 2, through a refractory sagger actuator movement speed and removal. The inner insulating layer 6 made of corundum brick building, the insulation layer 7 is made of light aluminum oxide brick building, the outer periphery of the insulation layer 7 is provided with the fiber layer 5 of aluminum silicate fiber cotton masonry. Heating temperature control circuit includes a transformer, SCR module for setting and controlling the sintering temperature of the temperature controller, ammeter, voltmeter, protective devices, thermoelectric heaters and temperature corner 23 composition. The transmission mechanism includes a support plate 18, guide sleeve 14, guide rod II, chain 17, sprocket the IO, the handle 20 and the gear unit is equipped for controlling a moving speed of the refractory sagger speed motor 19.

1 single refractory sagger height of 40~100 mm, a refractory sagger stacked together vertically, carried by the pallet 18; pallet 18 by a fixed guide sleeve 14 on the rod 11, driven by a drive chain 17 moves up and down; pallets 18 17, driven sprocket 10, drive shaft 15, the drive sprocket 9 and active chain 12 driven by a combination of a chain driven by the motor 19 and speed reducer 20 coupled to the drive; shaft 15 by a bearing housing 8 fixed to the frame 21, the rod guide fixed to the frame 21 II; 18 when the pallet moves between the upper and lower, limit switch 16 is protected; and when the pallet 18 is moved downward discharge needs, with flapper 13 refractory sagger 1 through an upper portion of the notch, the upper portion of the refractory sagger limiting, one down, then continue down the pallet 18, the vertical separation

between the refractory sagger 1 interposer 13, the pallet can be easily removed 1 on a refractory sagger 18; when a refractory sagger on a pallet 18 is removed, to change the direction of movement of the pallet 18 so that rapid upward movement (manual operation), when the pallet 18 contacts the upper portion of the refractory sagger 1, the moving pallet 18 is stopped, the card 13 is removed, then placed on the respective upper tubes refractory sagger 1, the pallet 18 continues to open Under slow-moving. Speed motor 19 by the moving speed is set. The sintering temperature is set and controlled by the temperature controller 22 electrical control instrument box. Electric control box 22 is installed in the instrument transformer, SCR (or modules), temperature controller (automatic control with PID) and the ammeter, voltmeter, and other protective devices, and thermoelectric heating rod 3 and the temperature in the furnace corner heating temperature control circuit 23 composition. After setting the temperature of the sintering process without adjustment to maintain constant temperature sintering, to control the length of the holding time set by the moving speed. Repeat the above operation and a refractory sagger on a refractory sagger, can not change the temperature, the sintered product is continuous without stopping the heating.

In particular the present invention is described in the embodiments are merely spirit of the present invention will be illustrated. Those skilled in the art of the present invention can be made to the specific embodiments described various modifications or additions, or a similar alternative embodiment, but without departing from the spirit of the invention or exceed defined in the appended claims range. While the present invention has made detailed explanation and cited some specific examples, but those skilled in the art, as long as not departing from the spirit and scope of the present invention may be various changes or modifications are apparent.

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Cited By (4)

Publication number	Priority date	Publication date	Assignee	Title
CN102419085A *	2011-12-20	2012-04-18	湖南省中晟热能科技有限公司	Microwave and electrical dual-firing top-hat kiln
CN102425939A *	2011-12-20	2012-04-25	湖南省中晟热能科技有限公司	Microwave heating bell kiln
CN102425934A *	2011-12-20	2012-04-25	湖南省中晟热能科技有限公司	Microwave heating high-temperature vertical kiln
CN106152787A *	2015-04-14	2016-11-23	上海六晶科技股份有限公司	A kind of equipment of feasible region sintering
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
Menezes et al.	2007	Microwave hybrid fast sintering of porcelain bodies
CN102677168A	2012-09-19	Thermal-field-adjustable furnace for growing crystals through kyropoulos method
CN102728532A	2012-10-17	Method for preparing crucible sintering-free coating for polycrystalline silicon cast ingots
CN101358275A	2009-02-04	Upper layer heat exchange type continuous annealing furnace
CN103411427B	2014-11-05	Efficient energy-saving high-temperature electric furnace with lifting furnace door and full-fiber hearth
CN201779976U	2011-03-30	Bell cover type resistance furnace
CN103453764B	2014-12-03	High sintering roller way kiln
CN201942778U	2011-08-24	Multi-temperature zone sapphire single crystal growth furnace
CN202390535U	2012-08-22	Continuous vacuum plating facility with heating device
CN203083344U	2013-07-24	Dry pressing isomerism magnetic tile full-automatic roller way kiln
CN101008100B	2010-05-19	Temperature gradient method rotary multiple crucible crystal growth system
CN101285654B	2010-06-09	Microwave sintering apparatus and method
CN202271646U	2012-06-13	Screen printer utilizing automatic running to achieve secondary printing
CN202576521U	2012-12-05	Degassing equipment
CN201779996U	2011-03-30	Sagger of sintering ceramic capacitor media
CN101545709B	2011-01-05	Method for microwave drying of high-titanium slag
CN201254620Y	2009-06-10	Continuous polysilicon purification crystallization furnace
CN201885563U	2011-06-29	Belt-shaped furnace
CN102268729A	2011-12-07	450 and one kind of ingot ingot furnace process
CN101311343A	2008-11-26	Vacuum furnace suitable for preparing large-diameter high-purity polysilicon ingot
CN200964448Y	2007-10-24	Crystalline silicon chip diffusion furnace
CN2808928Y	2006-08-23	Continuous high-temperature quenching device
CN103143489B	2014-08-27	Shelf type thermocuring machine
CN1352374A	2002-06-05	Continuous microwave fritting furnace
CN1974882A	2007-06-06	Monocrystal growing furnace in multiple falling crucible method

Priority Applications (1)

Application	Priority date	Filing date	Title
CN2009201206970U	2009-05-25	2009-05-25	Vertical continuous sintering furnace for microwave ferrite material

Applications Claiming Priority (1)

Application	Filing date	Title
CN2009201206970U	2009-05-25	Vertical continuous sintering furnace for microwave ferrite material

Legal Events

Date	Code	Title	Description
2010-03-03	C14	Grant of patent or utility model	
2019-06-18	CX01	Expiry of patent term	

Concepts

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