

Radiant burner SINNOx



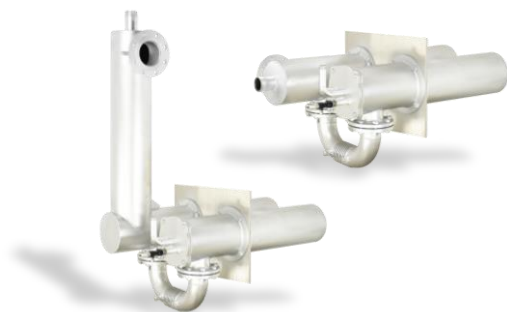
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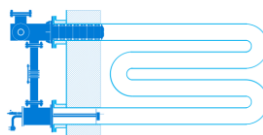
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CHARACTERISTICS

- Applicable for the heat treatment furnace indirectly heated by U-shape or W-shape radiant tube.
- The adoption of flue gas reflux and multi-stage combustion technology could reduce the maximum flame temperature and thus significantly reduce the NOx emissions.
- The high-efficiency recuperators could be customized for the different types of furnaces, the waste heat of flue gas could be recovered before leaving the chamber.
- The uniform flame temperature distribution could effectively extend the service life of radiant tube.
- Modular design, facilitating the maintenance of burner.
- Fuel: LPG, COG, natural gas, mixture gas and other fuel gas.

W-shape radiant tube



U-shape radiant tube



APPLICATIONS

SINNOx series burner is applicable for the heat treatment furnace indirectly heated by U-shape or W-shape radiant tube, such as continuous annealing operation line, galvanized operation line, silicon steel production line and other situations which need radiation heating.

CONFIGURATION

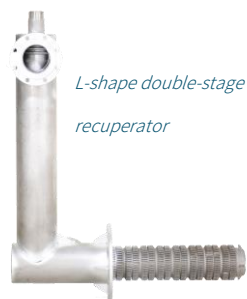
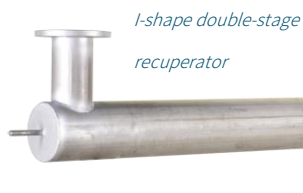
SINNOx radiant tube combustion system is composed of 3 major parts including burner, recuperator and connecting tubes.

Burner

- The burner is composed of a burner insert, an air housing and an adaptor flange.
- The burner insert is composed of a double-flange orifice plate, a gas housing, a gas pipe and a burner head. The self-cooling electrode is installed on the burner insert, single-electrode operation is available. The pilot burner SDB is also optional.
- The air housing is welded by stainless steel. If a thermal insulation is required, the insulation materials could be wrapped outside the air housing.
- The burner is installed on radiant tube by adaptor flange.

Recuperator

- Three types: single-stage recuperator, I-shape double-stage recuperator and L-shape double-stage recuperator.



- Built-in flue gas backflow structure and internal counterflow heat exchanger, which maximize the air preheating temperature.
- The fin tube of recuperator is made of heat-resistant cast steel, the fins arranged closely inside and outside the tube increase heat exchange area in limited space and improve the heat exchange efficiency.

Connecting tube

The connecting tube contains a bellow, through which the mixture of combustion air preheated by recuperator and reflux flue gas flows from the recuperator to the burner.

SPECIFICATION

Parameters

NOx emissions

- The thermal efficiency of recuperator at a furnace temperature of $\sim 900\text{ }^{\circ}\text{C}$ and a radiant tube surface heat load of $\sim 25\text{ kW}\cdot\text{m}^{-2}$: Single-stage recuperator: 65%; L-shape double-stage recuperator: 70%; I-shape double-stage recuperator: 75%.
- The NOx content of flue gas at a furnace temperature of $\sim 900\text{ }^{\circ}\text{C}$ and a radiant tube surface heat load of $\sim 25\text{ kW}\cdot\text{m}^{-2}$: Normal recuperator: $\sim 150\text{ mg}\cdot\text{m}^{-2}$; Ultra-low NOx recuperator: $\sim 80\text{ mg}\cdot\text{m}^{-2}$.
- Please contact us for lower NOx emissions.

Type table

Burner

Type	SINNOx				90	N	-545	L
Rated capacity	70	90	120	160				
Fuel	N: natural gas P: LPG T: town gas M: mixture gas							
Burner length	445	495	445+50n					
Other	L: ultra-low NOx emissions							

Recuperator

Type	H	170	A	-545	L
Form	H: single-stage HL: L-shape double-stage				
	HL: I-shape double stage				
Radiant tube diameter	150: 156~160 mm	170: 178~180 mm			
Materials	A: high temperature resistance, can be operated over 950 °C				
Length	445	495	445+50n		
Other	L: ultra-low NOx emissions				

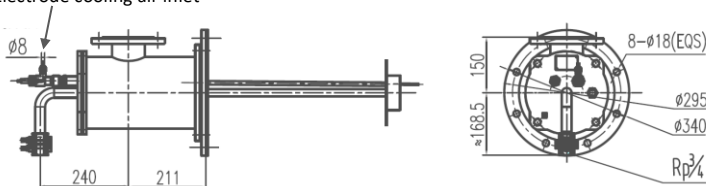
The selection of burner capacity should be integrated with furnace temperature, the surface heat load of radiant tube and radiant tube materials.

