Abridged version

KAWASAKI STEEL TECHNICAL REPORT

No.24 (April 1991)

Progress in Equipment Diagnosis Techniques at Kawasaki Steel Corporation

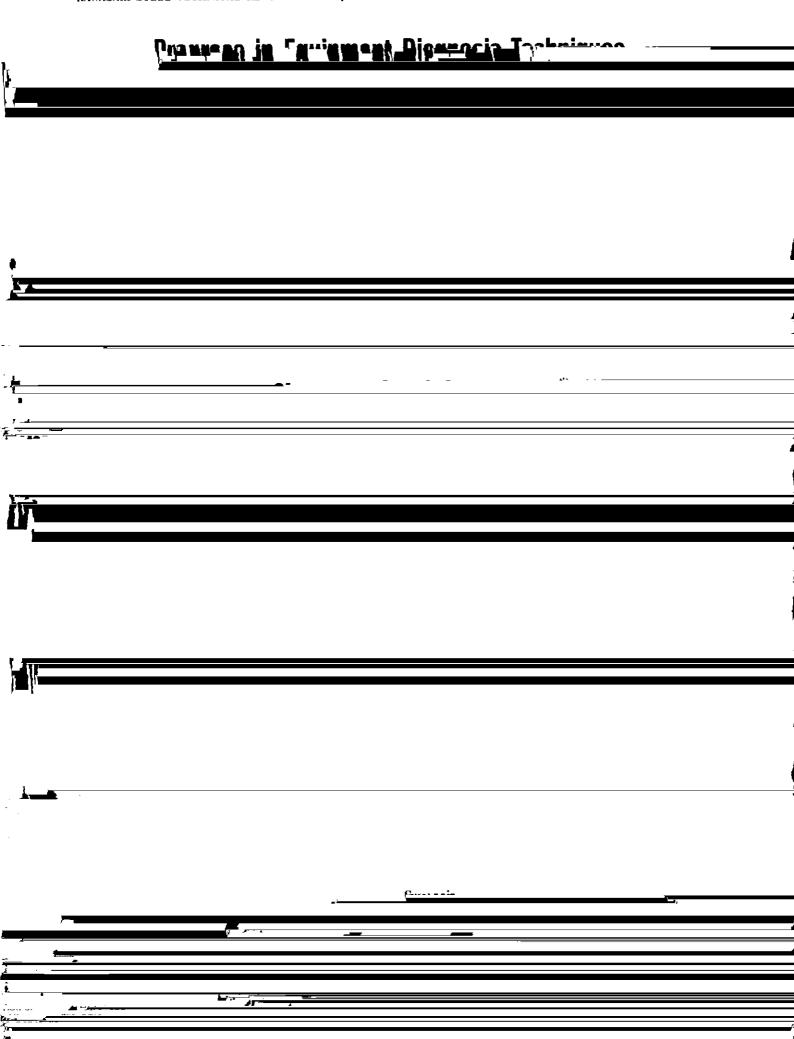
Akira Ichihara, Satoshi Kasai, Hiromasa Yamamoto, Masafumi Tanaka, Hiroshi Fusegawa, Yushi Miyake

Synopsis:

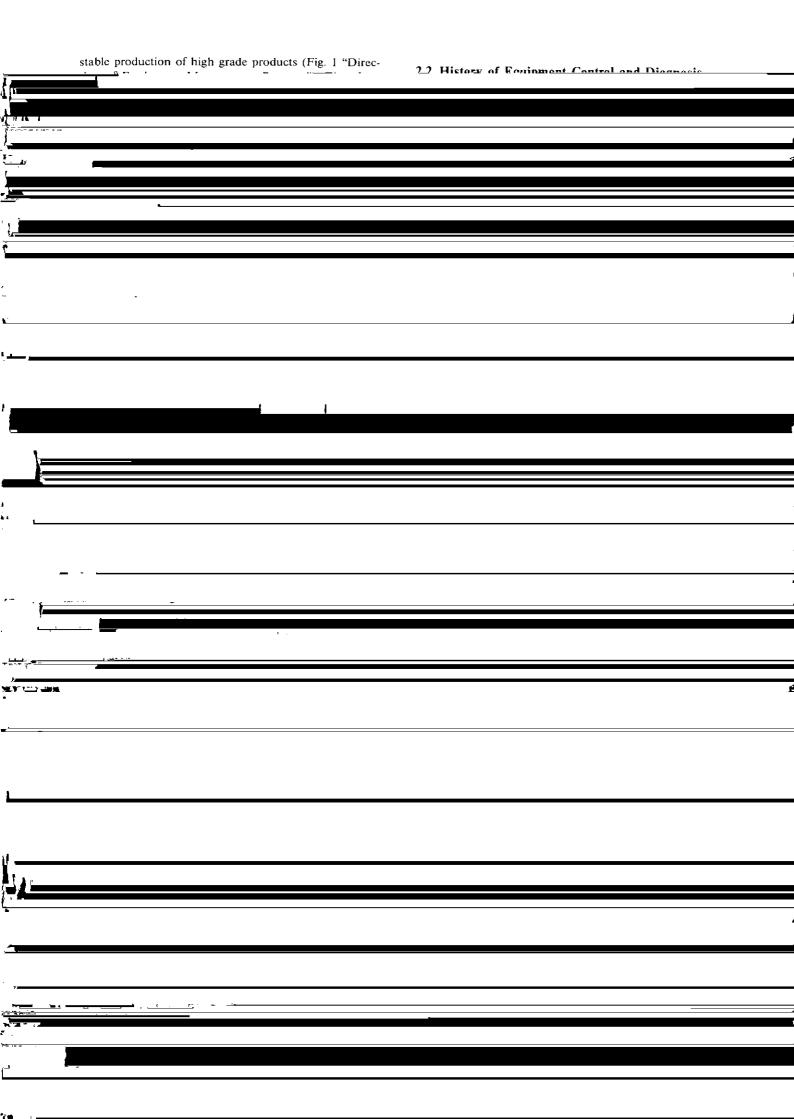
This paper reports on the development and application of Kawasaki Steel's equipment diagnosis techniques. The equipment control in the iron and steel industry, where production heavily depends on equipment performance, has been changing largely in the form of modernization of equipment with a view to cope with highly sophisticated quality control and multifarious production. In terms of assurance of equipment for desired production, an equipment control technology backed up by engineering has been more strongly demanded. Developed to bring the capacity of equipment into full play are the machinery/equipment diagnosis techniques used as predictive maintenance and process diagnosis techniques for product quality assurance. The above two techniques are being further developed into an equipment control system techniques. Since there are many phases where human judgement is needed, attention has been paid to the role of human support for highly efficient and sophisticated maintenance work in order to establish an equipment diagnosis techniques.

