

Guoju Electric Furnace - Juxing

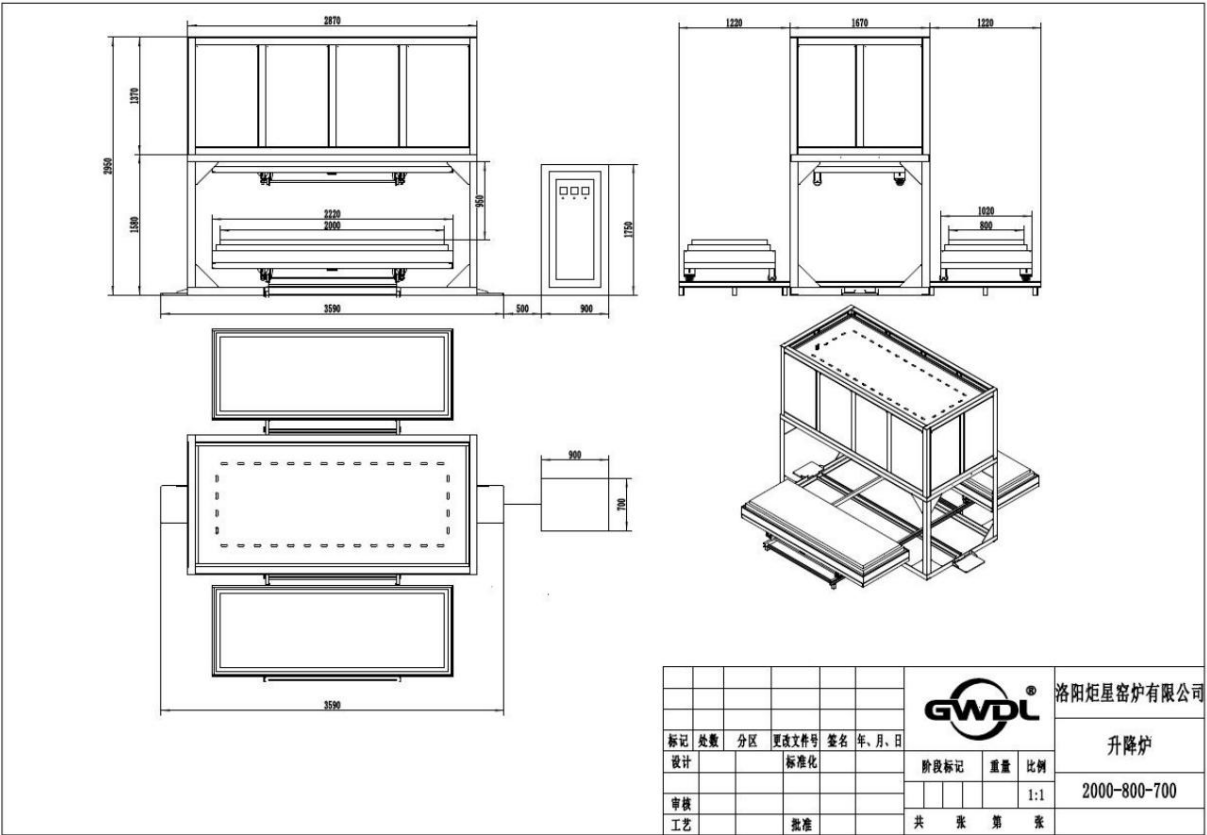


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Kiln Main Website: [www.gwdl.com](http://www.gwdl.com)

Contact information: 0379-69936789

Corrosion-resistant, high-temperature precision energy-saving lifting electric furnace



The GWL-YS series 1200-degree lifting furnace, as shown in the figure, features a separate design for the control system and furnace chamber.

The lining is made of vacuum-formed high-purity alumina lightweight material.

It uses a high-temperature, hydrofluoric acid-resistant silicon carbide heating element; it is specifically designed for universities and research institutes.

Laboratories and industrial and mining enterprises use materials in ceramics, metallurgy, electronics, glass, chemicals, machinery, refractory materials, and new materials.

Material development, special materials, building materials, metals, non-metals and other chemical materials are sintered and melted.

Specialized equipment developed for analysis and production.

The control panel is equipped with an intelligent temperature regulator that controls the power switch and the main heating start/stop button.

