Sobhan Mohamadian

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EDUCATION

Ph.D. in Electrical Engineering
2010-2016

Iran University of Science and Technology, Tehran/Iran
Thesis: Control Improvement of Five-Phase Synchronous Machine Fed by Load-Commutated Current-Source Inverter
Supervisor: Prof. Abbas Shoulaie

Visiting Researcher in high-Power synchronous Machine Modeling and Drives
2014-2015

University of Trieste, Trieste/Italy
Supervisor: Prof. Alberto Tessarolo

M.Sc. in Electrical Engineering – Power Electronics and Electrical Machine Drives
2007-2010

Iran University of Science and Technology, Tehran/Iran
Thesis: Modeling of a High Current Converter with Variable AC and DC Output Voltage
Supervisor: Prof. Abbas Shoulaie

B.Sc. in Electrical Power Engineering
2003-2007

Iran University of Science and Technology, Tehran/Iran
Thesis: Optimal Allocation of SVC in Power Systems
Supervisor: Senior Lecturer. Ahad Kazemi

RESERCH EXPERTISE

- Power Electronics Converters and Electrical Machine Drives
- Renewable Energy Systems
- Switching Mode Power Supplies and Grid Interface of Distributed Energy Sources
- Power Quality
- Electrical Machines

EMPLOYMENT

Asistant Professor
Sept. 2016-present

- **Damghan University**, Depatment of Engineering, Damghan, Iran

Ph.D. Fellow
2010-2016

- **Iran University of Science and Technology (IUST),** Department of Electrical Engineering, Tehran, Iran, under the scholarship of **Iran Ministry of Science, Research and Technology**

INDUSTRIAL PROJECTS

Semnan Province Electric Power Distribution Company, Semnan, Iran

- Design and Implementation of Single-Phase Smart PV Inverter for Grid-Connected applications (ongoing)

NIDEC-ASI (Ansaldo Sistemi Industriali), Milan, Italy

- Modeling and Field Experiments on High-power LCI-Fed Synchronous Motor Drives

MAPNA Electric & Control Engineering & Manufacturing Company (MECO), Karaj, Iran

- Consultant in the Power System Emulator (PSE) project

Iran University of Science and Technology (IUST), Tehran, Iran

- Implementation of a multilevel Current-Source Inverter (CSI)–fed Synchronous machine drive

Parsian Gas refinery Company, Mehr, Iran

- Investigation into the effect of LED lamps generated harmonics on the electric grid (case study of Parsian Gas refinery Company)

Niroo Research Institute (NRI), Tehran, Iran

- Design and implementation of B-H meter for soft magnetic materials

TEACHING and SUPERVISION

MAPNA Electric & Control Engineering & Manufacturing Company (MECO), Karaj, Iran

- Generalized Theory of Electrical Machines and Synchronous Machines Modeling Course,

MAPNA Electric & Control Engineering & Manufacturing

- Synchronous Machines Drives Course,

Company (MECO), Karaj, Iran

Mahan Institute of higher Education, Tehran, Iran.

- Power Electronics, for Ph.D. Applicants of National Universities Entrance Exam,

Damghan University, Damghan, Iran.

- Power Electronics, Special Topics in Switching Mode Power Supplies, DC Machines (Electrical Machines I), Synchronous Machines and three-phase Transformers (Electrical Machines III), Engineering Mathematics, Technical Language, Industrial Electronics Lab., Electrical Principles Lab.

Adiban Institute of Higher Education, 2017

Supervision
Supervisor of M.Sc Projects

- Investigation into the effect of LED lamps generated harmonics on the electric grid (case study of Parsian Gas refinery Company)
- The effect of harmonics generated by the field circuit power converter on the air-gap flux and stator voltage in wound-field synchronous machines
- Prioritization to the distributed generations based on the approach of loss reduction-to-operation final cost ratio
- Electrical faults and coordination of relay protection in power transformer of high-voltage substation

Shahid Beheshti University, 2019

Co-supervisor of M.Sc Projects

- Design and simulation of a multilevel hybrid Z-source inverter with high gain

ACADEMIC ACTIVITIES

- **Reviewer** for *IEEE Transactions on Power Electronics* (TPEL), *Journal of Emerging and Selected Topics in Power Electronics* (JESTPE), *IEEE Transactions on Industrial Electronics* (TIE), *IEEE Transactions on Energy Conversion* (TEC), *IEEE Transactions on Power Delivery* (TPWRD), etc.

