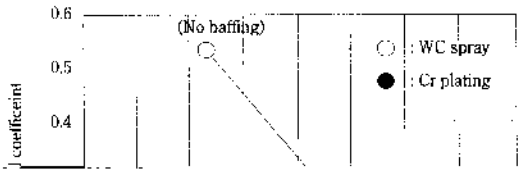
KAWASAKI STEEL TECHNICAL REPORT No. 45 November 2001

Development of Surface-modifying Technologies by Thermal Spraying of Process Rolls in Steel Production Process*

multi-coating techniques and heat treatment (fusing) technologies have been developed and are applied as required by the application.

This paper presents a brief explanation of the various types of surface-modifying technologies using thermal



to secure wear resistance. Here, it should be mentioned

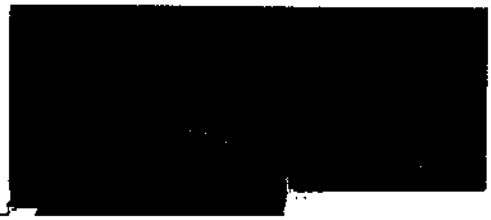


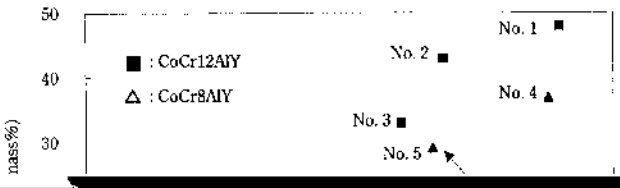
Table 1 Stream constituents with simulation program 'ChemSage'

Constituents	Amount (mol)
H_2/gas/	3.00×10^{-2}
N_2/gas/	9.70×10^{-1}
[illegible]	[illegible]

tion

Al_2O_3 | 1.26×10^{-3}

gated by laboratory Mn buildup tests. As shown in **Table 2**, test pieces were prepared using eight types of coating material containing varying amounts of Al and amounts and types of ceramics. These coatings were applied to an SUS base metal 25 mm square and 10 mm in thickness. The test results, as shown in **Table 3**, were



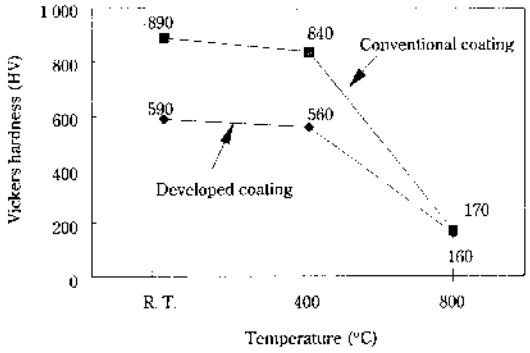


Fig. 6 Comparison of hardness between conventional coating and developed coating

Table 4 Results of EDX analysis for conventional coating and developed coating

(mass%)

		Conventional coating	Developed coating
Surface	Mn	49.6	20.4
	Al	43.5	4.1
Cross section	Mn	23.5	3.1
	Al	59.0	3.0

Table 4 shows the results of a chemical analysis of the surface and cross section by EDX. From the analysis of Mn and Al on the surface, it can be understood that the Mn content of the developed coating was reduced to one-half that of the conventional coating, and the Al