

FPGA Development of the Self-sensing Magnetic Bearing System Using The FPGA

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BK21

Key words : (Self-sensing Algorithm), FPGA (Field Programmable Gate Array), TMP (Turbo Molecular Pump)

1.

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$$(1) \quad (2)$$

가
가
가

$$g_0 - x = \frac{\mu_0 A_g N^2}{2V} \cdot \frac{di}{dt} \quad (3)$$

(Feedback Control) (3)

가

가

2.2

[2], [3]

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[4], [7]

8-Pole

(Self-sensing)

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()

Fig. 2 8-pole

(Position Estimator) FPGA

2.

2.1

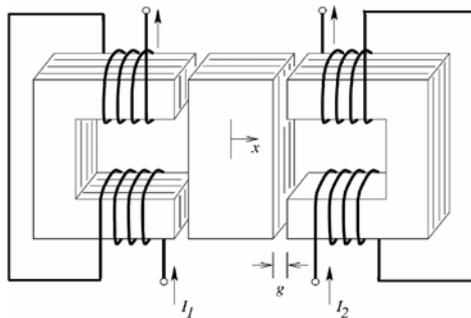


Fig. 1 Magnetic bearing scheme

Fig 1

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Faraday

f g Non-linear Matrix Equation

2.3

[6]

PWM Switching

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Fig.3

$$V = Ri + L \frac{di}{dt} \quad (1)$$

L

$$L = \frac{\mu_0 N^2 A_g}{2(g_0 - x)} \quad (2)$$

R

i

μ_0

가

N Pole

A_g Pole

g_0 , x

