



Mahmoud Fawzi

Assistant Professor (PhD)

- ▶ 08.10.1974 in Port Said
- ▶ Egyptian
- ▶ married

Skills

Electrical engineering 23+ yrs.



Power electronics converters 23+ yrs.



Fault-tolerant control 23+ yrs.



Electrical machines 23+ yrs.



Controllers design 23+ yrs.



HVDC 10+ yrs.



Matlab-Simulink 23+ yrs.



Latex 7+ yrs.



Arabic



English



Biography

I was born in Port Said, Egypt in 1974. I received the M.S. and Ph.D. degrees in electrical engineering from the Suez Canal University, Port Said, Egypt, in 2003 and 2010, respectively. I am currently an assistant professor with the Department of Electrical Engineering, Port Said University. My current research interests include fault diagnosis and fault-tolerant control of power electronic converters, HVDC, MMC, SST, electrical machine drives.

Work experience

Assistant Professor

02/2010 - today

Department of Electrical Engineering
Port Said University, Port Said, Egypt.

Teaching for undergraduate and postgraduate students, supervising M.Sc.& PhD degrees students and working with the education quality team.

During this period i taught the following courses: classical, modern and industrial control systems, electrical machines, power electronics, electrical traction, energy conversion and robot systems.

Part-time researcher

01/2019 - 1/2023

Department of Electrical, Electronic, Computers and Systems Engineering
University of Oviedo-Spain

Working with a research group in the project (Control of traction electronic power converter for railway applications), ref. FUIO-135-19, Funding institution: INGETEAM POWER TECHNOLOGY.

My role was doing the stability analysis of vehicle-catenary systems including different frequencies networks with modern EMUs and traditional rotary converters, analysis and suppression of power oscillations in high speed trains, building Matlab-Simulink models and writing technical reports.

Post- doctoral fellow

10/2014 - 07/2015

Department of Electrical, Electronic, Computers and Systems Engineering
University of Oviedo-Spain

Working with a research group in the field of (development of high power electronics converters) especially Modular Multilevel Converters MMCs with different submodule configurations, DC fault blocking and ride-through with full bridge submodules.

Part-time visiting professor

9/2019 - today

- Sinai University, Arish, Egypt.
- Higher Institute of Engineering and Technology, Arish, Egypt.

Teaching for undergraduate students.

Assistant Lecturer

06/2003 - 02/2010

Department of Electrical Engineering
Suez Canal University, Port Said, Egypt.

Teaching for undergraduate students, working in educational labs.

Education

02/2010

Fault-tolerant control of power electronic converters (PhD)

Suez Canal University

Title: **Improvement of Performance of AC Motor Drives Fault Tolerant Control Systems.**

06/2003

Fault diagnosis of electrical machine drives using AI techniques (M.Sc.)

Suez Canal University

Title: **Three Phase Induction Motor Drive Circuit Fault Diagnosis using Expert Systems.**

05/1997

Electrical power and machines (B.Sc.)

Suez Canal University

Contact

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Demonstrator

Department of Electrical Engineering
Suez Canal University, Port Said, Egypt.

08/1997 - 06/2003

Teaching for undergraduate students, working in educational labs.

On-Line Courses

I have completed the following On-Line Courses

- **Introduction to power electronics**, COURSERA, Dec. 2013.
- **Mobile Robotics**, Open2Study, Mar. 2014.
- **Control of Mobile Robots**, COURSERA, Mar. 2014.
- **Engineering Systems in Motion: Dynamics of Particles and Bodies in 2D Motion**, COURSERA, Apr. 2013.
- **Robot Mechanics and Control, Part I**, EDX, May.2014.

Professional Development Hours (PDHs)

I have completed the following Professional Development Hours (PDHs)

- **Reliability of Modern Power Electronic Based Power Systems**, IEEE PELS Continuing Education, 17 November 2020.
- **Current-fed Isolated Modular Multilevel DC-DC Converter (iM2DC) for MVDC Applications**, IEEE PELS Continuing Education, 30 January 2019.
- **Differential Power: A Fundamental Limit of Power Conversion**, IEEE PELS Continuing Education, 13 September 2018.
- **Modular Multilevel Converter (MMC) for Traction Applications**, IEEE PELS Continuing Education, 17 October, 2017.

Publications

- **Mahmoud Fawzi**, I. Abdelsalam, A. A. Aboushady, S. A. Abdel Maksoud. "**A Modified Phase Shift Control of the Dual Active Bridge-Based Modular Power Electronic Transformer to Minimize the LVdc Side Voltage Ripples Under Unbalanced Load Conditions**". In *IEEE Access*, vol. 10, pp. 81309-81322, 2022.
- **Mahmoud Fawzi**, Fernando Briz. "**Control of Modular Multilevel Converter Based Power Electronic Transformer MMC-PET Under Unbalanced LV Side Conditions**". submitted In: *IEEE Access*, (Under review 2021).
- Ibrahim Elmohamady, **Mahmoud Fawzi**, Sobhy S. Dessouky. "**Evaluation of the Impact of Island Mode for Renewable Energy Systems on the Adaptation Protection under Fault Conditions**". In: *Port-Said Engineering Research Journal*, Vol.24, No.1, pp.114-1209, 2020.
- Nagwa F. Ibrahim, **M. Fawzi**, Hamed A. Ibrahim, Sobhy S. Dessouky. "**Control Strategies for VSC Based HVDC During Grid Faults: A Comparative Study of Selection Criteria of Currents Reference**". In: the 21th Middle East Power System Conference, MEPCON'2019, Cairo, Egypt, Dec.17-19, 2019.
- Mahmoud Y. Mohamed, **M. Fawzi**, Salah A. Abdel Maksoud, A. E. Kalas. "**Finite Element Analysis of Multi-Phase Squirrel Cage Induction Motor to Develop the Optimum Torque**". In: IEEE Conference on Power Electronics and Renewable Energy (CPERE), Aswan, Egypt, Oct. 23, 2019.

