

A Model Design of Reheating Furnace with Regenerative Combustion System

이용국*, 조한창, 조길원, 김기홍
포항산업과학연구원
(yonglee@rist.re.kr*)

To develop a high efficient and low emissive reheating furnace, a 10 ton/h reheating furnace for billet was designed and tested. The walking beam-type furnace is consisted of two zones- heating zone and soaking zone- which are fully adapted with 4-pair regenerative combustion burners respectively. For optimum design of the furnace, a new computation program for heat transfer in the furnace for heating the billets and a low NOx regenerative combustion burner were developed and applied in 10ton/h reheating furnace.

From the tests, the following results are obtained: (1) heating time of billet is shortened to about 40% compared to conventional reheating furnace, (2) averaged NOx emission through the use of regenerative combustion burner was 60ppm, which is reduced by 40% compared to conventional burner, (3) energy is saved above 20% compared to conventional reheating furnace with temperature recovery efficiency of about 90% in regenerator, which is similar to the results of the conventional regenerative combustion burner. From these results, it is confirmed that the developed reheating furnace had the high performance and could be applicable in the fields.