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Special Issue on Stainless Steels

Production of High Grade Stainless Steels

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Synopsis :

On the basis of fundamental experiments, optimum condition in steelmaking and continuous casting for the production of high quality stainless steels have been determined. The amounts of impurity contents were decreased by adopting K-BOP and SS-VOD process and the secondary cooling conditions in continuous casting were optimized. With these countermeasures, all kinds of stainless steel have been produced by continuous casting without problems. For the dualphase stainless steel, hot ductility was remarkably improved by heat treatment of slab soaking. Thus the system for the stable production of all high quality stainless steels has now been established.

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The body can be viewed from the next page.

Production of High Grade Stainless Steels*



Synopsis

report, the essential points of these techniques are introduced.

2 Manufacturing Processes and Types of High Grade Stainless Steels

depending on their steel grades, especially crack sensibility. The steels, which transform into martensite at normal cooling rate or which are brittle at normal temperature, need special considerations for slab treatment, and temperature control of slabs was performed. The steel easy to crack during hot rolling were pretreated

The refining and casting of stainless steels were performed in the No. 1 Steel Making Shop of Chiba Works.

When the improvement of cast slab microstructure was

2.2 Manufactured Steels

The integration of stainless steel manufacturing pro-

cesses at Chiba Works has made it possible to establish a

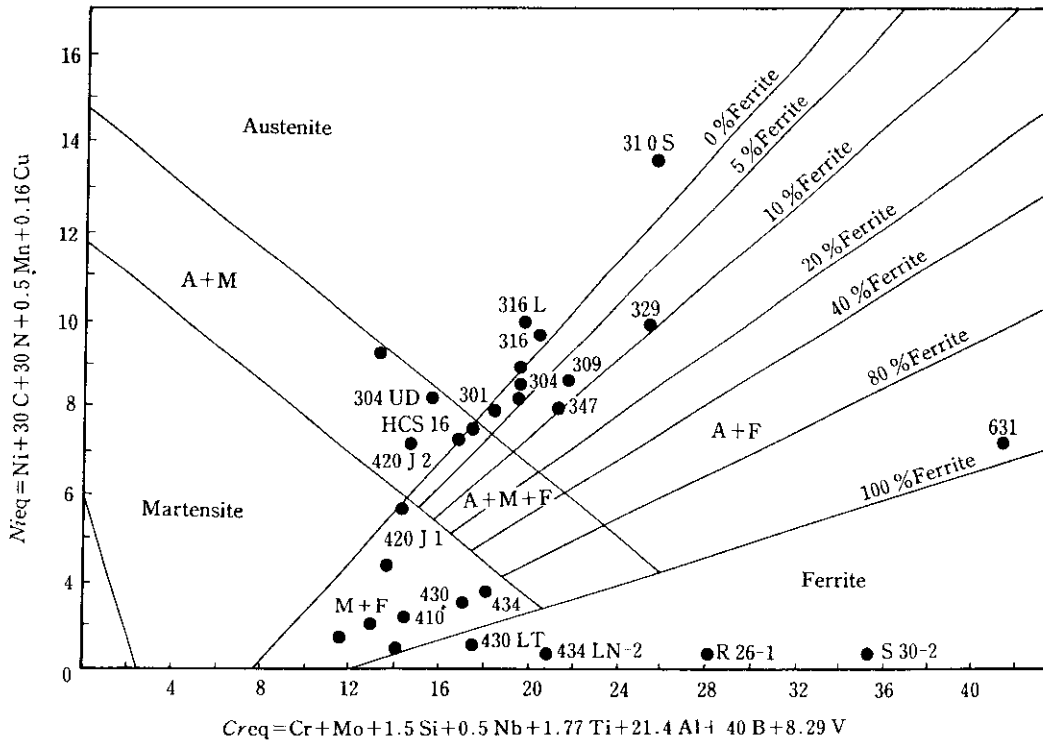
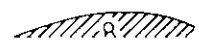


Fig. 1 Schaeffler diagram

100

SUS 631



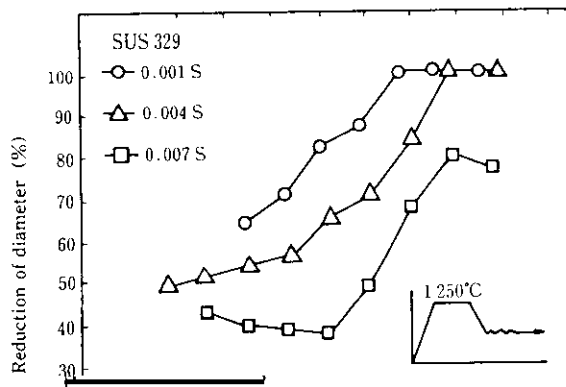


Fig. 3 Effect of S content on hot workability of stainless steel

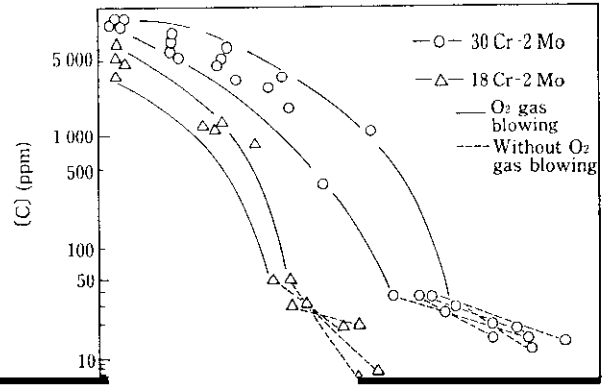


Fig. 5 Decarburization by SS-VOD

report⁶⁾, an excellent point of KSC process is that stable desulfurization is attainable by the single slag method. On the other hand, high Cr ferritic stainless steels

embrittlement in specific temperature range. Therefore, it is important to optimize mold cooling conditions