This product features a voltmeter, ammeter, and computer interface for real-time monitoring of the system's operating status.

Thanks to its integrated circuitry, it operates in a good environment, is highly resistant to interference, and maintains a furnace shell temperature of  $\pm 45^{\circ}\text{C}$  at its highest temperature.

Improved working environment, microcomputer program control, programmable curves, fully automatic heating/cooling, during operation

Temperature control parameters and programs can be modified, making it flexible, convenient, and easy to operate.

Temperature control accuracy:  $\pm 1^{\circ}\text{C}$  with no overshoot. Fast heating rate, fastest heating speed.

$\leq 45^{\circ}\text{C}/\text{min}$ .

The furnace lining is entirely made of vacuum-formed high-purity alumina lightweight material, which has high operating temperature and low heat storage capacity.

It is resistant to rapid heating and cooling, does not crack or slag, and has good heat preservation performance (energy saving effect is more than 60% of that of old-fashioned electric furnaces).

With a reasonable structure, double-layer furnace jacket, and air-cooled heat dissipation, the test cycle can be greatly shortened.

| <div>category</div> <div>parameter</div> | 1200 degrees  |
|--|---|
| Maximum operating temperature;           | 1200 degrees  |
| long-term operating temperature          | 1150 degrees  |
| control range; number of                 | 80 to 1000 degrees  |
| temperature sensing                      | Thermocouple type K, temperature measurement range 0-1320 degrees Celsius |
| elements; number of control              | 5 temperature control systems   |
| units; heating element mounting          | All sides + bottom  |
| position; temperature control accuracy.  | $\pm 1^{\circ}\text{C}$ degree (integrated circuit control, no overshoot) |

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|   |   |
|---|---|
| Furnace temperature uniformity                              | ±1 degree Celsius (depending on furnace size; larger furnaces can use multi-point control for better temperature uniformity). Heating rate is freely adjustable, ranging from a maximum of 20 degrees Celsius per minute to a   |
| heating rate  | minimum of 1 degree Celsius per hour. High-temperature alloy resistance wire (imported, containing molybdenum, with a surface temperature reaching 1500 degrees Celsius) or hydrofluoric acid-resistant silicon carbide rods are used as heating elements. U-shaped,  |
| Heating element   | uniform-diameter silicon carbide rods are non-metallic high-temperature heating elements made primarily of high-purity α-SiC. They feature rapid heating, high thermal efficiency, long lifespan, resistance to deformation at high temperatures, easy installation, operation, and maintenance, and a maximum temperature of 1500 degrees Celsius. The furnace body is machined using CNC machine tools, undergoing polishing, grinding, pickling, phosphating, powder coating, and high-temperature baking. It features a two-tone design, a novel and attractive appearance, and boasts advantages such as oxidation resistance, acid and alkali resistance, corrosion resistance, high-temperature resistance, and easy cleaning. The   |
| Furnace body  | furnace body adopts an internationally advanced air-cooled double-layer structure. Effective air-cooling guide baffles ensure overall cold air circulation within the furnace shell, ultimately cooling the conductive plates of the heating elements before they are discharged from the furnace body, preventing high-temperature oxidation of the conductive plates and ensuring a good working environment. This lifting furnace can utilize a dual lifting   |
| Furnace body structure                                      | platform, allowing for alternating loading platforms at high temperatures, resulting in significantly improved work efficiency and energy savings. The loading platform's entry and exit are controlled by an electromechanical transmission, with adjustable speed, good stability, and high precision. The loading platform's lifting is achieved through hydraulic lifting for smooth operation.   |
| Double loading station                                      |   |
|   |   |
|   |   |
| The charging platform is combined with the furnace opening. | The furnace door opens by vertical lifting from the bottom; the charging platform and the furnace opening have 3-4 layers of tapered steps with soft seals, and elastic high-temperature sealing strips are arranged on the steps to effectively absorb the expansion of the refractory materials at the furnace opening and the charging platform; the charging platform is made of vacuum-  |
| Refractory material for loading platform                    | formed high-purity hydrofluoric acid corrosion resistant material and high-purity alumina hollow spherical plate, which ensures both heat preservation and load-bearing performance.  |
| Refractory materials  | The furnace lining is made of a material resistant to hydrofluoric acid corrosion. Lightweight hollow spherical alumina plates are used in areas prone to material handling and heavy loads (furnace opening and bottom), offering high operating temperatures, low heat storage, resistance to rapid heating and cooling, and excellent insulation performance (energy saving is over 80% of that of traditional electric furnaces). The heating element coating inside the furnace is made of   |
| Furnace corrosion protection                                | corrosion-resistant material, and the high-temperature materials inside the furnace also use a three-layer insulation system: aluminum silicate fiberboard, alumina fiberboard, and   |
| thermal insulation materials                                | hydrofluoric acid-resistant refractory material. Energy saving is over 80% of that of traditional electric furnaces. For long-term uninterrupted operation, with the outer shell temperature below 45 degrees Celsius, an integrated modular control unit is used, ensuring accurate control. A   |
| Furnace shell temperature                                   | dual-loop control and dual-loop protection system is designed, providing protection against   |
| Protect   | overshoot, over-adjustment, under-adjustment, thermocouple breakage, phase loss, overvoltage, overcurrent, overtemperature, current feedback, and soft start.   |
| control   | Employing closed-loop technology with thyristor module trigger control, including phase-shift trigger control or zero-crossing triggering, the output voltage, current, or power is continuously adjustable, exhibiting constant voltage, constant current, or constant power characteristics. The current loop is the inner loop, and the voltage loop is the outer loop. When a sudden load is applied or the load current exceeds the current limit, the output current of the voltage regulator is limited to the rated current range, ensuring normal operation of the output and the voltage regulator. Simultaneously, the voltage loop also participates in regulation, limiting the output current of the voltage regulator to the rated current range, maintaining constant output current and voltage with sufficient adjustment margin. This protects heating elements from excessive current and voltage surges, achieving a safe and reliable control effect. |

