						S4	FEMS
S-14	Keywords	Y3	equipment or facility	Z1/3	solid fuels/natural gas	D	Construction

NIPPON STEEL ENGINEERING CO., LTD.

Exhaust Heat Recovery System for Hot Air Stoves

Features

An exhaust heat recovery system for hot stove uses the heat energy in the combustion exhaust from a hot stove to preheat fuel gas and combustion air. The exhaust heat recovery system of Nippon Steel Engineering has the following characteristics.

- Its large heat recovery capacity enables reuse of a large quantity of heat energy.
- ◆ It can be used in a high temperature range.
- The built-in auxiliary burner allows operation of a hot stove only with blast furnace gas (BFG) (mono-fuel BFG combustion).
- A single heat-receiving heat exchanger can preheat both combustion air and fuel gas.
- The modular, compact heat exchangers provide more installation flexibility (easy to install in cramped location).
- Able to control the temperature of the heat carrier to prevent acid dew-point corrosion and corrosion on the inner surfaces of pipes.
- The heat transfer carrier can deliver continuous efficiency without the problems of thermal degradation, freezing, or evaporation.
- An element of a heat exchanger can be replaced in a short period of time. (There is no need to install a bypass exhaust pipe for maintenance.)

Basic Concept or Summary









Effects or Remarks

- Fuel gas consumption in a hot stove has been reduced significantly.
 - (Approx. 10 % reduction in the energy amount equivalent in the use with a 5,000 m³ blast furnace)
- The ratio of reducing materials in a blast furnace has been reduced without changing the fuel consumption by raising the combustion temperature, temperature in the dome and ventilation air temperature.

(Reduction of 10 kg/ton-pig in the coke ratio by raising the ventilation air temperature in a 5,000 m³ blast furnace by 100 °C)

 Introduction of the mono-fuel BFG combustion has eliminated the need for high-calorific gases (coke oven gas and LPG).

Installation in Practice or Schedule

Domestic Nippon Steel Corporation: Kyushu Works (two installations), East Nippon Works (two installations), North Nippon Works, Nagoya Works and others Kobe Steel and others

Overseas POSCO, ILVA, Laiwu Steel Corporation, and others

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