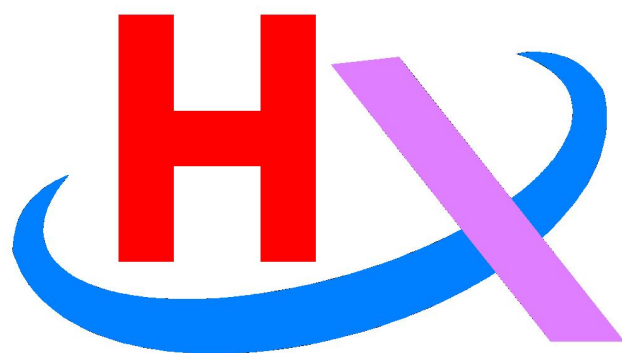

Horizontal fuel oil gas hot blast stove



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HENGXIN

Installation instruction

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The product description

LRF series of hot blast stove by my company and the department of thermal engineering, tsinghua university hua technology development co., joint design, USES the long spiral groove plate heat transfer technology, combustion chamber and the heat exchanger design into an organic whole, compact structure, innovative forms, reasonable, thermal strength, heating up fast, high efficiency, easy installation and operation, hot air is clean, but stable. The hot blast stove can provide clean hot air, providing an ideal direct heat source for drying in all walks of life. The temperature of hot air can be selected according to the drying process requirements. Widely used in chemical, food, medicinal materials, tobacco and all kinds of industrial materials drying, printing and dyeing, painting industry drying, workshop, auditorium, farm shed, animal shed and other building heating and underground mining areas, underground engineering and other places to reduce the temperature of humidity.

I、 Main technical parameters

See the technical documents of corresponding models.

II、 Working principle, main equipment and performance characteristics

I、 The working principle of

The combustion chamber and heat exchanger of the hot blast stove are integrated, and the whole steel plate multi-layer sleeve structure is adopted. The lower part of the furnace center is the combustion chamber, and the upper part and the surrounding part are the annular heat exchanger. The air and flue gas are double return, and the heat exchange is carried out in their own way. In order to improve the heat efficiency, multi-head spiral groove heat transfer technology and turbulent flow principle are adopted to reduce the thickness of laminar flow, so that the air and flue gas constantly change the direction of rotation in the process of travel, and the heat transfer effect is greatly enhanced.

Main working process is: the fuel to produce high temperature flue gas in the chamber of a stove or furnace, via electronic ignition, in under the action of fan into the smoke ring, after heat exchange with the outside air, the flue discharge air, cold air into the furnace heat exchange, the roof into the lateral air chamber of a stove or furnace ring, by the hot air outlet piping to clean hot air supply facilities.

II、 The main equipment

The hot blast stove is mainly composed of grate, firebrick, reflection plate, hot blast stove body, flue and air inlet pipe, dust collector, chimney and its support, induced draft fan (including regulating valve), blower (including regulating valve) and special temperature measuring instrument, etc.

III、 The performance characteristics of

- 1, with anthracite as fuel, smoke exhaust approximately colorless, new environmental protection.
- 2, with clean hot air as the dry medium, no pollution.
- 3, low energy consumption, high thermal efficiency.
4. Automatic test and display.
- 5, the operation is simple, easy to use, all the supporting equipment is made in China, its performance indicators reach the domestic advanced level.

III、 Installation instructions

I、 Preparations before installation

After the hot blast stove is delivered to the site, the following preparations must be made before installation in order to run quickly:

1. Staffing

Hot blast stove installation must be responsible for a person, furnace workers to participate in, and equipped with fitter, heavy, cold work, welders and auxiliary workers.

2. Organize relevant personnel to learn materials

Organize relevant personnel to be familiar with hot blast stove drawings, installation and operation instructions and other technical documents to understand and master installation, lifting, operation and other matters.

3. Determine the installation location

1) The installation site should be close to the hot spot to shorten the hot air pipeline, reduce the infrastructure cost and reduce the heat loss of the pipeline.

2) Convenient storage and transportation of fuel.

3) The road is clear when the hot blast stove is installed and transported.

4) The layout of the hot blast stove room should have sufficient light, good ventilation, and the ground should not be flooded. In order to ensure the convenience of operation, operation and maintenance, there is 4-5 meters in front of the furnace, 1.5 to 2 meters behind the furnace and 2 meters on the left and right sides. The height of the hot blast stove room should not be lower than the height of the furnace by 1 meter.

5) It is strictly prohibited to store toxic, flammable and explosive articles in the hot blast stove room.

6) The doors and Windows of the hot blast stove room should be opened outwards, and the rest room and Windows should also be opened outwards.

