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Kawasaki Steel's Steelmaking Technologies for Mass Production of High Cleanliness Steel Sheet

B j € S " Yuji Miki© f L , o " Shuji Takeuchi©

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Synopsis :

The demand for high quality steel sheets has been increasing in the world market. Kawasaki Steel has developed, at its Chiba and Mizushima Works, new steelmaking technologies to produce high quality slabs without defects. In this report, the following technologies to improve the cleanliness, quality and productivity of the slabs are introduced. (1) Improvement of hot metal pretreatment, (2) Control of slag composition and optimization of ladle refining, (3) Suppression of reoxidation of steel in a tundish, (4) Flow control of molten steel in a mold. With these technologies, surface defects have been reduced down to one tenth in the last ten years.

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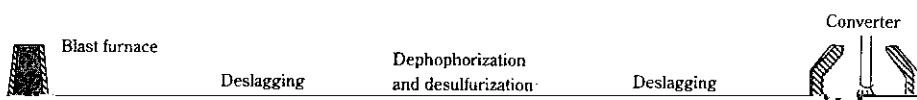
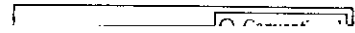
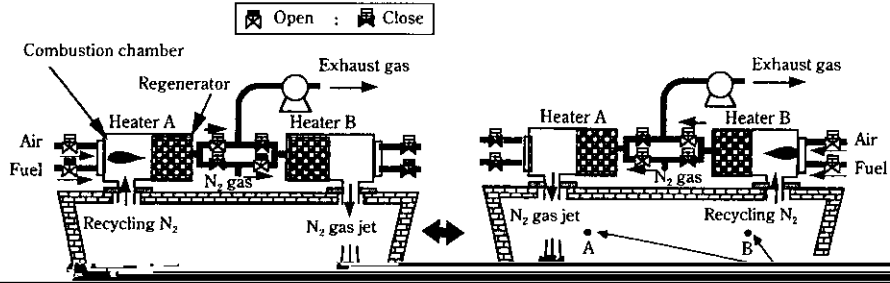


Table 2 Design parameters and rate constants for decarburiza-



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Condition 1	Heater A; Combustion mode Heater B; N <sub>2</sub> jet mode
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Condition 2	Heater A; N <sub>2</sub> jet mode Heater B; Combustion mode
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Fig. 9 Schematic diagram of N<sub>2</sub> Jet Heater

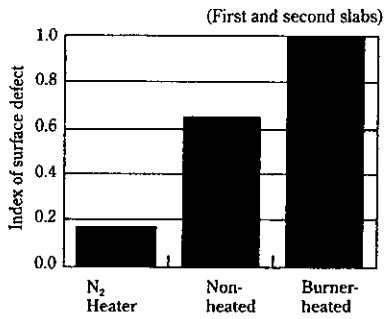


Fig. 10 Comparison of hot-coil surface quality

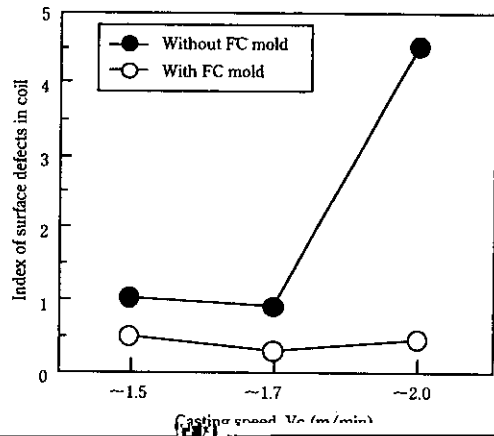


Fig. 12 The effect of the FC mold on surface quality of cold-

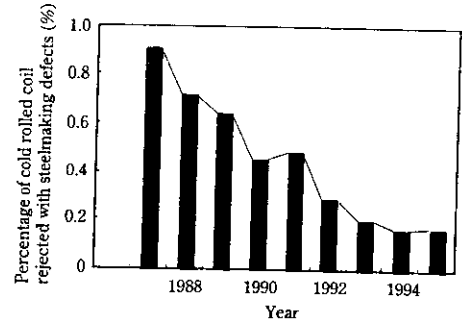
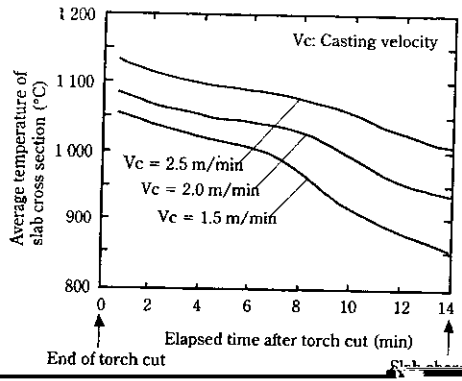


Fig. 15. Improvement of surface quality of cold rolled coil.