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Improvement of Motor Performance
by Use of High-Efficiency Electrical Steels

要旨

電気自動車やハイブリッド自動車用駆動モータとして使用される
ことの名目代表的な種類であるが、その中でも、



Table 1 Magnetic properties of used stator core materials

Material	$W_{10/50}$ (W/kg)	B_{50} (T)
35RMHE250	2.07	1.71
35RMHE300	2.38	1.73
50RMHE300	2.40	1.71
50RMHE350	2.64	1.73
35RMA250	2.36	1.72
50RMA350	3.17	1.76
35RM300	2.39	1.68
50RM230	2.16	1.67
50RM400	2.86	1.71
50RM1300	5.16	1.77

Tests made on 25 cm Epstein samples (L-C) after stress relief annealed at 750°C for 2 h in N_2

Table 2 Specifications of tested brushless DC motor

Motor type	Surface permanent magnet type brushless DC motor
Rated power	300 W

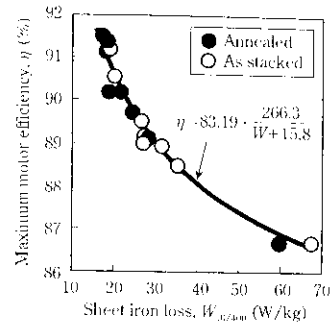
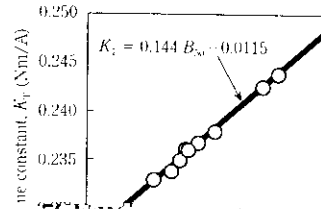
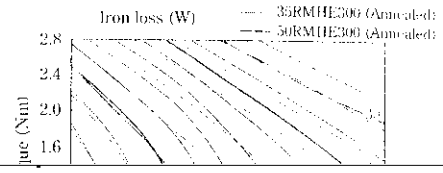
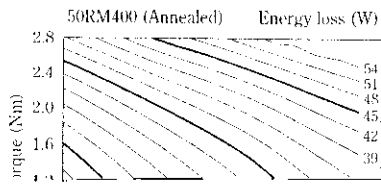


Fig. 1 Relation between maximum motor efficiency of a brushless DC motor and sheet iron loss $W_{10/50}$



(a) RMHF

(a) 35RMHE250 (Annealed)



Rotational speed (rpm)

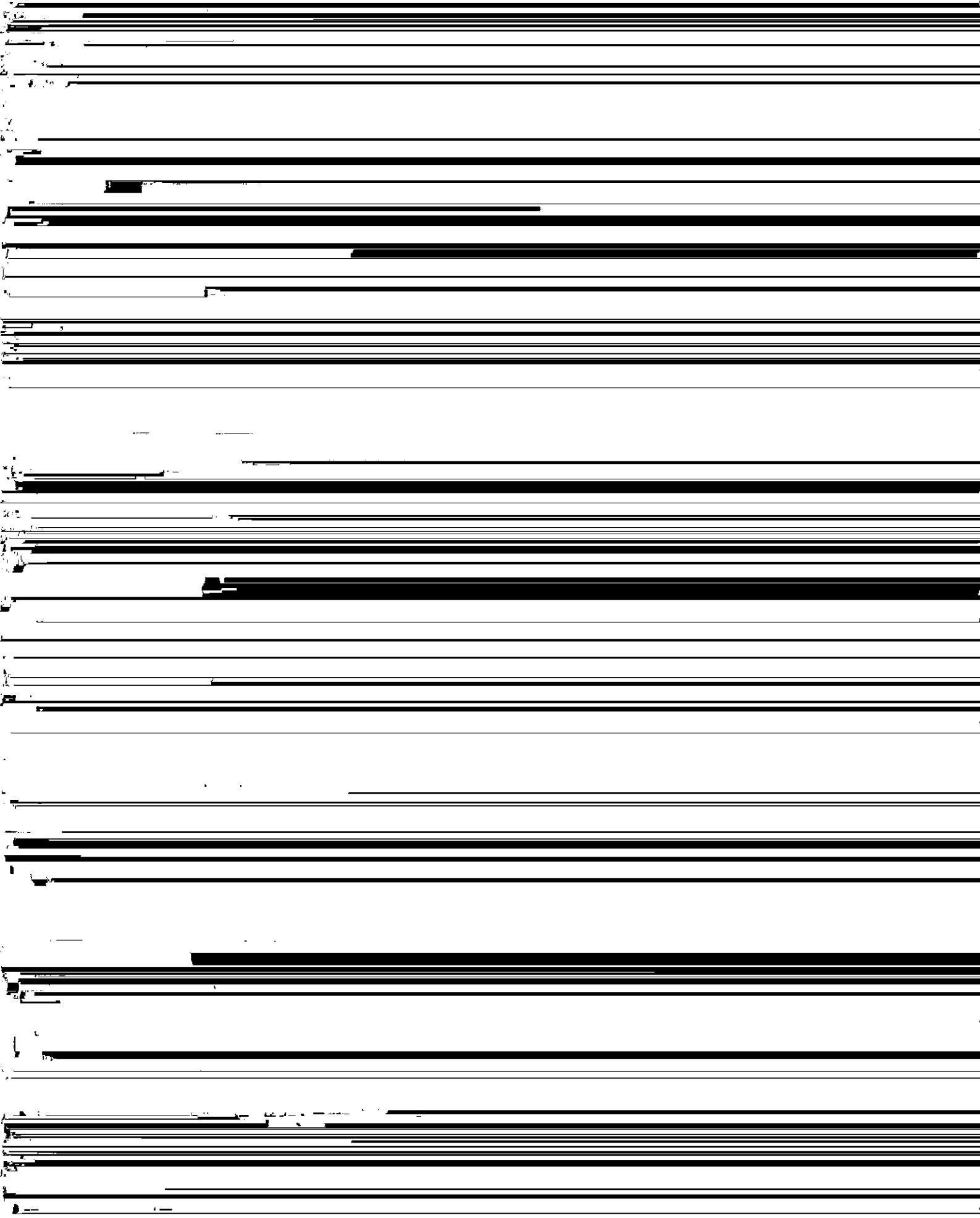
Fig. 5 Energy loss map of a brushless DC motor using 50RM400 as core material

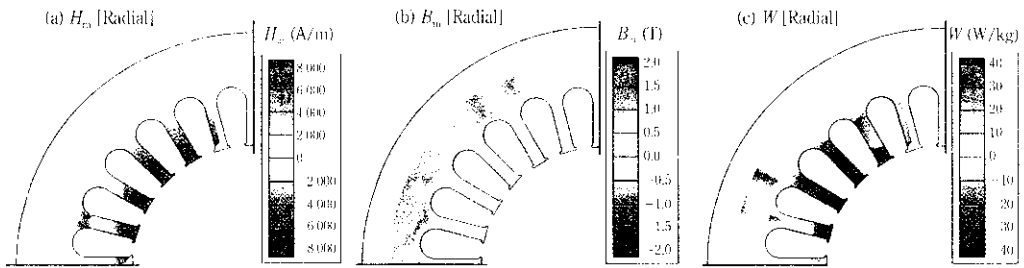
400 800 1200 1600 2000 2400
Rotational speed (rpm)

Fig. 8 Iron loss maps of brushless DC motors using 35RMHE300 and 50RMHE300 as core material

50RM400 (Annealed) --- Copper loss (W)
--- Iron loss (W)

低鉄損となる傾向を示す。より高周波数において低鉄損となる傾向





f (RM400)