

KAWASAKI STEEL TECHNICAL REPORT

No.45 (November 2001)

"Developed Machinery Maintenance Technology
in Steelmaking Plant"

Management System Supporting Reliability of Equipment

Kitamura, H.; Fukumoto, M.

Synopsis :

An equipment maintenance management system has been developed with the purpose of

Management System Supporting Reliability of Equipment*

Synopsis:

[The following text is completely obscured by heavy black redaction bars.]

2 Trends in Equipment Management Technology

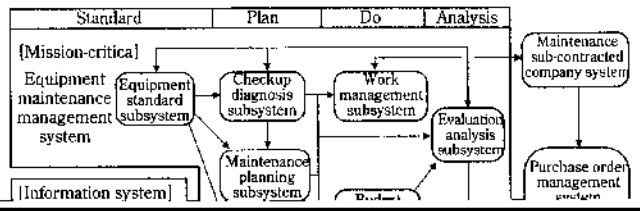
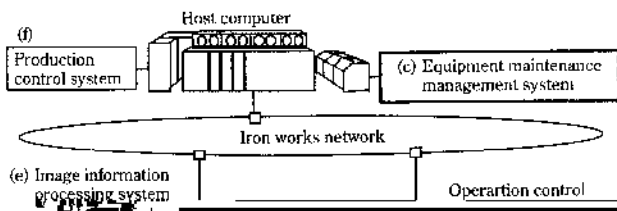
Reviewing the history of equipment management in Japan, the 1950s was a period of preventive maintenance, which was introduced from the United States. In the 1960s, predictive maintenance was adopted and

printer has been replaced by a high-speed laser printer giving distinct hardcopies.

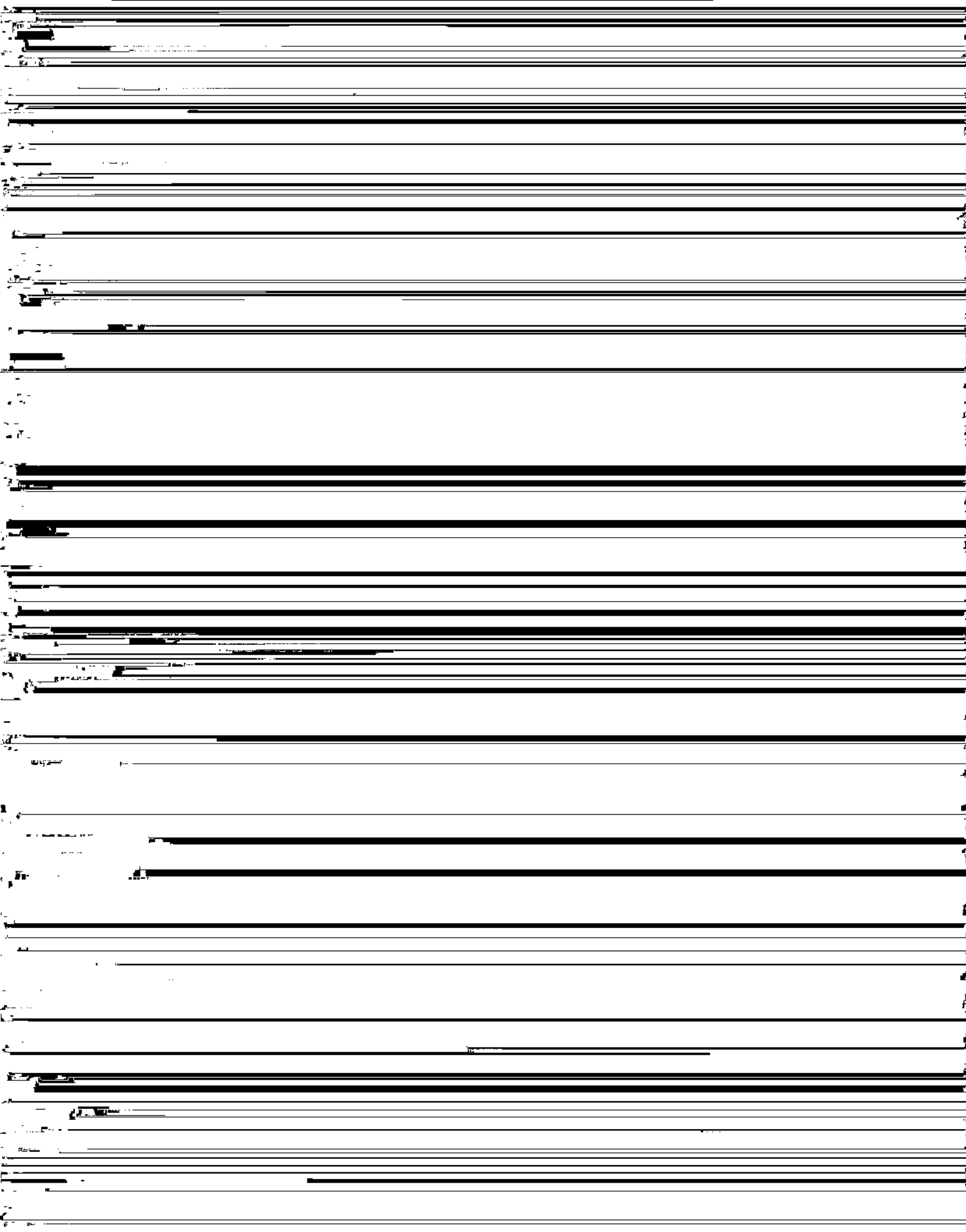
Under the circumstances, nowadays even operators at the work site use own personal computers, and it has become possible to perform all work from his or her own personal computer.

TPM (total productive maintenance) began in the 1970s. Chronologically, so-called time based maintenance was practiced until the 1970s, and in the 1980s, predictive maintenance, namely, the concept of condition-based maintenance, took root.

no longer used only by a limited number of equipment engineers, but has now been transformed into a general purpose system that can be used by all engineers and persons with practical work responsibilities by way of a single personal computer.



but also the system itself was a basic obstacle to use.



in operation by the introduction of GUI was also described.

In the future, in order to ensure stable operation of equipment, it seems that the role borne by technical capabilities in maintenance will be even more important, and development of theoretical equipment management backed by measured data will become indispensable.

Among these trends, the roles of maintenance experienced knowledge-free technology and engineer experts will become even more important.

Modernization of Plant Management System", 9th European Maintenance Cong., (1988)3

- 3) H. Kitamura, Y. Kawamatsu, and S. Kasai: JIPM 1st Int. Conf. TPM, (1991)
- 4) S. Kasai, Y. Kawamatsu, H. Kitamura, and T. Nishikawa: *Plant-Engineer*, (1991)11, 48-54
- 5) T. Terada and T. Takano: 24th Ishikawa-syo Jyusyo-Kinen, (1993), 17
- 6) T. Takano, H. Kitamura, and T. Nishikawa: "Advanced Maintenance for High Quality & High Product": The 2nd Annual Total Productive Maintenance Conf., (1991)10
- 7) A. Ichihara, S. Kasai, H. Yamamoto, M. Tanaka, H.

considered to be the followings: the development of a system that reports the conditions of equipment deterioration to the equipment management center in real time,

69-73

- 8) K. Takagi, H. Hotta, M. Watanuki, N. Inoue, T. Hanada, and A. Matsumura: *Kawasaki Steel Giho*, 22(1990)2, 101-111
- 9) K. Tada, T. Konishi, S. Kasai, T. Naito, H. Kishida, and H.