

Development of a Low NO_x, Flameless Regenerative Burner for Reheating Furnace

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This study has been performed to develop a low NO_x regenerative burner for the application to reheating furnace. An experimental furnace for regenerative combustion was designed and fabricated to burn LNG up to 200,000 kcal/h. To derive a low NO_x burner model, various types of burners were designed and fabricated. Combustion experiments were performed to check NO_x emission between test burners. It was shown that the NO_x emission could be maintained lower than 50 ppm under furnace temperature of around 1,200°C by adopting high speed air/fuel injection. The flameless combustion mode was achieved by high speed injection. Further reduction of NO_x emission was confirmed by applying air/fuel staging.