HONORS and AWARDS

National University Entrance Exam, 2003

- Ranked approximately 0.22% among nearly 450,000 competitors of Mathematics and Physics in the B.Sc. National University Entrance Exam in Iran

Iran University of Science and Technology (IUST) Ph.D Enterance

- Ranked first among electrical power engineers taking the exam in order to persue their Ph.D study at IUST

Exam, 2009

Iran Ministry of Science, Research and Technology, 2012

- Being awarded the Iran Ministry of Science, Research and Technology scholarship to become a faculty member after graduation

PUBLICATIONS

***h-index*: 8 (*Google Scholar*)**

❖ Journal Articles

[1] **S. Mohamadian**, and A. Shoulaie, "Comprehensive definitions for evaluating harmonic distortion and unbalanced conditions in three and four-wire three-phase systems based on IEEE standard 1459," *IEEE Transactions on Power Delivery*, vol. 26, no. 3, pp. 1774–1782, Jul. 2011.

[2] **S. Mohamadian**, S. Castellan, A. Tessarolo, G. Ferrari, and A. Shoulaie, "An algebraic algorithm for motor voltage waveform prediction in dual-LCI drives with interconnected DC-links," *IEEE Transactions on Energy Conversion*, vol. 31, no. 2, pp. 506-519, Jun. 2016.

[3] **S. Mohamadian**, A. Tessarolo, S. Castellan, and A. Shoulaie, "Steady-state simulation of LCI-fed synchronous motor drives through a computationally-efficient algebraic method," *IEEE Transactions on Power Electronics*, vol. 32, no. 1, pp. 452-470, Jan. 2017.

[4] A. Tessarolo, **S. Mohamadian**, and M. Bortolozzi, "A new method for determining the leakage inductances of a nine-phase synchronous machine from no-load and short-circuit tests," *IEEE Transactions on Energy Conversion*, vol. 30, no. 4, pp. 1515-1527, Dec. 2015.

[5] **S. Mohamadian**, S. Castellan, A. Tessarolo, M. H. Khanzade, and A. Shoulaie, "A novel thyristor-based CSI topology with multilevel current waveform for improved drive performance," *IEEE Transactions on Power Electronics*, vol. 33, no. 2, pp. 997-1006, Feb. 2018.

[6] A. Parizad, **S. Mohamadian**, M. E. Iranian, and J. M. Guerrero, "Power system real/time emulation: a practical virtual instrumentation to complete electric power system modelling," *IEEE Transactions on Industrial Informatics*, vol. 15, no. 2, pp. 889-900, Feb. 2019.

[7] S. M. Seyyedzadeh, **S. Mohamadian**, M. Siami and A. Shoulaie, "Modeling of the Nonlinear Characteristics of Voltage Source Inverters for Motor Self-Commissioning," *IEEE Transactions on Power Electronics*, vol. 34, no. 12, pp. 12154-12164, Dec. 2019.

[8] A. D. Kolagar, **S. Mohamadian**, and A. Soulaie, "Unbalance assessment and apparent power decomposition in the electric system of interharmonic producing loads," *International Transactions on Electrical Energy Systems*, vol. 24, no. 2, pp.

246-263, Feb. 2014.

[9] M. M. Shahroudi, **S. Mohamadian**, M. S. Naderi, and F. Mahdavizadeh, "A novel reference current generation strategy for multifunction DG-grid interface, using C-RLS algorithm," *International Transactions on Electrical Energy Systems*, vol. 25, no. 11, pp. 2877-2896, Nov. 2015.

[10] M. ghorbani, A. Mosallanejad, and **S. Mohamadian**, "A new method to point of common coupling voltage control in distribution grid-connected photovoltaic systems," *International Transactions on Electrical Energy Systems*, DOI: 10.1002/etep.2491.

