

High-efficiency recovery of waste heat and low NOx combustion by reducing flame temperature.

Energy-saving Regenerative Burner System

Features

- Recovers high-temperature waste heat highly efficiently (approximately 90%), and provides a 30% higher energy-saving effect than conventional systems.
- Uses a pair of burners in alternating combustion operation, i.e., burners alternately burning and exhausting combustion gas, thus making improvement in inner furnace temperature distribution.
- Greatly reduces NOx with the combustion of the burners under flame control regardless of the temperatures of preheated air.

Overview

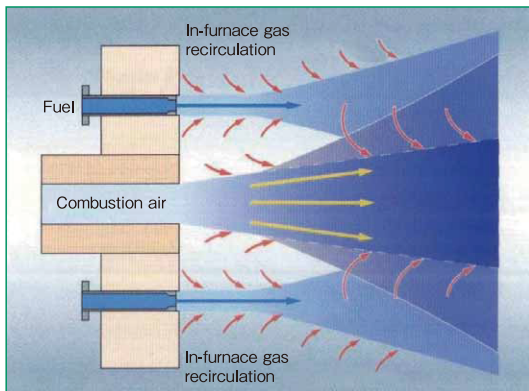
(Technical principles, actions, etc.)

ROZAI provides two types of regenerative system according to application.

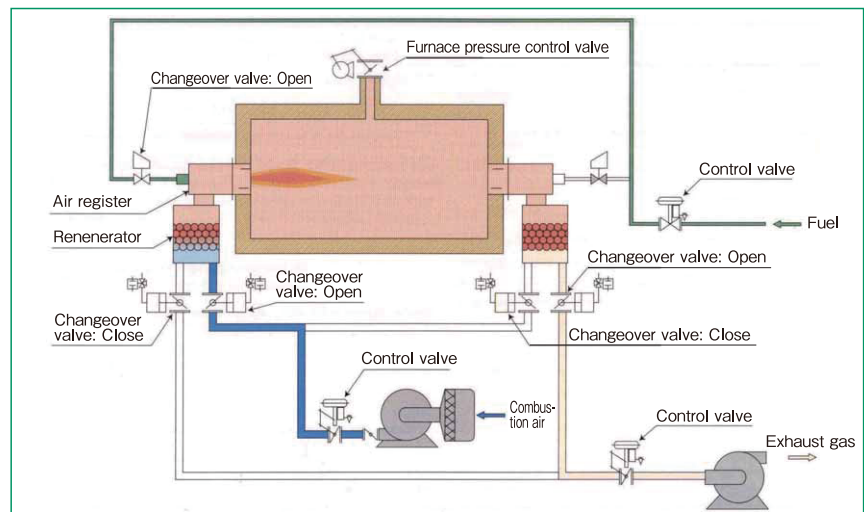
Both types have a pair of two burners, each of which has a heat storage medium in the lower part. These burners are of alternating combustion type, in which the inner furnace gas and combustion air flow alternately, and the waste heat in high-temperature air is recovered. The thermal storage media (alumina balls) in the regenerator performs the heat exchange of the combustion air in the furnace, and the combustion air is discharged as high-temperature air.

1. IRSH TYPE REGENERATIVE LOW NOx BURNER Fuel and air are directly blown into the high-temperature furnace from different nozzles, respectively, which decreases combustion velocity leading to low NOx emission. This is the newest energy-saving combustion system that drastically reduces NOx generation.

2. RSH TYPE REGENERATIVE LOW NOx BURNER This energy-saving combustion system uses a unique two-stage combustion technology along with a method of exhaust gas recirculation, thus suppressing the generation of NOx to a large extent. The high-speed jet flow from the burner for recirculating in-furnace gas prevents high-temperature flame and provides flame stability.



Combustion image



System flow

Introductory Track Record

- Delivered to the heating furnace facilities of major steel manufacturers in Japan, Korea, and China.
- Delivered to the melting furnace facilities of major aluminum rolling manufacturers in Japan, Korea, Taiwan, and Thailand.
- Delivered to forging manufacturers in Japan, and Korea.
- Delivered to aluminum melting facilities in Thailand as part of a model project for international projects for increasing efficient use of energy sponsored by the New Energy and Industrial Technology Development Organization (NEDO).

A total of 2,000 units have been delivered.

Effects

- The system performs the high-efficiency recovery of waste heat at high temperatures, thus providing a 30% higher energy-saving effect than conventional systems that recover waste heat from the chimney flues. Furthermore, the system is equipped with a combustion mechanism that suppresses NOx generation, thus greatly reducing NOx emissions even if the system is in combustion operation with high-temperature preheated air.
- A pair of burners is used for combustion and exhaust alternately, thus agitating air flow in the furnace, thus providing uniform furnace temperature distribution to heat workpieces uniformly and ensuring the improvement and stability of production quality.
- The system used for continuous furnaces will improve the heating performance and soaking characteristics of the furnaces, thus making it possible to downsize the furnaces.

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