Professor Mahinda Vilathgamuwa

Science and Engineering Faculty,
Electrical Engineering, Computer Science,
Power Engineering

Personal

Name	Professor Mahinda Vilathgamuwa
Position(s)	Professor in Power Engineering Science and Engineering Faculty, Electrical Engineering, Computer Science, Power Engineering
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Location	View location details (QUT staff and student access only)
Identifiers and profiles	

Qualifications	Ph D (Electrical Engineering) (University of Cambridge)
Professional memberships and associations	Senior Member, IEEE.

Biography

Area of research: *Power Electronics, Electromobility, Wireless Power, Electrical Drives, Renewable Energy;* I am most interested in how electric power can be generated and utilized efficiently. My main focus is on the development of efficient energy conversion processes using new power semiconductor devices along with novel converter topologies and electromechanical systems. With the electrification and automation of many aspects of our lives, it is of paramount important that energy is converted efficiently and economically. Presently, evolving paradigm shift within the energy sector revolutionizes the way energy is generated via modern energy sources and how energy is stored using novel storage devices. This is a challenging yet fascinating task for many contemporary power engineering professionals in today's world. **Academic Qualifications:**

- BSc(Engineering) – (Hons), 1984, Department of Electrical Engineering, University of Moratuwa, Sri Lanka
- PhD (Electrical Engineering) – 1993, Cambridge University, Cambridge, United Kingdom

Summary of Working Experience

- Jun 1985 – Oct 1988 : Assistant Lecturer, University of Moratuwa
- May 1993 – Dec 1993 : Senior Lecturer, University of Moratuwa
- Dec 1993- Dec 1998: Lecturer, Nanyang Technological University, Singapore
- Jan 1999 – Dec 2000: Asst. Professor, Nanyang Technological University, Singapore
- Jan 2001 – Feb 2014 : Associate Professor, Nanyang Technological University, Singapore

Professional Qualifications

- Senior Member – Institute of Electrical and Electronic Engineering

Service to professional bodies

- Secretary – IEEE Singapore Section, 2003
- Secretary – IEEE Singapore Section, 2004
- Committee member -IEEE Singapore Section, 2005
- Committee member -IEEE Singapore Section, 2006
- Deputy Chairman -IEEE Singapore Section, 2007
- Treasurer -IEEE Singapore Section, 2008
- Deputy Chairman -IEEE Singapore Section, 2009
- Deputy Chairman -IEEE Singapore Section, 2010
- Chairman -IEEE Singapore Section, 2011
- Chairman -IEEE Singapore Section, 2012

- General co-chairman – IEEE Power Electronics and Drives Systems Conference, Kuala Lumpur, Malaysia, 2005
- General co-chairman – IEEE Power Electronics and Drives Systems Conference, Bangkok, Thailand, 2007
- General co-chairman – IEEE International conference on sustainable energy technologies, Sri Lanka, 2010
- General co-chairman – IEEE International conference on sustainable energy technologies, Nepal, 2012
- Technical co-chairman – International power and energy conference, Ho Chi Ming City, Vietnam, 2012
- General co-chairman – IEEE Power Electronics and Drives Systems Conference, Sydney,Australia, 2015
- Associate Editor – IEEE Transactions on Industry Applications

Selected List of Grants

- The Analysis, Design and Implementation of Solid State PWM Power Flow Controllers (AcRF RG50/95), Funding Source: Ministry of Education, Singapore, Principal Investigator, 1995 – 1998
- The Stability Of Low Voltage Direct Current Marine Systems, Funding Source: Rolls Royce, Principal Investigator, 2010-2014
- Development of Efficient Inverters for Renewable and Modern Energy Sources, Principal Investigator, Funding Source: Panasonic, 2011-2012

- Novel Energy Efficient Electric Machines For Electric Ships Using Magneto-Caloric Systems, Principal Investigator, Funding Source: Maritime and Ports Authority, Singapore, 2010-2013
- Electro-Mechanical Interactions With Power Inverters In Electric StarterGenerator Application, Principal Investigator, Funding Source: Rolls Royce, 2012-2013
- Electromobility in megacities (TUM CREATE), Funding Source: National Research Foundation, Singapore, 2011-2016
- Optimization and New Designs of Permanent Magnet Generators for Tidal Energy Conversion, Co-Principal Investigator, Funding Source: Atlantis Resources Corporation, 2009-2012
- Development of Photovoltaic (PV) Power Conditioners, Principal Investigator, Funding Source: Panasonic, 2010-2011
- Electro-Mechanical Interactions With Power Inverters, Principal Investigator, Funding Source: Rolls Royce, 2010-2011
- Efficient wireless power transfer system for ventricular assist devices, Principal Investigator, Funding Source: The Prince Charles Hospital Foundation, 2016
- Degradation conscious, electrochemistry based, grid-scale battery energy management system, Principal Investigator, Funding Source: Australian Research Council, 2016-2018

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Teaching

ENB250 – Electrical Circuits; ENB344 – Industrial Electronics; EGH448 – Power Electronis

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Publications

Zhang S, Tseng K, Vilathgamuwa DM, Nguyen T, Xiao Yu W, (2011) Design of a robust grid interface system for PMSG-based wind turbine generators, *IEEE Transactions on Industrial Electronics* p316-328

Loh P, Vilathgamuwa DM, Gajanayake CJ, Lim YR, Teo CW, (2007) Transient Modeling and Analysis of Pulse-Width Modulated Z-Source Inverter, *IEEE Transactions on Power Electronics* p498-507

Wang XY, Vilathgamuwa DM, Choi SS, (2008) Determination of battery storage capacity in energy buffer for wind farm, *IEEE Transactions on Energy Conversion* p868-878

Yun WL, Vilathgamuwa DM, Blaabjerg F, Loh P, (2007) A Robust Control Scheme for Medium-Voltage-Level DVR Implementation, *IEEE Transactions on Industrial Electronics* p2249-2261

Foo GH, Zhang X, Vilathgamuwa DM, (2013) A sensor fault detection and isolation method in interior permanent-magnet synchronous motor drives based on an extended Kalman filter, *IEEE Transactions on Industrial Electronics* p3485-3495

Gajanayake CJ, Vilathgamuwa DM, Loh P, Teodorescu R, Blaabjerg F, (2009) Z-source-inverter-based flexible distributed generation system solution for grid power quality improvement, *IEEE Transactions on Energy Conversion* p695-704

Jayasinghe SG, Vilathgamuwa DM, Madawala U, (2011) Diode-clamped three-level inverter-based battery/supercapacitor direct integration scheme for renewable energy systems, *IEEE Transactions on Power Electronics* p3720-3729

Gao F, Loh P, Blaabjerg F, Vilathgamuwa DM, (2007) Dual Z-source inverter with three-level reduced common-mode switching, *IEEE Transactions on Industry Applications* p1597-1608

Madawala U, Geyer T, Bradshaw JB, Vilathgamuwa DM, (2012) Modeling and analysis of a novel variable-speed cage induction generator, *IEEE Transactions on Industrial Electronics* p1020-1028

Li YW, Vilathgamuwa DM, Loh P, (2007) Robust control scheme for a microgrid with PFC capacitor connected, *IEEE Transactions on Industry Applications* p1172-1182

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