[11] **S. Mohamadian**, H. Azizi-Moghaddam, "Conduction and Dead-Time Voltage Drops Estimation of Asymmetric Cascaded H-Bridge Converters Utilizing Level-Shifted PWM Scheme" *Iranian Journal of Electrical and Electronic Engineering* (*IJEEE*), vol. 16, no. 1, pp. 48-57, Mar. 2020.

[12] H. Azizi-Moghaddam, M. H. Saeedinia, **Sobhan Mohamadian**, M. S. Mahdavi, and G. B. Gharehpetian, "Integrated Modeling of Power Network and Connected Flywheel Energy Storage System for Optimal Power and Energy Ratings of Flywheel" *IEEE Transactions on Energy Conversion*, DOI: 10.1109/TEC.2020.3037739.

❖ Conference Papers

[1] **S. Mohamadian**, and A. Shoulaie, "A novel AC/DC converter for high current and low voltage applications," in Proc. 1st *Power Electronic, Drive Systems* and *Technologies Conference* (*PEDSTC*), Tehran, 2010, pp. 152-156.

[2] M. T. Kenari, **S. Mohamadian**, and A. Shoulaie, "A new concept in evaluating power system distortions under unbalanced and nonsinusoidal conditions," in Proc. 9th *IEEE Int. Conf. Environment and Electrical Engineering* (*EEEIC*), Prague, 2010, pp. 179-182.

[3] R. Ghandehari, **S. Mohamadian**, and A. Shoulaie, "A new approach to AC/DC converters modelling in time domain for harmonic analysis," in Proc. 1st *Power Quality Conference* (*PQC*), Tehran, 2011.

[4] **S. Mohamadian**, R. Ghandehari, and A. Shoulaie, "A Comparative study of AC/DC converters used in high current applications," in Proc. 2nd *Power Electronic, Drive Systems* and Technologies Conference (PEDSTC), Tehran, 2011, pp. 604-609.

[5] **S. Mohamadian**, M. H. Khanzade, S. Castellan, and A. Tessarolo, "LCI-fed wound-field synchronous motors: A technology status review and new development trends," in *AEIT Annual Conference - From Research to Industry: The Need for a More Effective Technology Transfer* (*AEIT*), Sep. 2014, Italy, pp. 1–6.

[6] **S. Mohamadian**, A. Tessarolo, and A. Shoulaie, "Design of an efficient starting circuit for LCI-fed synchronous motor drives," in Proc. 5th Int. *Conf. Power Electronics, Drive Systems and Tchnologies* (*PEDSTC*), Tehran (Iran), Feb. 2014,

pp. 31-36.

[7] **S. Mohamadian**, A. Tessarolo, and A. Shoulaie, “Field oriented control of LCI-fed WFSM drives in stator flux reference frame,” in Proc. 5th Int. *Conf. Power Electronics, Drive Systems and Technologies* (*PEDSTC*), Tehran (Iran), Feb. 2014, pp. 19-24.

[8] **S. Mohamadian**, “A novel flux observer and switching scheme for LCI/fed synchronous motor drives,” in Proc. 8th Int. *Conf. Power Electronics, Drive Systems and Technologies* (*PEDSTC*), Mashhad (Iran), Feb. 2017.

[9] **S. Mohamadian** and A. Tessarolo “Improvement fault tolerance of multiphase LCI-fed synchronous motor drives,” in Proc. 18th *Int. Conf. Environmental and Electrical Engineering* (*EEEIC*), Palermo (Italy), June 2018.

[10] A. Parizad, H. R. Baghaee, **S. Mohamadian**, A. Yazdani, G. B. Gharehpetian and J. M. Guerrero, "A Laboratory Set-Up for Real-Time Power System Simulation using LabVIEW and NI PXI Hardware," 2019 *IEEE Power & Energy Society General Meeting* (*PESGM*), Atlanta, GA, USA, 2019, pp. 1-5.

[11] H. Azizi-Moghaddam, **S. Mohamadian,** and R. Nasiri-Zarandi “Adaptive vector control of induction motor based inverse dynamic dynamometer,” 11th Int. *Conf. Power Electronics, Drive Systems and Technologies* (*PEDSTC*), Tehran (Iran), Feb. 2020.