

High-Efficiency Heat Recovery System for Glass Melting Furnaces

Features

- Achieves energy-saving operation of glass melting furnaces
- Greatly improves heat exchange efficiency with proprietary “Hi-per Regenerator” structure
- Reduces clogging issues caused by sodium sulfate precipitation
- Numerous installations both domestically and internationally
- Contributes to carbon neutrality and decarbonization

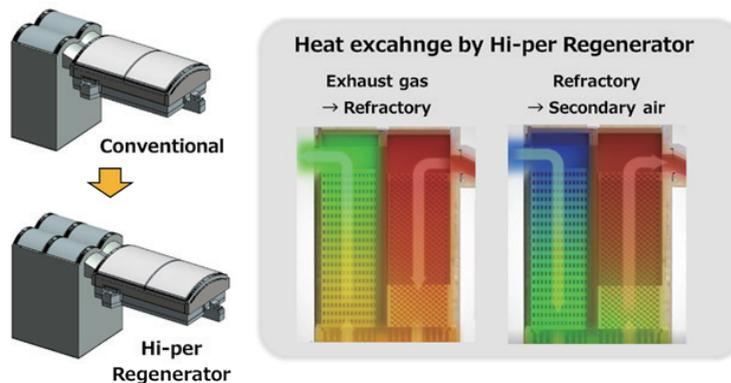


Overview & Principles

In glass melting furnaces, the heat energy of exhaust gas, at approximately 1,400°C generated during the manufacturing process, is recovered through refractory materials built into the regenerator and reused by exchanging heat with secondary air. This system employs a two-chamber regenerator structure to efficiently recover heat from high-temperature exhaust gas, significantly improving the overall combustion efficiency of the furnace. In addition, the risk of clogging caused by sodium sulfate precipitation, previously a concern, has been mitigated.

Energy-Saving Effects

With the introduction of this system, exhaust gas temperature, which was about 550°C in conventional regenerators, can be reduced to approximately 350°C. By recovering and reusing about 200°C of heat energy, annual fuel consumption has been reduced by more than 15%, compared to conventional systems. Improved heat exchange efficiency, furthermore, contributes to additional reductions in energy costs and CO₂ emissions.



Since the 1960s, this system has been widely adopted in Japan, as well as in Asian countries, such as the Philippines, Thailand, Vietnam and Malaysia. As of 2025, it has been installed in more than 50 glass melting furnaces, including retrofitting of existing furnaces, with further expansion expected in the future.

Period	1960's	1970's	1980's	1990's	2000's	2010's	2020's
Number of Multi-Reg.	2	4	6	10	9	10	11
Glass Type							
Container	0	0	2	5	6	8	8
Table Ware	0	1	0	0	1	1	1
Others	2	3	4	5	2	1	2
Improvement of the technology	1st Generation (Challenge)						
	2nd Generation (Solve Problem and Expand)						
						3rd Generation (Reliability with Simulation)	
							4th Generation (with TMT)

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