Please contact us for the customization of burner and recuperator length.

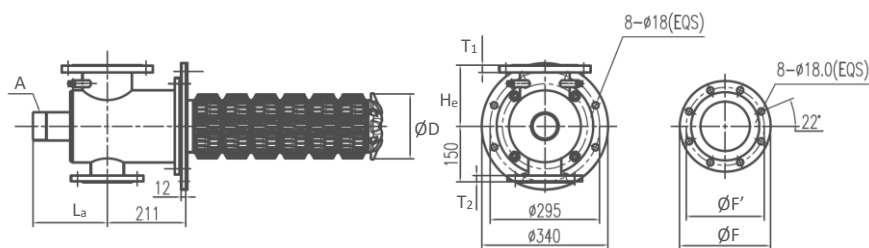
Dimensions

The burner (mm)

Electrode cooling air inlet

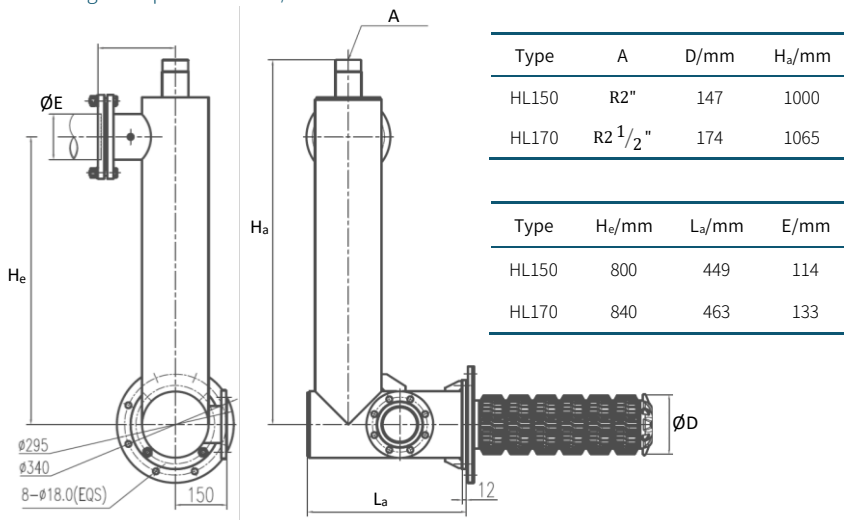


Single-stage recuperator H150/H170



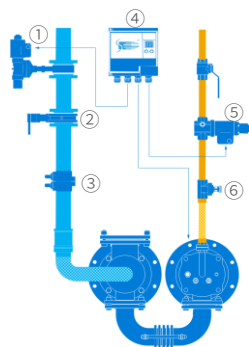
Type	A	D/mm	La/mm	He/mm	T ₁ /mm	T ₂ /mm	F'/mm	F/mm
H150	R2"	147	160	150	18	16	180	215
H170	R2 1/2"	174	200	165	20	18	210	245

Double-stage recuperator HL150/HL170



SOLUTIONS

- Pulse control: Installing all the valves in the picture and control the burner by ignition controller.
- Double-cross limit continuous control: The gas flow could be reduced while air flow remains constant at a capacity below 40% of the rated and a regulation ratio of 1:5. ① is unnecessary in this control mode. When using pilot burner, the gas shut-off control could be operated by main pipeline system and thus ⑤ is also unnecessary.
- Double-cross limit continuous/pulse control: All the valves in the picture shall be installed, the burner is controlled by double-cross limit continuous mode at a capacity over 40% of the rated and by pulse mode below 40%.



① Air pulse solenoid valve MC..F +HTB (With a valve disc opening position feedback)

② Air manual valve SKAH

③ Air double-flange orifice plate

④ Burner controller SCU 4.1

⑤ Gas solenoid valve SG

⑥ Manual linear flow control KV

INSTALLATION

- To ensure the accuracy of orifice plate measurement, the pipe connected to the air inlet on burner must be straight in the length of 5*DN without other resistance elements.
- To facilitate the checking and maintenance, prohibit covering the mounting flanges while wrapping insulation materials on the outer surface of recuperator and connecting tube.
- Electrode with cooling air is installed by default. The connection of cooling air is a Ø8 ferrule fitting. Suggest to intake the cooling air at the upstream of air shut-off valve.

OPERATION

Attention

- The SINNOx shall be operated at an excess air coefficient over 1.05 and prohibit working in a reductive atmosphere.
- To avoid leakage, the screws on the flanges of burner must be tightened again after the burner being installed and heating the furnace for the first time.
- Monitor the flue gas data, prevent the burner from working in a reductive atmosphere.

Maintenance

- Maintenance: connecting tube, radiant tube, spark insert, flame state and others.
- At least once every six months. Increase the times of maintenance, as appropriate.