KAWASAKI STEEL TECHNICAL REPORT
No.45 (November 2001)
"Developed Machinery Maintenance Technology
in Steelmaking Plant"

Maintenance-Free Technology for Hydraulic Equipment

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Maintenance-Free Technology for Hydraulic Equipment*

Synopsis:

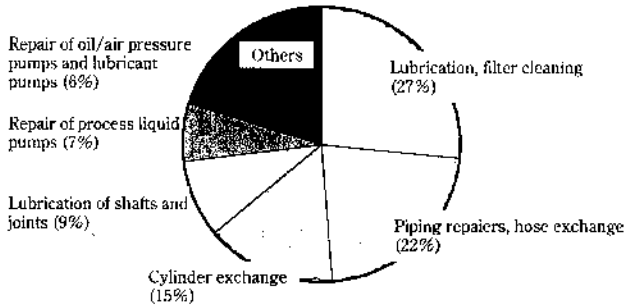
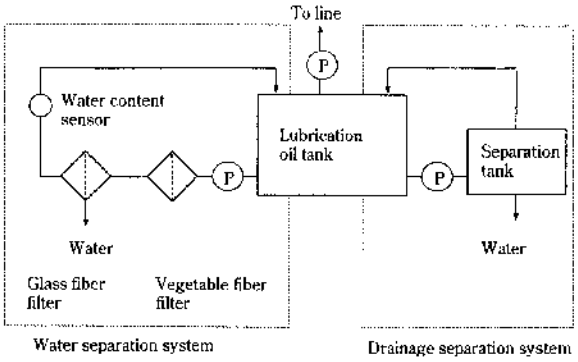
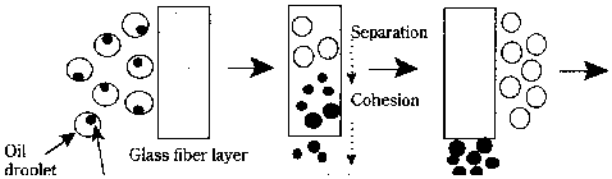


Fig. 1 Profile of works related to hydraulic equipment

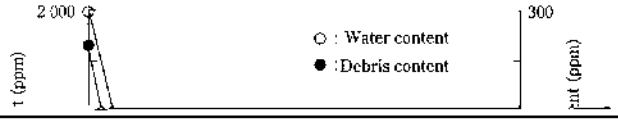


related to hydraulic equipment in cold rolling mills. To realize maintenance-free for hydraulic equipment, it is necessary to extend the cycle of filter exchanges, extend the lives of cylinders and pumps, and extend the lubricating cycle of shafts and joints. It should be noted that the breakdown of work related to hydraulic equipment in the iron- and steelmaking plants is virtually the same as

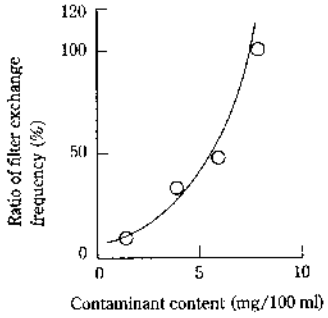


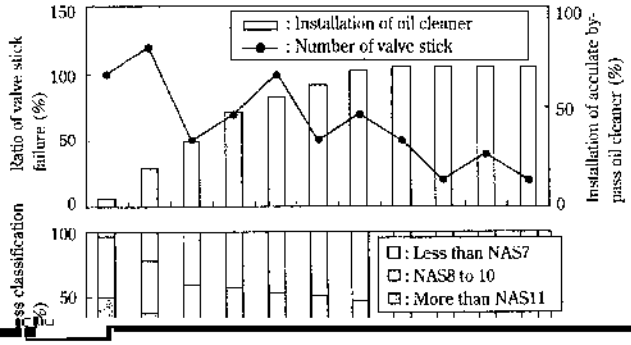
are therefore necessary.[2)]

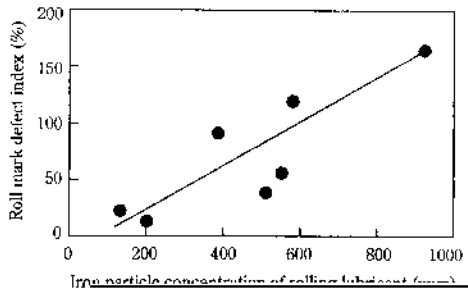
Fig. 2 Mechanism of water removal filter

