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Introducing the No.3 Continuous Slab Caster at Chiba Works

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**Synopsis :**

The No.3 continuous slab caster of Chiba Works, Kawasaki Steel Corporation has been operating satisfactorily since its start in April, 1981. In order to cast slabs of sound internal quality at high speed, this machine has a 3-meter-long vertical portion, a progressive bending and unbending profile and small roller pitches with divided rollers. The machine also has an equipment for a quick test scarfing to see if slabs are good for charging hot into the heating furnace. Hydrogen content of steels melted by Q-BOP are rather higher than those by LD; posing problems of slab surface defects which, however, are now solved by improvement in Q-BOP operation.

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# Introducing the No. 3 Continuous Slab Caster at Chiba Works\*

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## 1 Introduction

At the No. 3 Steelmaking Shop of Kawasaki Steel's

free slabs" was established, with the following guidelines:

(1) To construct a highly efficient machine capable of

and high quality

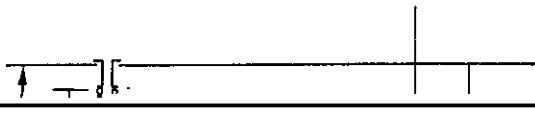
For high quality	For high productivity
1) Vertical-bending profile	1) Dummy bar top charge
2) Small roller-pitch by divided roller	2) High speed casting
	3) Automatic mold width

conditioning part of the slab.

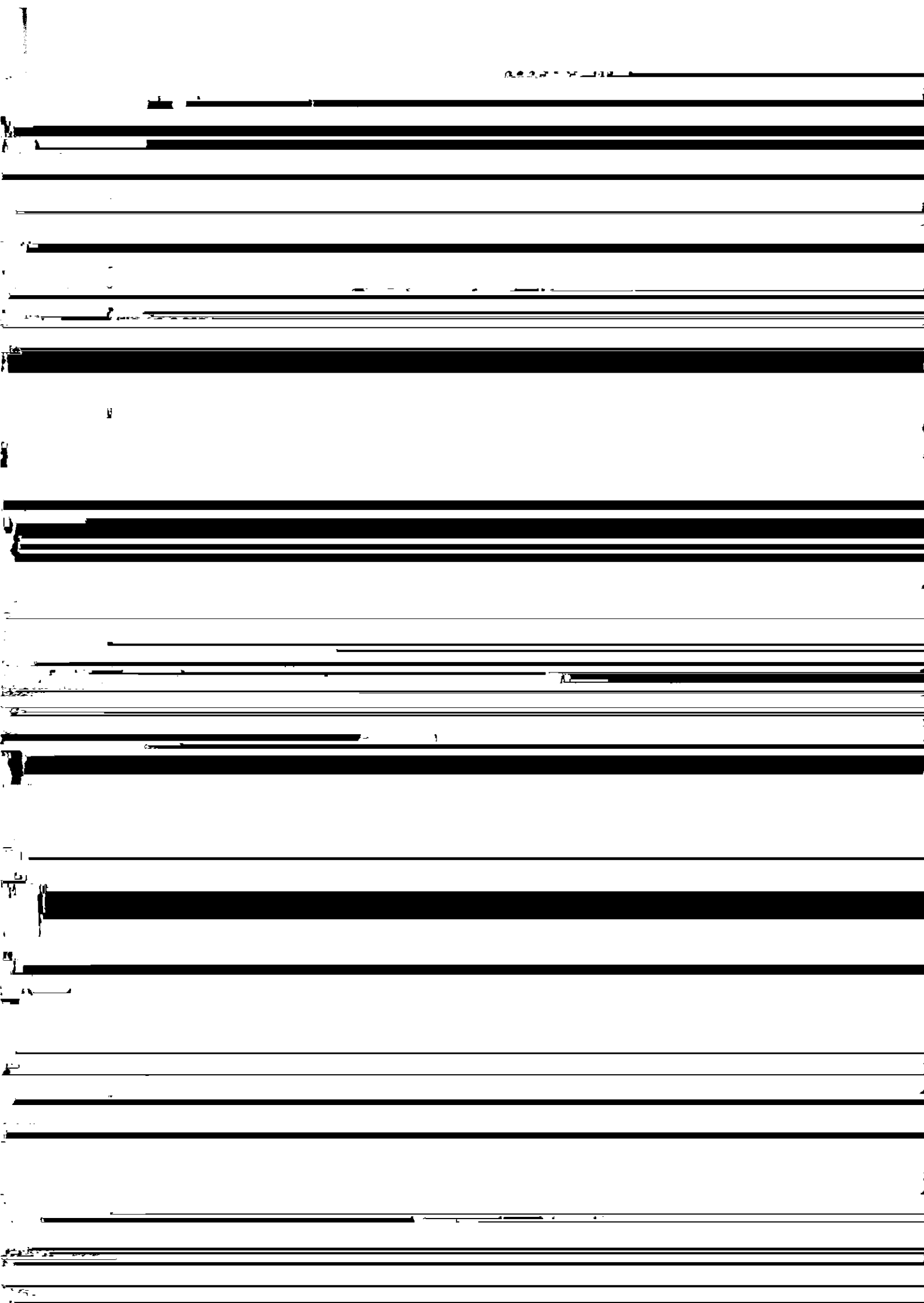
The above-mentioned layout was so designed as to permit efficient jointing with No. 4 slab caster and No. 3 hot strip mill to be constructed in the future. To be more specific, it was planned that No. 4 slab caster

