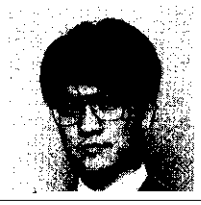
KAWASAKI STEEL TECHNICAL REPORT No. 32 March 1995

Development of Hydrogen Gas Injection Method for Promoting Decarburization of Ultra-low Carbon Steel in RH Degasser*

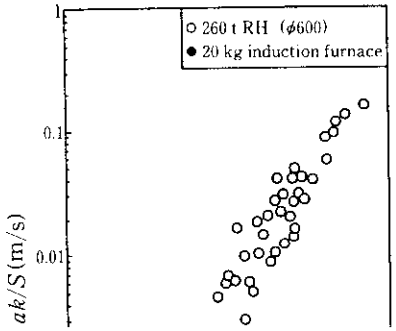


Synopsis:

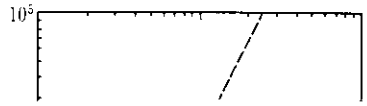
Kawasaki Steel has developed a hydrogen gas injection method at the RH degasser for promoting the decarburization reaction of the ultra-low carbon steel in the range of a carbon content of less than 20 ppm. Hydrogen gas is

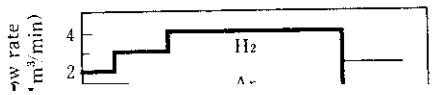
2 Study of Decarburization Behavior of Ultra-low Carbon Steel in RH and Techniques for Promoting Decarburization

The decarburization reaction ($\underline{C} + \underline{O} = CO$) in the ultra-low carbon region in the RH is considered to be mainly controlled by the mass transfer of carbon in the molten steel, and can therefore be appropriately described using a first-order equation for the reaction rate of carbon, as shown in Eq. (1).

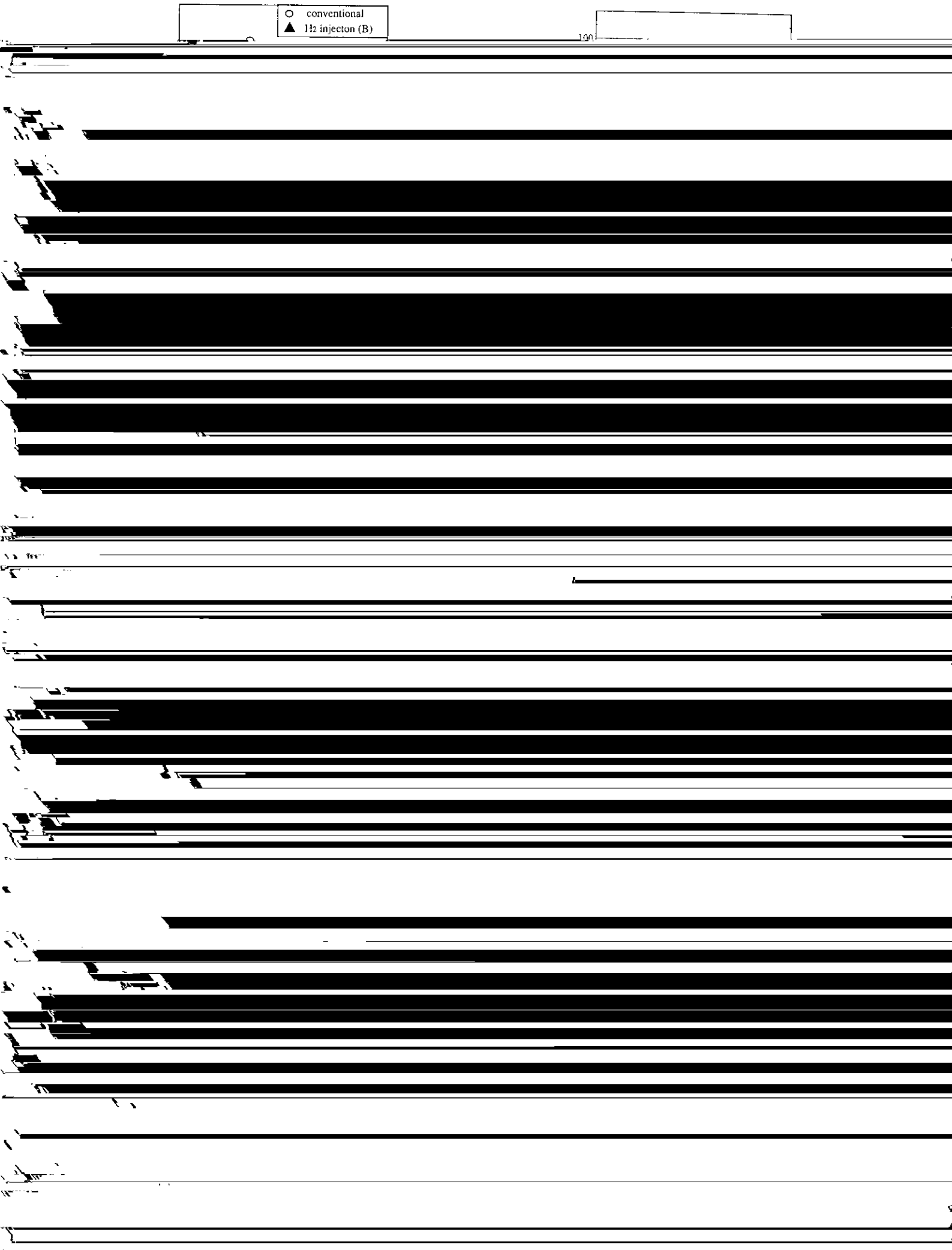


P_V: pressure of vessel atmosphere
ρ: density of molten steel (kg/m^3)
g: acceleration of gravity (m/s^2)
h: depth from liquid surface to [illegible]





carbon content of [C] ≦ 10 ppm. For this reason, a pattern was adopted in which low-vacuum treatment was started at the point when [C] had been reduced to


conventional
H2 injecton (B)
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