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شبكة المعلومات الجامعية

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# التوثيق الالكتروني والميكروفيلم

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## التوثيق الإلكتروني والميكروفيلم

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SUEZ CANAL UNIVERSITY
FACULTY OF ENGINEERING AND TECHNOLOGY
PORT-SAID
ELECTRICAL ENGINEERING DEPARTMENT

# *PERFORMANCE ANALYSIS OF INVERTER-FED PERMANENT MAGNET SYNCHRONOUS MOTOR*

A Thesis Submitted in Partial Fulfilment for the

Degree of Master of Science

BY

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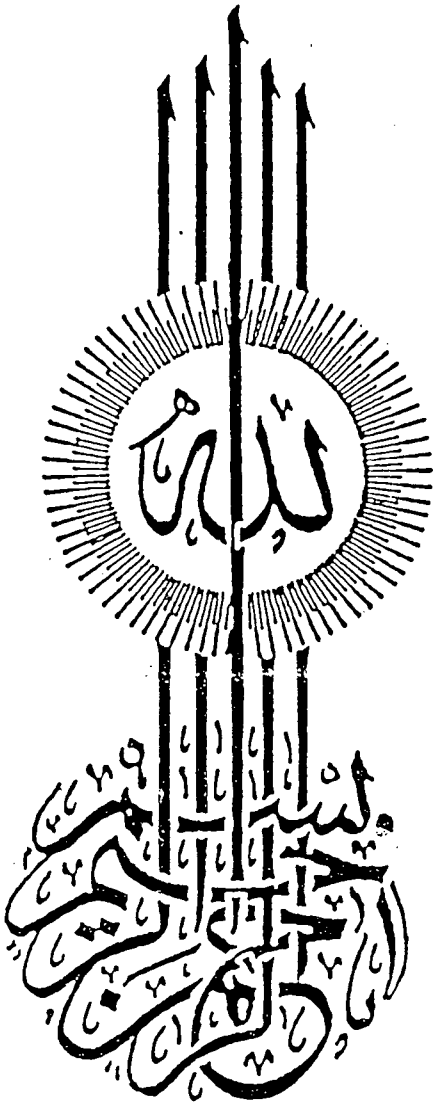

سبحانك

لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

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ARABIC SUMMRY

# NOMENCLATURE

| | |
|---|---|
| a , b | Fourier coefficients. |
| DF | Distortion factor. |
| F | Supply frequency, hz. |
| FR | Frequency ratio. |
| HF | Harmonic factor. |
| H | Inertia constant, sec. |
| I | Current, p.u. |
| L | Inductance, henery. |
| P | Power, p.u. |
| R | Resistance, p.u. |
| rpw | relative pulse - width. |
| S | Slip. |
| T | Torque, p.u. |
| t | Time, sec. |
| V,E | Voltage, p.u. |
| X | Reactance, p.u. |
| 2p | Number of poles. |
| 2m | Number of pulses per half - cycle. |
| $K_D$ | Damping torque coefficient, p.u/rad/sec. |
| $K_S$ | Synchronizing torque coefficient, p.u/rad. |
| $\delta$ | Load angle degree. |
| $\omega$ | Angular velocity, rad/sec. |
| $\rho$ | Differential operator. |
| $\lambda, \psi$ | Flux linkage ( $\psi = \omega\lambda$ ). |

| | |
|---|---|
| $\theta$ | Rotor displacement, degree. |
| $\alpha$ | Triggering angle, degree. |
| $\tau$ | Theoretical maximum pulse - width. |
| $\beta$ | Variable pulse - width. |
| $\Phi$ | Flux wb. |
| $\varphi$ | Power factor. |

## SUB AND SUPERSCRIPTS

| | |
|---|---|
| d | Direct axis. |
| q | Quadrature axis. |
| d.c. | Direct current. |
| n | Harmonic order. |
| f | Field. |
| s | Stator. |
| r | Rotor. |
| m | Mutual. |
| l | Leakage. |
| pm | Permanent magnet. |
| e | Electrical. |
| 0 | Zero sequence. |
| a,b,c | Three phase set. |
| m | Motor. |
| L | Load. |
| rms | Root mean square. |