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|                              |   |
|------------------------------|---|
|                              | Accuracy.   |
| Display parameters           | Real-time temperature, temperature range number, time interval, remaining time, output power percentage, voltage, current, etc.   |
| Button                       | It features buttons with a lifespan exceeding 100,000 uses and includes LED indicator lights.   |
| Temperature profile setting  | It adopts an intelligent temperature controller, equipped with various adjustment modes such as standard PID, artificial intelligence adjustment APID or MPT, and has self-tuning and self-learning functions. It has excellent control characteristics with no overshoot and no undershoot. It has 30-segment program control function, which can realize temperature rise and fall control with arbitrary slope. It has programmable/operable commands such as jump (loop), run, pause and stop, and allows modification of the program at any time during program control operation. It adopts an artificial intelligence adjustment algorithm with curve fitting function, which can obtain a smooth curve control  |
| Multiple curve inputs        | effect. The 50-segment program control function can input settings: 30 (50) segments for one curve, 14 (28) segments/line for two curves, 9 (15) segments/line for three curves, and 5 (9) segments/line for five curves. Multiple curves can be input at the same time and can be called at will when in use. The electric furnace is  |
| Communication interface      | equipped with an RS485 communication interface, with a communication distance of up to 1200 meters. It can be controlled via computer for starting, pausing, stopping, setting and reading heating curves, and parameter settings. It is highly reliable and easy to operate. The computer screen displays a wealth of information, including measured values, setpoints, output values, time intervals, interval numbers, heating curves, and power percentage curves. Heating curves can be stored on the computer and can be recalled and modified at will, along with setpoints and commonly used parameters. Historical curves and reports can be filtered by time interval (1 second to 1 hour) and can be stored long-term. The package includes two heating elements, two |
| Random accessories           | sets of rods, one crucible tong, one pair of high-temperature gloves, one touchscreen control system, one exhaust port, and one firing plate. The electric furnace comes with a one-year free   |
| Warranty coverage and period | warranty; the heating elements are not covered by the warranty.   |

| name                     | Specifications and Models | Furnace dimensions (length, width, height) in mm | External dimensions mm | Voltage ACV | power kw | weight (kg) |
|--------------------------|---------------------------|--|------------------------|-------------|----------|-------------|
| Lifting electric furnace | GWL-1000SS2000/800/700    | 2000x800x700 (See drawing 380)                   |                        |             | 120      | 52000       |