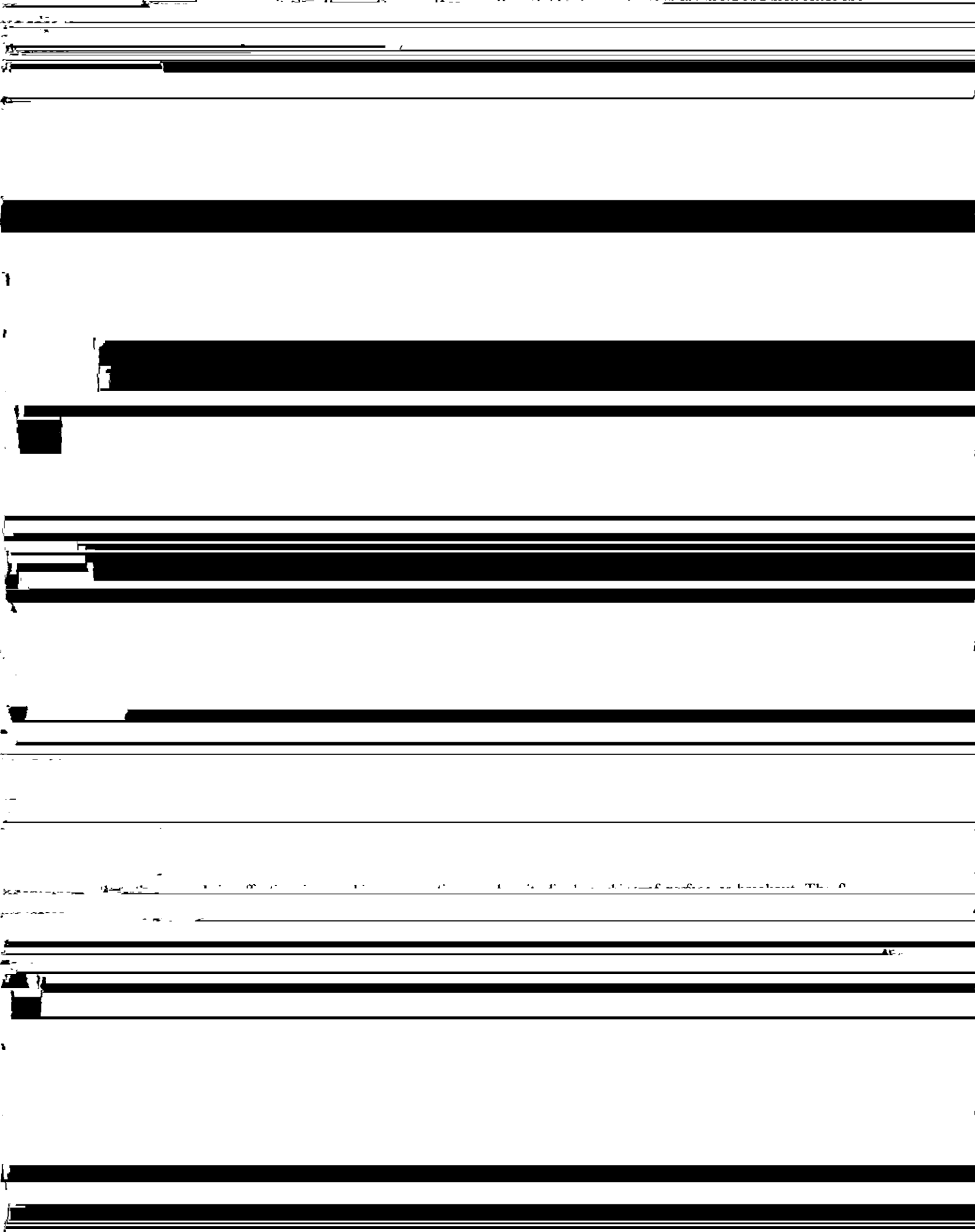
at various temperatures by laboratory experiments, the transition of embrittlement state in the continuous cast

and to control slab temperature around the straightener. It is thought that the internal cracks of slab occur

at the straightening performed when the slab surface temperature is in a specific embrittlement temperature

the surface temperature calculated using the SUS 304 pattern. In the case I, the reduction of area in the upper

The flux solidification not only reduces the lubrication between mold and slab but also seriously affects



Castable Vitrinite

◇ As cast

→ 1250°C × 1.5 h

their quality improvement. These techniques are

Kato: *Kawasaki Steel Giho*, 15(1983)2, 21-27

f) H. Kaito, T. Okano, S. Inoue, S. Yano, M. Ozeki and A.