

New Grain-Oriented Electrical Steels for Transformer Cores with Extremely Low Iron Losses*

Michiro Komatsubara**

Eiji Hina***

Koh Narano****

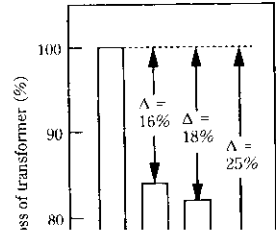
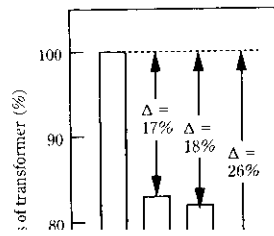
... of domain refining technique to the materials with

The production of grain-oriented silicon electrical steels which are used mainly as the materials for trans-

Table 1 Typical magnetic properties of new materials and conventional one

Material	New materials	Conventional materials
1	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]
5	[REDACTED]	[REDACTED]
6	[REDACTED]	[REDACTED]
7	[REDACTED]	[REDACTED]
8	[REDACTED]	[REDACTED]
9	[REDACTED]	[REDACTED]
10	[REDACTED]	[REDACTED]
11	[REDACTED]	[REDACTED]
12	[REDACTED]	[REDACTED]
13	[REDACTED]	[REDACTED]
14	[REDACTED]	[REDACTED]
15	[REDACTED]	[REDACTED]
16	[REDACTED]	[REDACTED]
17	[REDACTED]	[REDACTED]
18	[REDACTED]	[REDACTED]
19	[REDACTED]	[REDACTED]
20	[REDACTED]	[REDACTED]
21	[REDACTED]	[REDACTED]
22	[REDACTED]	[REDACTED]
23	[REDACTED]	[REDACTED]
24	[REDACTED]	[REDACTED]
25	[REDACTED]	[REDACTED]
26	[REDACTED]	[REDACTED]
27	[REDACTED]	[REDACTED]
28	[REDACTED]	[REDACTED]
29	[REDACTED]	[REDACTED]
30	[REDACTED]	[REDACTED]

applied to stack-core transformers and wound-core ones. The new products have been tested using the model stack-core transformer with iron core structures for step laps as shown in Fig. 3. These results are shown in Table 2. Moreover, the new products have been tested in wound-core transformers with a capacity of 20 kVA and with step lap structures. These results are shown in



which also shows that the iron loss rate of the transformer has been remarkably improved by using this new product.

6 Conclusion

The newly developed materials 22PCGH000N

References

- 1) Kawasaki Steel Corp.: Jpn. Patent 2 655 991
- 2) Kawasaki Steel Corp.: Jpn. Kokoku 07-84615
- 3) Kawasaki Steel Corp.: Jpn. Kokai 09-41042
- 4) Kawasaki Steel Corp.: Jpn. Kokoku 07-72300
- 5) K_Sato, A_Honda, M_Ishida, B_Fukuda, and T_Kan: *J Appl*