4. Foundation preparation

Construction of ground diagram, the datum line of hot blast stove body installation is marked, and the hot blast stove foundation is poured with concrete. The installation of auxiliary machine should be carried out in accordance with the requirements of the operation manual of auxiliary machine. The foundation of auxiliary machine should be subject to the physical object, and the foundation of auxiliary machine should be poured.

5. Equipment acceptance

1) After the hot blast stove is delivered, the parts and components should be checked according to the list of the manufacturing company, the integrity of the equipment should be checked according to the installation drawing of the hot blast stove, and the large pieces of the hot blast stove should be checked whether they are damaged or deformed during transportation. In case of damage, deformation, etc., the installation department refuses to install.

2) If the hot blast stove body needs to be lifted, its lifting capacity shall not be less than the body weight.

II、 Installation of hot blast stove body

When the hot blast stove is placed on the horizontal foundation, the furnace body should be perpendicular to the ground, and its inclination should not exceed 10mm. Otherwise, the lower side should be raised. The center of the hot blast stove body should be perpendicular to the center of the foundation, and the deviation should not exceed 5mm.

III、 Masonry of furnace wall

1) The installation site should be close to the hot spot to shorten the hot air pipeline, reduce the infrastructure cost and reduce the heat loss of the pipeline.

2) Convenient storage and transportation of fuel and ash.

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- 3) The road is clear when the hot blast stove is installed and transported.
 - 4) The layout of the hot blast stove room should have sufficient light, good ventilation, and the ground should not be flooded. In order to ensure the convenience of operation, operation and maintenance, there is 4-5 meters in front of the furnace, 1.5 to 2 meters behind the furnace and 2 meters on the left and right sides. The height of the hot blast stove room should not be lower than the height of the furnace by 1 meter.
 - 5) It is strictly prohibited to store toxic, flammable and explosive articles in the hot blast stove room.
 - 6) The doors and Windows of the hot blast stove room should be opened outwards, and the rest room and Windows should also be opened outwards.

IV、 Installation of blower, induced draft fan, hot air pipe and flue

First, the blower, induced draft fan, dust collector in place, and fixed with anchor screws, on-site assembly and connection of flue, hot air pipeline, each flange joint embedded asbestos rope, ensure strict, to prevent air leakage. After the blower and induced draft fan are installed, check whether they are stuck, leakage and other defects, and then switch on the power supply for test run, check whether the motor steering is correct, whether there is friction phenomenon, and whether the motor temperature is normal. The running time of induced draft fan in cold state operation and cold furnace starting should not exceed 5 minutes, and the adjusting door should be turned down to avoid burning out the motor.

The steel chimney can be installed above the outlet of induced draft fan, but the weight of the chimney must be supported by steel frame, and the induced draft fan shall not bear.

V、 Electrical control cabinet installation

Electrical control cabinet should be checked in detail before installation.

1. Whether the appearance of the electric control cabinet is damaged, whether the button marks are complete, whether the internal components and lines are damaged or confused, and whether the wiring is clearly marked.
2. Whether the instrument conductor of the electric control cabinet is complete and

damaged.

3. After the electric control cabinet is installed in place, wiring should be carried out according to the requirements of the drawings and instructions. The box shell should be grounded, and the power test can be carried out under the condition of ensuring the insulation.

IV、 Operation method

I、 Check hot blast stove before ignition

- 1, there are no sundries in the furnace;
2. Whether the firebricks and the reflecting plate are in good condition;
3. Whether the wiring of the fan is correct and whether the running state is good;
4. Whether all equipment is normal.

II、 oven

Oven is an important, meticulous work, should be carried out seriously according to this regulation, do not be impatient and rash, new inside the furnace or replace firebrick and reflection plate, should carry out oven, time is generally 4 hours.

- 1) Do not start the flue induced draft fan when drying the oven, only open the regulating valve to make it open to the maximum.
- 2) the grate piled dry wood or wood chips, ignition and combustion, burning appropriate add wood or wood chips, so that the top of the smoke chamber temperature is not greater than 80°C.
- 3) After the completion of the oven, add coal to heat up according to the requirements of heating equipment.

III、 The ignition

Different types of boiler its coal consumption is different, according to the size of heat and load requirements to determine the coal interval, the coal into the furnace must be grain coal, particle size 15~65 mm, uniform size, coal content is not more than 5%, according to the amount of coal consumption to determine the slag time, times and

slag amount. The general requirements of frequent fire, frequent investigation, observation of combustion chamber fire color and combustion status through the fire hole, timely adjustment of the size of the primary air and secondary air volume, the size of the secondary air volume is particularly important for gas combustion.

