

KAWASAKI STEEL TECHNICAL REPORT

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**Production of High Carbon Steel Using Pretreated Hot Metal in
Top-and-Bottom-Blown Converter**

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Synopsis :

Production of High Carbon Steel Using Pretreated Hot Metal in Top-and-Bottom-Blown Converter*



Synopsis:

Approximately 90% of high carbon steel is produced by a process which involves the use of pretreated hot metal in a top-and-bottom-blown converter.

- sumption of the deoxidizer were high.
- (2) It was necessary to add alloys such as Mn and recarburizing materials at the stages of tapping and thereafter, resulting in higher tapping temperatures.
 - (3) To promote the dephosphorization reaction in the high temperature zone, lime consumption was

Top and bottom blowing converter	85 t × 2
Combination of gases	Inner: O ₂ , O ₂ +Ar(N ₂), Ar(N ₂) Outer: Propane, Propane + Ar(N ₂), Ar(N ₂)

necessarily higher.
The present process has been developed with the aim

Oxygen flow rate	Top lance	175 Nm ³ /min max.
	Bottom lance	100 Nm ³ /min max.

Input	Output
	Vessel (5.6%)

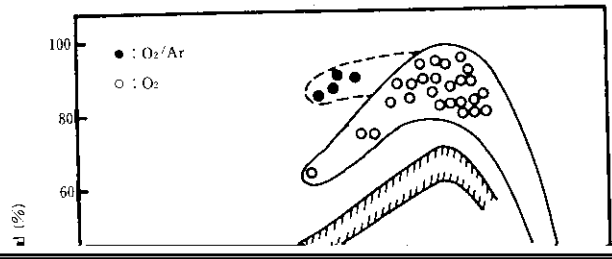
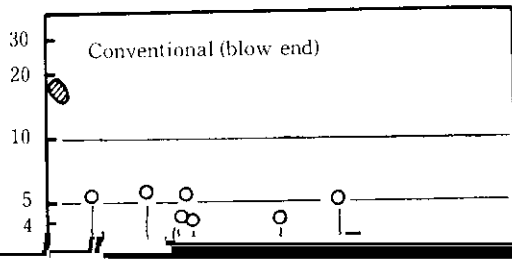
become unstable. To cope with the former problem, K-

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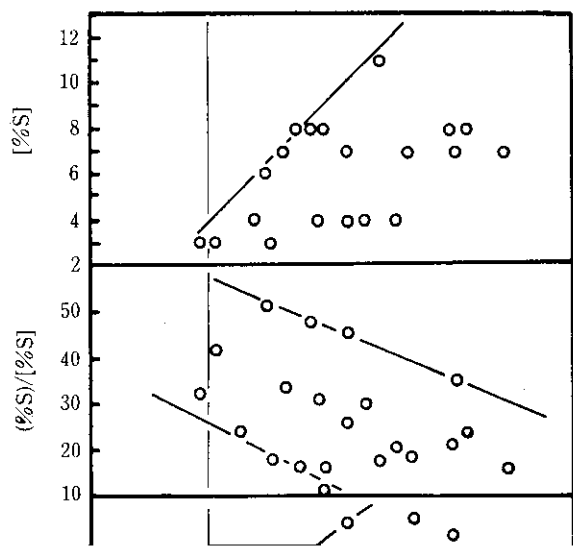
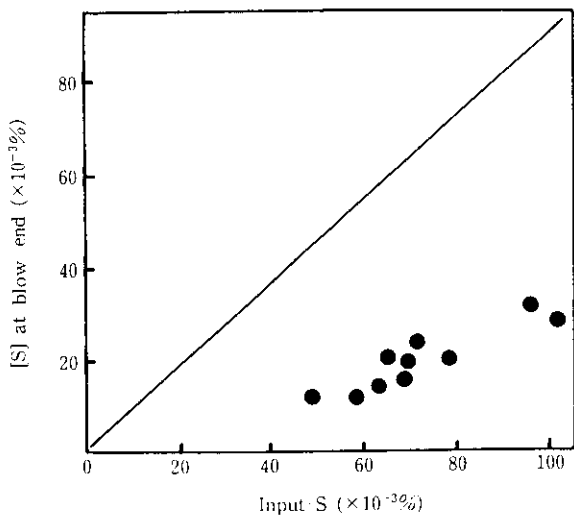
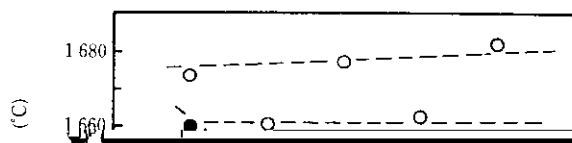


Fig. 9 Relation between input S content and blow

the desulfurizing reaction during the reduction period is shown in Fig. 10. What is important here is to control slag basicity at 2.5. It is generally considered that high basicity of slag is advantageous to desulfurization, but that the accompanying rise in the melting point of slag

100

Dust (0.9)		Dust (1.1)
T.Fe in slag (2.3)		T.Fe in slag (0.2)
		Loss by oxidation



4 Conclusions

The authors have been able to establish a highly rational high carbon steel manufacturing process which