- Sobhy S. Dessouky, **M. Fawzi**, Hamed A. Ibrahim, Nagwa F. Ibrahim. "**Analysis of DC Pole to Pole Fault in VSC-HVDC Transmission System**". In: the 20th Middle East Power System Conference, MEPCON'2018, Cairo, Egypt, Dec.18-20, 2018.
- Mahmoud Elghonimy, **M. Fawzi**, A.E. Kalas, Gamal Abdel Azeem. "**Proportional Resonant Controller with Resonant Harmonic Compensators for Three-Phase Static Frequency Converter Feeding Nonlinear Loads**". In: the 19th Middle East Power System Conference, MEPCON'2017, Cairo, Egypt, Dec.19-21, 2017.
- Mahmoud Y. Mohamed, Salah A. Abdel Maksoud, **M. Fawzi**, A. E. Kalas. "**Effect of poles, slots, phases number and stack length changes on the optimal design of induction motor**". In: the 19th Middle East Power System Conference, MEPCON'2017, Cairo, Egypt, Dec.19-21, 2017.
- Sobhy S. Dessouky, **M. Fawzi**, Basem E. Elnaghi, Hamed A. Ibrahim, Mariam K. Shehata. "**Synthetic loading of three phase induction machines using PWM inverter**". In: the 19th Middle East Power System Conference, MEPCON'2017, Cairo, Egypt, Dec.19-21, 2017.
- **M.Fawzi**, Fernando.Briz, A.E.Kalas. "**DC short circuit ride-through strategy for a full-bridge MMC HVDC transmission system**". In: the 19th European Conference on Power Electronics and Applications (EPE ECCE'2017), Warsaw, Poland, Sep. 11-14, 2017.
- **M.Fawzi**, A.E.Kalas, M.H.Elfar, O.Elbakssawy. "**A Study on Energy Balancing and Control of Modular Multi-Level Converters**". In: the 18th Middle East Power System Conference, MEPCON'2016, Cairo, Egypt, Dec.27-29, 2016.
- **M.Fawzi**, A.E.Kalas, M.H.Elfar, O.Elbakssawy. "**Circulating Current Control and Energy Balancing of Modular Multi-Level Converters**". In: the 6th International Conference on Power and Energy (PECon2016), Melaka, Malaysia, Nov.28-29, 2016.
- E.E. El-Kholy, A.E.Kalas, **M.Fawzi**, M. El-Shahat Dessouki, Abdou M El-Refay, Mohammed El-Zefery. "**High Performance Direct Torque Control for Induction Motor Drive Fed from Photovoltaic System**". In: the World Academy of Science, Engineering and Technology (WASET), International journal of energy and power engineering, Vol.9, No.11, 2015, pp 1285-1294.
- A. E. Kalas, Elwy E. El-kholy, **M.Fawzi**. "**Fault Tolerant Control of Four Switch Three Phase Inverter Fed Induction Motor Drive System**". In: the 14th Middle East Power System Conference, MEPCON'2010, Cairo University, Egypt, December 19-21, 2010.
- Farouk M. Abdel-Kader, Elwy E. Elkholy, A. Elsaadawi, A. E. Kalas, **M. Fawzi**. "**A Modified DTC Algorithm for Fault Tolerant Three Phase Induction Motor Drive System**". In: the 13th Middle East Power System Conference, MEPCON'2009, Assuit, Egypt, Dec.20-23, 2009.
- Farouk M. Abdel-Kader, Elwy E. Elkholy, A. Elsaadawi, A. E. Kalas, **M. Fawzi**. "**Fault Tolerant Control of Three Phase Induction Motor Drive System with Current Regulation Technique**". In: the 13th Middle East Power System Conference, MEPCON'2009, Assuit, Egypt, Dec.20-23, 2009.
- A.M.El-Saadawi , A.Kalas, **M.Fawzi**. "**Development of an expert system to fault diagnosis of three phase induction motor drive system**". In: the 12th International Middle-East Power System Conference, 2008. MEPCON 2008. , Aswan, Egypt, 12-15 March 2008.
- I.A.Amin, A.M.El-Saadawi , A.Kalas, **M.Fawzi**. "**Modeling and Simulation of Variable Voltage- Variable Frequency PWM Induction Motor Drive system at Normal and Fault Conditions (Part-II)**". In: the 2nd Minia International Conf. For Advanced Trends In Engineering, 2002, Minia, Egypt, 2002.
- I.A.Amin, A.M.El-Saadawi , A.Kalas, **M.Fawzi**. "**Modeling and Simulation of Variable Voltage-Variable Frequency PWM Induction Motor Drive system at Normal and Fault Conditions (Part-I)**". In: the 2nd Minia International Conf. For Advanced Trends In Engineering, 2002, Minia, Egypt, 2002.