**Table 3** Principal specification of Chiba No. 3 slab  
caster

even during high-speed casting. **Fig. 5** shows the rela-  
tion between the length of the vertical portion and the



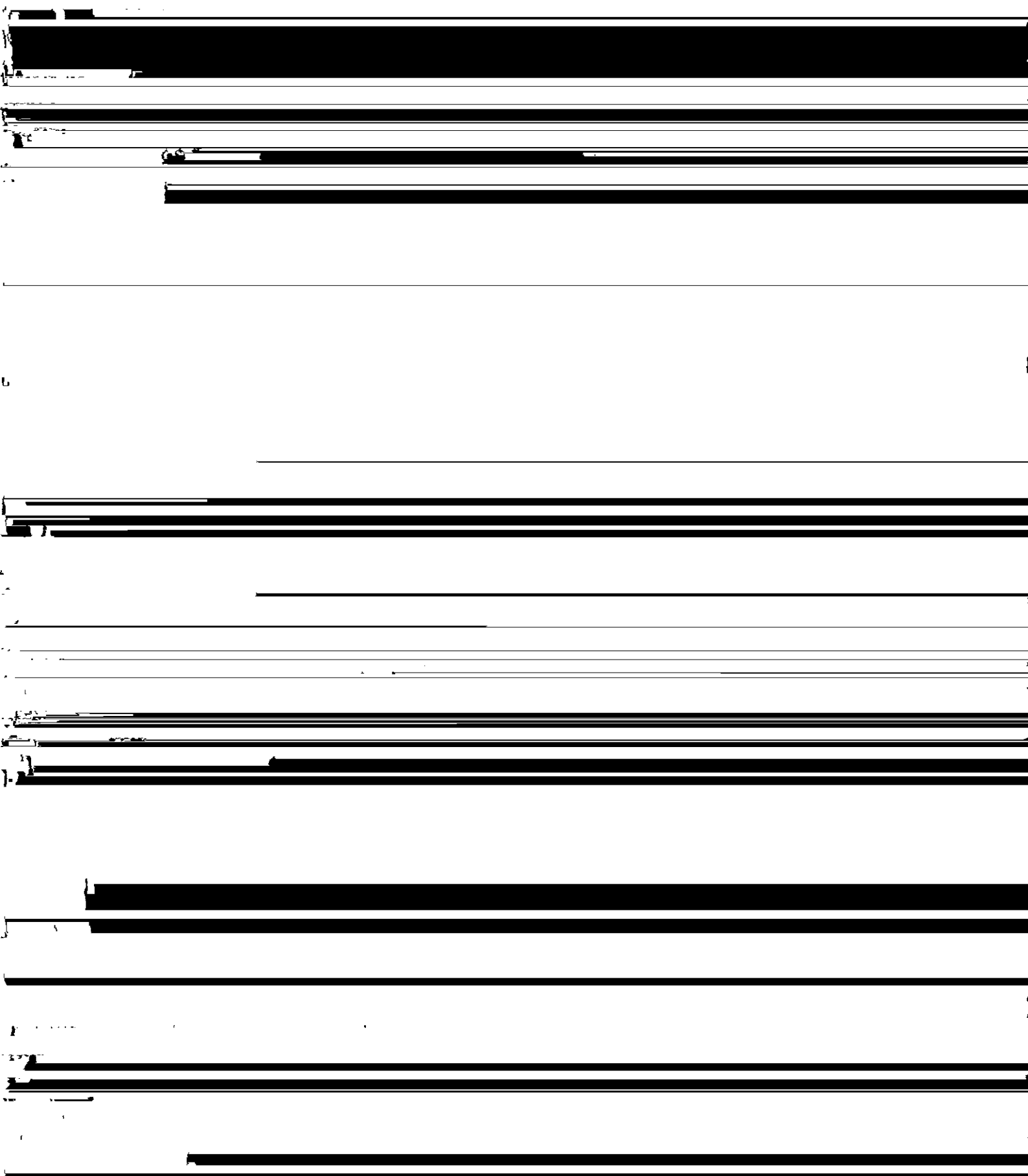
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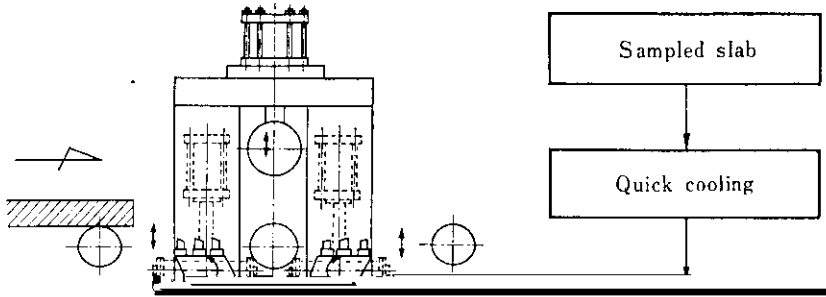


### 3.2.4 Dummy bar top insertion system

which have been conditioned in the warm state are transported to the slab yard, loaded on the slab buggy

To protect the heating intervals a "dummy bar top







#### 4 Operation

Since the start of operation, main facilities have exhibited smooth start-up without any mechanical trouble. One-shift operation was carried out for one week after the beginning of hot run, then two-shift operation for three weeks, and finally full three-shift operation commenced.

Automatic units started operation smoothly for the

start of the hot run. This figure indicates a satisfactory start-up operation as a result of early accomplishment of automation. Steel grades of slabs cast by the machine are mainly materials for hot and cold rolled strip, most of which have a narrow width, as shown in Fig. 12, and thus are low in casting efficiency. In spite of this fact, the machine showed excellent operation, primarily because of the early accomplishment of automation, among others, of slab-width changing

most part and various other operations were also

operation during casting.

feeder and level controllers (for tundish and mold) as

width changing operations during casting.

Slab size 230 t × 1 480 w  
Casting speed 1.23 m/min

100



cularly contributed to operation stabilization and product quality improvement through favorable effects such as uniform positioning of the crater end

inclusion surfacing in the tundish, and prevention of tundish slag inclusion into the mold.

## 6 Conclusion

Vertical... ..