

Technical Specification for Model RSK3003Z-09A Solar Cell Drying and Firing Furnace



HengLi RSK3003Z-09A furnace is widely used for solar cell contact drying, firing and metallization.

The quoted unit features 10950 mm of total length comprised of 9 independently controlled heating zones. This model is a fast firing furnace integrated with a drying oven. The drying oven has 4500 mm heated length comprised of 3 heated zones, and firing oven has 2400 mm heated length comprised of 6 heated zones. Wafers are carried through the furnace on a 300 mm wide belt with 25 mm (1 inch) of product clearance over the belt.

A color monitor, personal computer and Windows based furnace control software for full temperature, conveyor speed, monitoring and setting of profiling, and recipe storage. The CPU and monitor are mounted on a panel at the exit end of furnace. Each furnace zone is monitored and controlled using a type "K" thermocouple in each heated zone. These ports connect to the Microprocessor, described above so that profiling thermocouples can be connected and used with the software to capture, display, printout, and store profiles. Product cooling is accomplished by utilizing special water and air mixed cooling module, including exit curtain and baffle assembly. The standard cooling is facility water at 100LPM/6-8BAR/20 ° C.

ADVANTAGES

With IR lamp Heating element, power distributing, special cooling and stable driving design, the furnace can work up to 6000 mm per minute for contact pastes firing, which increases the machine turnover capacity obviously. Specially designed heating layout and atmosphere system and chamber structure works ultra effectively for P.V. product manufacturing.

PERFORMANCE SPECIFICATION

1. Maximum Temperature Rating: 950 ° C



2. Normal Operating Temperature: 100~900° C
3. Protections: over temperature, open T.C., belt and gas slip
4. Cooling Modules: Water-cooling. Use facility water at 100LPM/6-8BAR/20 ° C
5. Atmosphere System: 12 independently adjustable gas inlets for uniform flow distribution across entire chamber width.
6. Belt width: 300 mm
7. Clearance above Conveyor Belt: 25mm(1")
8. Belt Speed Range: 1000~6000mm per minute
9. Drive System: variable frequency control, digital speed display.
10. Exhaust System: several 2"dia. air powered venturi exhauster. Full chamber width exhausting.
11. Sintering condensate collection trap. Exhaust flow adjust by amplified gas.

FURNACE LAYOUT

1. Drying oven: 4500 mm, 250-350 ° C
2. Firing zone: 2400 mm, 400-950 ° C
3. Cooling zone: 4200 mm
4. approximate length of furnace: 13970mm

TABLES

1. Loading table is 1500 mm long and 960 mm wide.
2. Un-loading table is 1500 long and 960 mm wide.
3. Tables are stainless steel.
4. Entrance table has three thermocouple ports. Thermocouple ports are connected to the microprocessor so that profiling thermocouples can be connected and used with the Windows based DCS system to capture, display, store, and print profiles.

CONVEYOR SYSTEM

1. Belt material: Cr20Ni80 stainless steel
2. Belt Mesh: Balanced Spiral, V style
3. Belt Speed: 1000-6000 mm/ min. Belt speed is programmable in mm/min or IPM with readout on the PC. Deviation from set point alarm is programmable. Range of speeds specified refer to adjustability of belt speed only, and does not imply compliance with load and temperature requirements over the range of belt speed adjustability. An alarm will alert stoppage of conveyor belt.
4. Speed Control: variable frequency motor controller, digital displayed

TEMPERATURE CONTROLS

1. Each zone is controlled with a single loop intelligent temperature controller. The controller is a high performance single ASIC with full auto-tuning PID.
2. Each furnace zone is monitored and controlled using a type "K" thermocouple in the heated zone.

ATMOSPHERE CONTROL SYSTEM



The furnace operates in compressed dry air condition. There are 20 routes separately into different zones according to the requirements of process. Every rout flow is adjustable by a manual valve and displays the flow rate in digital.

ELECTRICIAL SPECIFICATION

1. Connected Load: 160 KVA
2. Operating from 380V, 3-phase, with 5 wire 50Hz. Other power condition may available as the customer requirement.

PHYSICAL CHARACTERISTICS

1. Off-white color.
2. Approximate weight is 3500 kg.

OPTIONS

1. Ultrasonic belt cleaner with dryer:
This option is for cleaning of belt. It includes ultrasonic bath, belt level controlling assembly, wet belt dryer and water level controlling components.
2. Load out alarm:
If load is out from furnace, but no guy to pick them, the function will acted.
3. Temperature Analyzer:
The Analyzer is an independent instrument, which can sample 6 channel K type T.C input, and store the dates in a pre- setting period. You can check and analyze the dates in the instrument, or transfer it to your computer using the software supplied. With the software supplied, you can check, compare, analyze, and profile the sampled temperature. You can use the analyzer to check the profiling module in furnace computer system. Also you can use it to check temperature profiling for other furnaces and ovens.
4. UPS system or manual conveyor assembly:
It is for the storage of dates and transmission of the treatment parts out of furnace after power failure.