



Search

Return to Search Results

My Tools ▾

Search History

Marked List 10



Save to EndNote online



3 of 10

## Self-Commissioning of Electrical Parameters for PMSM in Sensorless Drives

By: [Lascau, C](#) (Lascau, Cristian)<sup>[1]</sup>; [Andreescu, GD](#) (Andreescu, Gheorghe-Daniel)<sup>[2]</sup>

Edited by: [Ertan, HB](#)

[View ResearcherID and ORCID](#)

2015 INTL AEGEAN CONFERENCE ON ELECTRICAL MACHINES & POWER ELECTRONICS (ACEMP), 2015 INTL CONFERENCE ON OPTIMIZATION OF ELECTRICAL & ELECTRONIC EQUIPMENT (OPTIM) & 2015 INTL SYMPOSIUM ON ADVANCED ELECTROMECHANICAL MOTION SYSTEMS (ELECTROMOTION)

Pages: 605-U806

Published: 2015

### Conference

**Conference:** Int Aegean Conference on Electrical Machines and Power Electronics (ACEMP) / Int Conference on Optimization of Electrical and Electronic Equipment (OPTIM) / Int Symposium on Advanced Electromechanical Motion Systems (ELECTROMOTION)

**Location:** Side, TURKEY

**Date:** SEP 02-04, 2015

**Sponsor(s):** IEEE; IEEE Ind Elect Soc; IEEE Power Elect Soc; IEEE Power & Energy Soc; Middle E Tech Univ; Transilvania Univ Brasov; Univ Politehnica Timisoara; Tech Univ Cluj Napoca; IEEE Ind Applicat Soc

### Abstract

PMSM applications in high-performance control, with or without sensors, involve well self-tuning of the controllers and observers to machine parameters with off/on-line identifications for "plug-in" controllers. This paper proposed self-commissioning methods to automatic identify the PMSM electrical parameters (stator resistance, dq-inductances and PM flux) in sensorless drives, sometimes the rotor is allowed to move. No added hardware or off-line manipulation is required. An observer-based equivalent stator resistance identification, including the inverter resistance and dead-time, is developed at standstill by using two dc current injection levels in phase a and the corresponding stator voltage references. A new dq-inductance identification strategy using HF voltage injection at standstill is proposed with two cascaded observers: i) observer of the current-produced stator flux (without PM flux) - robust to dc offset and PM flux, and then ii) observer of the dq-inductances based on the error of the current-produced stator flux. The PM flux is estimated at constant speed with V/f control in two steps: the stator flux without integration, and the rotor position based on the active flux are estimated in alpha beta stator reference, and then the PM flux is computed in dq rotor reference. The identification methods are validated by simulation results with good results.

### Keywords

**Author Keywords:** dq-inductances; observer; parameter estimation; permanent magnet flux; permanent magnet motors; sensorless control; stator resistance

**KeyWords Plus:** SYNCHRONOUS MACHINES; IDENTIFICATION; INJECTION; IPMSM

### Author Information

**Reprint Address:** Lascau, C (reprint author)

Politehn Univ Timisoara, Dept Elect Engrn, Timisoara, Romania.

**Addresses:**

[ 1 ] Politehn Univ Timisoara, Dept Elect Engrn, Timisoara, Romania

[ 2 ] Politehn Univ Timisoara, Automat & Appl Informat Dept, Timisoara, Romania

**E-mail Addresses:** [lascucristian@yahoo.com](mailto:lascucristian@yahoo.com); [daniel.andreescu@upt.ro](mailto:daniel.andreescu@upt.ro)

### Citation Network

0 Times Cited

17 Cited References

[View Related Records](#)

[View Citation Map](#)

[Create Citation Alert](#)

(data from Web of Science™ Core Collection)

### All Times Cited Counts

0 in All Databases

0 in Web of Science Core Collection

0 in BIOSIS Citation Index

0 in Chinese Science Citation Database

0 in Data Citation Index

0 in Russian Science Citation Index

0 in SciELO Citation Index

### Usage Count

Last 180 Days: 0

Since 2013: 0

[Learn more](#)

**This record is from:**  
Web of Science™ Core Collection

### Suggest a correction

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

**Publisher**

IEEE, 345 E 47TH ST, NEW YORK, NY 10017 USA

**Categories / Classification**

**Research Areas:** Engineering

**Web of Science Categories:** Engineering, Electrical & Electronic

**Document Information**

**Document Type:** Proceedings Paper

**Language:** English

**Accession Number:** WOS:000382957000094

**ISBN:** 978-1-4673-7239-8

**Other Information**

**IDS Number:** BF6CH

**Cited References in Web of Science Core Collection:** 17

**Times Cited in Web of Science Core Collection:** 0