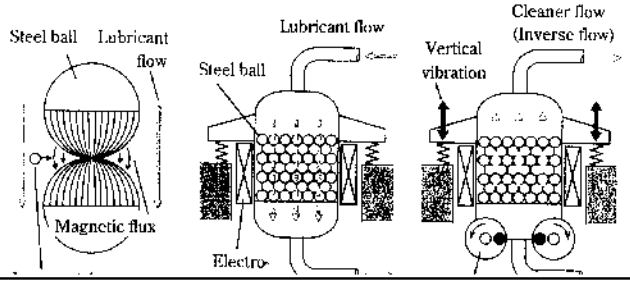


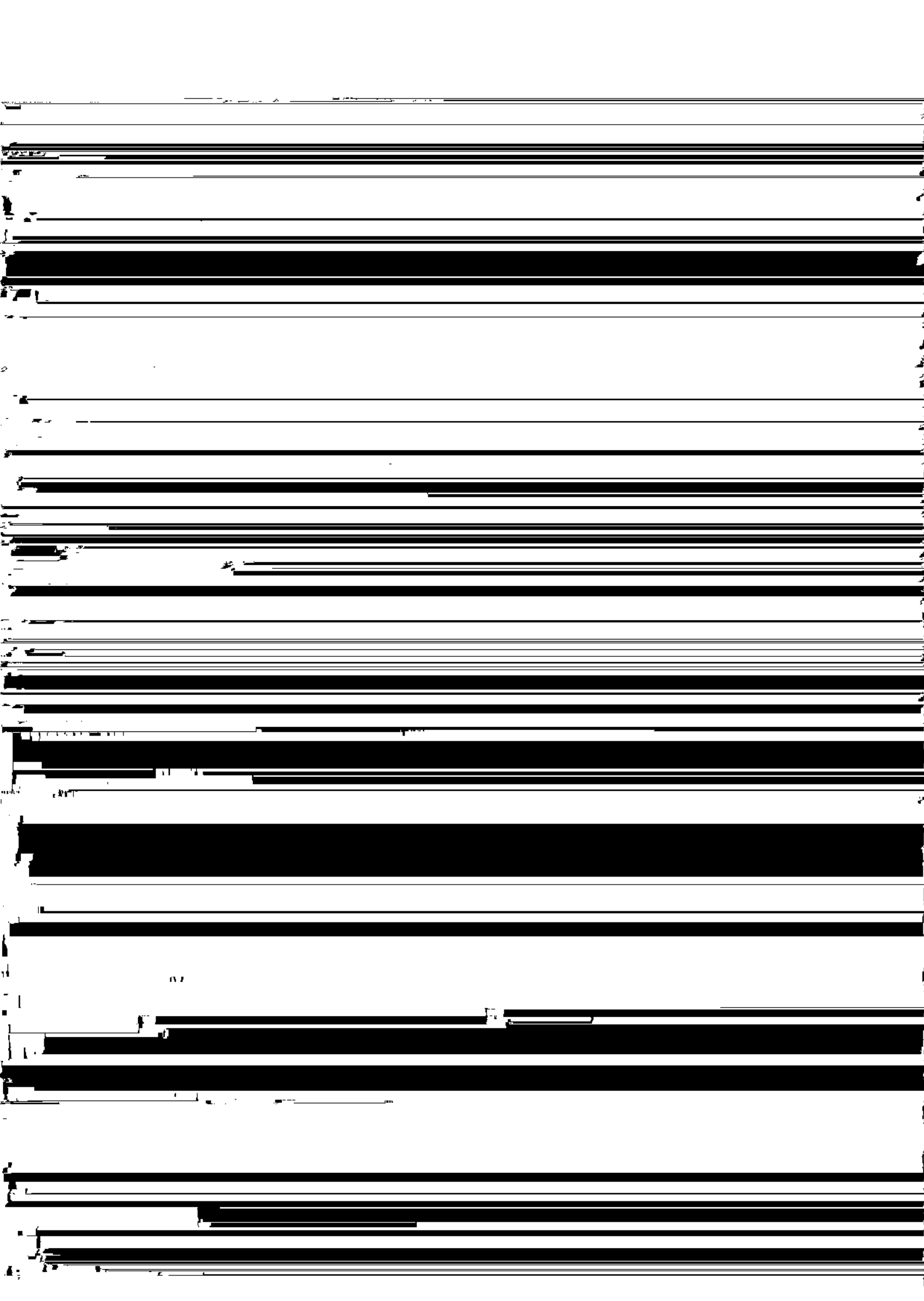
expected. Because the depth element filter has an extremely large capacity of foreign matter capture and can remove both solid particles and oxidized products


Ratio of filter exchange frequency (%)
120
100
50
0
0
5
10
Contaminant content (mg/100 ml)


: Installation of oil cleaner
: Number of valve stick
Ratio of valve stick failure (%)
Installation of acculate by-pass oil cleaner (%)
150
100
50
0
100
50
0
: Less than NAS7
: NAS8 to 10
: More than NAS11


Roll mark defect index (%)
200
150
100
50
0
0
200
400
600
800
1000


Steel ball
Lubricant flow
Magnetic flux
Lubricant flow
Steel ball
Electro-
Vertical vibration
Cleaner flow (Inverse flow)



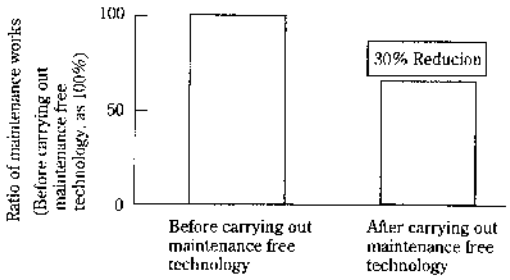


Fig. 20 Transition of ratio of maintenance works at hydraulic equipment

ment of materials and equipment will be necessary in order to achieve even longer equipment life. In any case, however, joint efforts by the makers and users of machinery, hydraulic equipment and fluids, bearings, seals, lubricants, and other components and materials will be required.

References

1) T. Takimoto, N. Ogasawara, and H. Horyoda: *Kawasaki Steel Technical Report*, (2001)45, 3
2) K. Kawashima: Tribology Kenkyukai, 11(2000), 29

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