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sis judgment, and evaluation, and (5) education and equipment performance by keeping the accuracy of training of key personnel who can pass high level judgequipment. ment in enginment control At its initial stage the role of equipment mainte-This paper describes the development and application nance was limited to maintaining and, when possible, at lauste mitted to the axisting production and approxima



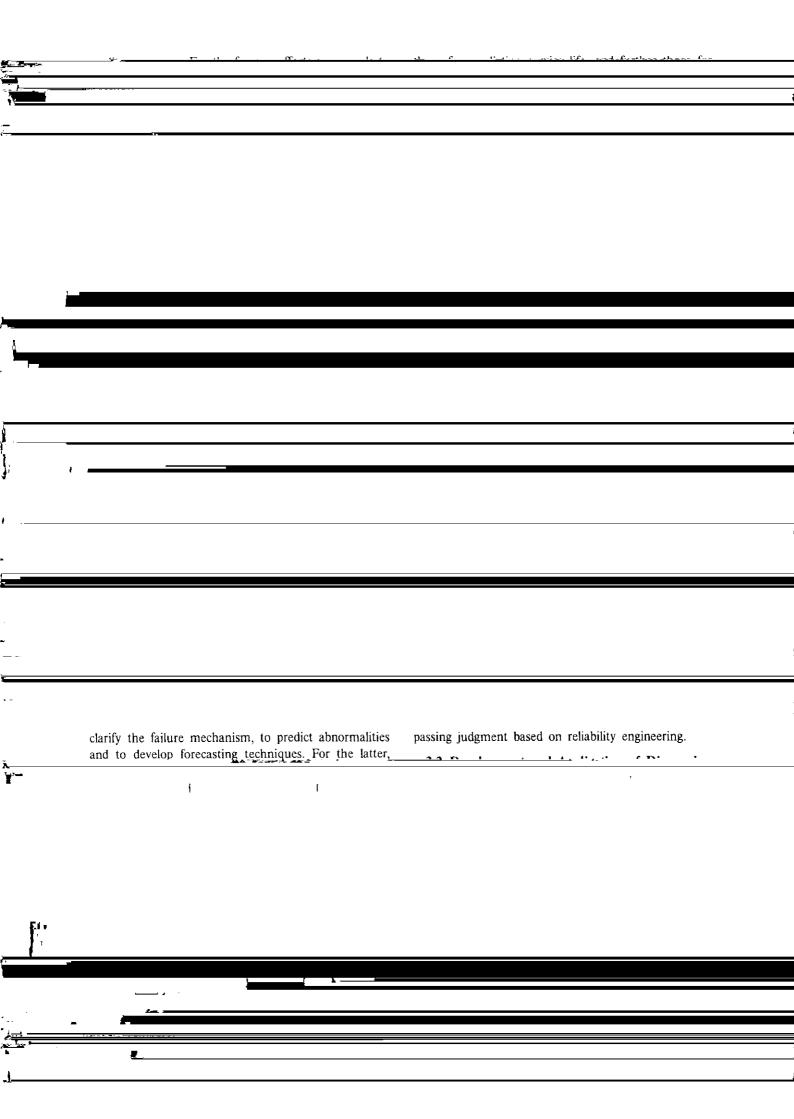


Table 2 Diagnosis techniques at Kawasaki Steel

		Table 2 Diagnosis	techniques at Kawasaki Steel		
		1970's	198	30's	
	Items	2nd half	1st half	2nd half	
ı	Development of diagnosis technique	Diagnosis of roller and motor by vibration method Crack depth measurement Stress analysis of structure	Diagnosis of low speed rotating machine	Diagnosis of chimney and torpedo car by thermoview Diagnosis of hydraulic valve by vibration analysis Diagnosis of hot-run roller by	
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Table 3 Major items in on-line diagnosis systems

	Plant	Sintering Plant	Blast Fornace	Continuous Casting Machine	Hot Strip Mill	Continuous Pickling Line	Tandem Cold Rolling Mill	Continuous Annealing Line
	Item			Casting Machine	<u>i</u>		Rolling Mill	Annealing Line
.		. Blower nump	. Rell-lect device l	- Lubricant evetam	. Mill deina	. I nonne	i - Mill dema	- Hazeth roll
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