When hear the sound of the gas combustion fast variable hours, may be burning is not prosperous, the first close the blower, then throw a handle event grate over several times back and forth, if feel throw easily, grate surface slagging, empty tent phenomenon is possible at this time to open the oven door to dial the fire, slag thickness should not less than 200 mm, such as when the slag is not burning hot, should stop slag, Close the slag removal door tightly, open the upper furnace door to add coal, before adding coal, first burn the ignition coal on the protective exhaust, then open the blower, open the air door for 2~3 minutes, then close the air door, open the coal inlet for 2~3 minutes, and then add coal. Closing the fan and opening the coal inlet is a continuous action, and cannot be delayed in the middle. If closing the air valve is delayed for a period of time and then opening the coal inlet, it may cause the danger of gas deflagration. When opening the filling port, the operator must be at the opening side of the filling port and open the skylight at the same time to avoid the danger of gas leakage to the operator.

When adding coal each time, the air regulating door should be closed once, and then the blower should be closed after five minutes, so that the secondary air can blow out the unburned gas and residual gas in the furnace hall. After about ten minutes, the door of the furnace should be opened. In particular, when opening the furnace door, the operator shall not stand in front of the furnace door; When looking into the furnace near the door of the furnace, the face of the person should avoid the front side of the fire hole as far as possible to prevent the flames from shooting out. After adding coal, close the furnace door and turn on the blower to let the coal burn slowly. At this time, the air inlet of the blower is opened to 50%. After half an hour of operation, the air inlet of the blower is fully opened, and the boiler enters normal operation. The electronic igniter is an automatic device. It works automatically when the blower igniter is started and stops working automatically after the gas is normally burned in the furnace. If the combustion chamber fire out, automatic control system alarm, at this time the stoker should timely check the cause, so that the normal operation of the furnace. Stokers should often check and test the automatic ignition system, in case of failure, the furnace hall shot (explosion) phenomenon (remember to

do "fire and gas", rather than "gas and fire").

IV、 Safe and economical operation

1. With the normal combustion of coal, the temperature keeps rising, and the outlet temperature of hot air shall not be higher than the maximum service temperature marked on the nameplate.
2. "Three furnace, seven furnace", the key of hand furnace is burning. Therefore, the stoker should do "three frequently", "four fast". "Three" is: often add coal, often pull fire, often poke fire. "Four fast" is: open and close the furnace door fast, but the action is light; Add coal fast, to be evenly distributed; Pull fire action fast, no string of cold air mouth; Slag quick, pay attention not to damage the furnace wall. To ensure the stability of hot blast stove performance, reduce coal consumption.

V、 The furnace

There are generally three kinds of furnace shutdown: temporary shutdown, emergency shutdown and normal shutdown.

Temporarily stop the furnace: lunch break, night, short or stop heating thermal equipment for short periods of time, can use pressure fire solution to stay (stop induced draft fan, close the regulating valve, stop blower again when hot air outlet temperature is lower than 50 °C), so, when rest end or heat to equipment need heating, can with the fastest speed back to normal operation.

Emergency shutdown: in the operation of a sudden power failure or hot equipment has an unexpected fault need maintenance, emergency shutdown of the furnace. Stop the flue induced draft fan, and make its regulating valve open to the maximum, pressure the fire, open the furnace door. Power failure is extremely avoided in operation, because power failure will greatly reduce the life of hot blast stove.

Normal stop: the end of the operation or need a long time maintenance and planned stop. At this time, the upper part of the reflector should be cleaned up, the dust cleaning door, dust collector and other places, and all the ash in the furnace should be cleaned up. When the furnace is stopped, a container should be placed on the grate, with more than 20 kg of quicklime built in.

VI、Matters needing attention

1. If the hot blast stove is enabled, it must be carried out under the normal power supply.
2. Before starting the fan, check whether the regulating valve is in zero position. After starting for half a minute, it can be gradually opened to the normal position.
3. After the burner is shut down, the blower still needs to work until the temperature of the hot air outlet is below 50°C.

V、Unit repair and maintenance

1. Pay attention to the operation of the fan and the heating of the motor at any time. If there are abnormal phenomena, the cause should be found in time and eliminated quickly.
2. Fan bearings are often injected with butter to ensure good lubrication.
3. If the firebrick and reflective plate in the furnace are damaged, the furnace should be stopped in time for repair or replacement, otherwise the service performance and life of the hot blast stove will be affected.
- 4, stop the furnace without period, the furnace should be placed in the quicklime (container, not less than 20 kg), keep the furnace dry, prevent metal surface rust corrosion.
- 5, before the formal power supply operation, should check whether the power supply voltage is normal, too high or too low should not start.

VI、Technical safety and labor protection

- 1, the stoker should have a special training certificate.
2. Stokers should strictly abide by this instruction manual and operation rules.
- 3, stokers should be equipped with protective gloves, goggles and protective caps.

