

KAWASAKI STEEL TECHNICAL REPORT

No.17 (October 1987)

Construction of Shaft Type Ferromanganese Smelting Furnace

Teruaki Morimoto, Masaaki Yoshimoto, Hiromitsu Takahashi, Takao Hamada, Norio Fukushima, Syoji Sakurai

Synopsis :

A shaft type smelting furnace (SF) for high carbon manganese ferro-alloys was blown in on June 24, 1985 and Mizushima Ferro-alloy Co., Ltd. The SF has an inner volume of 398 m³ and a production capacity of 270 t/d (H/C FeMn) and is equipped with a center feed Cardan type bell-less top (CTBL) and radiation type recuperator for pre-heating blast air. The features of the SF operation are the high coke rate, high dust rate and high top gas temperature compared with those of the blast furnace. The SF has cooling plates arranged from bosh to upper shaft with a small pitch, wearing plates cooled, and cooling-type CTBL rotating frame. Gas cleaning system is reinforced with a cyclone in addition to the conventional system. The outline of the construction of the SF is described in this report.

(c)JFE Steel Corporation, 2003

The body can be viewed from the next page.

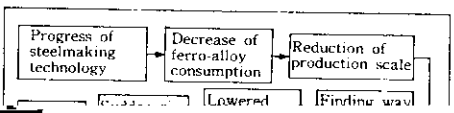
Construction of Shaft Type Ferromanganese Smelting Furnace*



Synopsis:

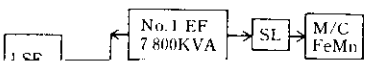
A shaft type smelting furnace (SF) for high carbon man-

ganese was constructed and operated in June 24, 1985 at Mizu-



Electric Furnace

SF



No. 1 EF (shut down)

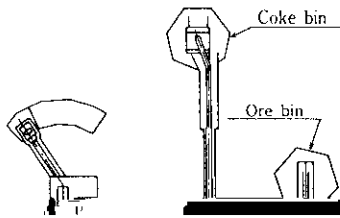


Table 1 Operational conditions for design of SF

Items	Specification
Inner volume	398 m ³
Production	230 t/d
Blast volume	450 Nm ³ /min

pig-iron blast furnace. Top gas temperature is con-

ing system, affecting it adversely.

1-11-30 1-11-30 1-11-30 1-11-30

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

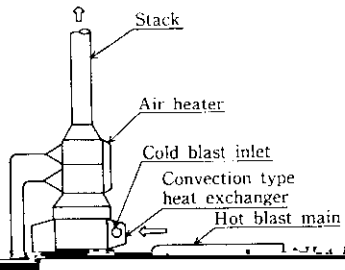
[REDACTED]

[REDACTED]

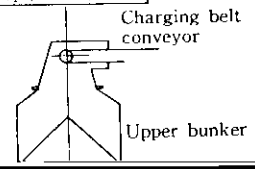
Table 2 Main specifications of SF equipment

Item	Specifications
Furnace proper	

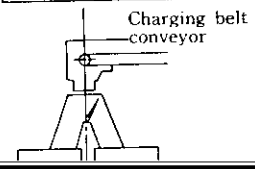
- (4) Water cooling of bell-less drive unit (rotating frame and distribution chute ring)
- (5) Adoption of a high-flow-rate-water-cooled-type-tuyere (tip velocity: 20 m/s)

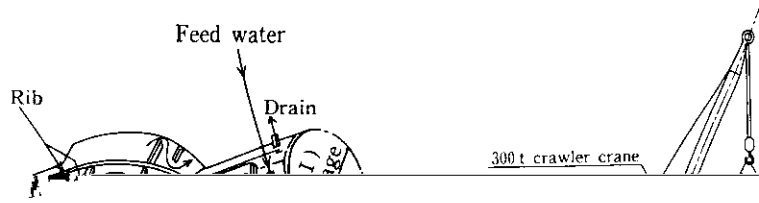


Center feed
Cardan type
bell-less furnace
top (CTBL)



Conventional type
bell-less furnace
top





[]

1984

1985

1