Dr THOMAS JOHN (PhD, FHEA, MIET)

Electrical Power Engineer | Researcher | University Educator
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RESEARCH METRICS

Self-authored Journal Publications - 4
IEEE Conference Papers - 3
Current PhD Students - 1
H-index - 6
Citations – 387
Research Funding - 1 Internal RIF (Principal Investigator)
Internal Grant Activity - Got an award of £4400 from EHU
External Grant Activity - 1 EPSRC Proposal Under Preparation
Professional Recognition – FHEA; MIET; CEng (CEng application in progress)

PROFESSIONAL PROFILE

Electrical Power Engineer with over ten years of international academic experience across the United Kingdom, Singapore and India. My research focuses on power electronics, power systems, AC/DC microgrids, intelligent converter control and renewable energy integration. I combine Model Predictive Control, OPAL-RT real-time simulation, and Software-in-the-Loop techniques to develop experimentally validated solutions for inverter-dominated electricity networks. My research introduced the concept of non-local harmonic current and reactive power compensation and now focuses on the development of the Multi-Functional Distribution Network Device (MDND). I teach undergraduate electrical engineering modules, supervise doctoral research, develop laboratories and contribute to curriculum enhancement.

RESEARCH INTERESTS

- Power Electronics; Power Systems; Microgrids; Grid-Forming Inverters; Model Predictive Control; Renewable Energy Integration; Software-in-the-Loop

SELECTED CAREER HIGHLIGHTS

- Over 10 years of academic teaching experience across the UK, Singapore and India.
- Current PhD supervisor with extensive undergraduate and postgraduate teaching experience.
- Developed the concept of non-local harmonic current and reactive power compensation for interconnected multi-microgrid systems.
- Principal Investigator of an Internal Research Investment Fund project in collaboration with the Power Electronics and Machines Centre, University of Nottingham.

EDUCATION

- PhD in Electrical Engineering – Nanyang Technological University, Singapore (Aug 2012 – Oct 2017)
- M.Eng. in Power Systems Engineering – Anna University, Chennai, India (Aug 2008 – July 2010)
- B.Eng. in Electrical and Electronics Engineering - Anna University, Chennai, India (July 2002 – April 2006)

ACADEMIC APPOINTMENTS

- **Lecturer in Electrical Engineering**, Edge Hill University, Ormskirk, UK (Sep 2022 - Current)
- Lecturer, Blackpool & The Fylde College, Fleetwood, UK (Sep 2020 – Aug 2022)
- Postdoctoral Research Associate, Newcastle University, Newcastle Upon Tyne, UK (Jul 2018 – Jul 2020)
- Assistant Professor, KCG College of Technology, Chennai, India (Jun 2017 – Apr 2018)
- Assistant Professor, Velammal Engineering College, Chennai, India (Jun 2010 – May 2012)

PROFESSIONAL QUALIFICATIONS

- **Fellow of the Higher Education Academy (FHEA)**
- Chartered Engineer (CEng) (*CEng application in progress)

NOVEL RESEARCH CONTRIBUTIONS

- **Non-Local Compensation:** Developed the concept of non-local harmonic current and reactive power compensation for interconnected multi-microgrid systems.
- **Series–Shunt Network Device (SSND):** Proposed a coordinated device architecture for network-level power quality improvement.
- **Multi-Functional Distribution Network Device (MDND):** Current research extending SSND into an intelligent multifunctional converter capable of coordinated power flow control, voltage regulation, harmonic mitigation and AC/DC power exchange.

CURRENT RESEARCH FUNDING & COLLABORATION

- Principal Investigator of an Internal Research Investment Fund project at Edge Hill University to validate intelligent converter control using OPAL-RT in collaboration with the Power Electronics and Machines Centre (PEMC), University of Nottingham.
- Preparing competitive external research proposals focused on intelligent converter control, digital twins and resilient power systems, including an EPSRC proposal under preparation.

PEER-REVIEWED JOURNAL PUBLICATIONS

Four self-authored published journal articles in areas of power systems, power electronics and microgrids.

- **John, T**. & Khan, U. (2024). Control architecture for regulating voltage and power flows in networked microgrid systems. International Transactions on Electrical Energy Systems, DOI: 10.1155/2024/6690355.
- **John, T**. & Sarantakos, I. (2022). Stacking services of energy storage systems in grid-connected microgrids. Renewable Energy, 195, 357–365, DOI: 10.1016/j.renene.2022.06.035.
- **John, T**., Greenwood, D., & Patsios, H. (2020). Non-local harmonic current and reactive power compensation in multi-microgrid systems. IET Generation, Transmission & Distribution, DOI: 10.1049/iet-gtd.2019.1675.
- **John, T**. & So, P. L. (2017). Voltage and frequency control during microgrid islanding. IET Generation, Transmission & Distribution, DOI: 10.1049/iet-gtd.2016.1113.

IEEE CONFERENCE PUBLICATIONS

Three IEEE international conference papers covering hybrid multi-microgrids, converter control and renewable energy integration.

- Khant, A., & **John, T**. (2025). Control of power exchange in hybrid multi-microgrid systems. Proceedings of the IEEE Energy Conversion Congress & Expo Europe (ECCE Europe), Birmingham, UK. DOI: 10.1109/ECCE-Europe62795.2025.11238870
- **John, T**., Wang, Y., Tan, K. T., & So, P. L. (2015). Coordinated operation of a microgrid with a distribution network device. Proceedings of the IEEE Innovative Smart Grid Technologies – Asia (ISGT Asia), Bangkok, Thailand. **DOI:** 10.1109/ISGT-Asia.2015.7387070
- **John, T**., Wang, Y., Tan, K. T., & So, P. L. (2014). Model predictive control of distributed generation inverter in a microgrid. Proceedings of the IEEE Innovative Smart Grid Technologies – Asia (ISGT Asia), Kuala Lumpur, Malaysia. DOI: 10.1109/ISGT-Asia.2014.6873870

MODULES TAUGHT

- Power Electronics; Electrical Machines; Power Systems; Electrical Drives; Electrical Engineering Fundamentals; Electronic Devices and Circuits; Electromagnetism

LABORATORY DEVELOPMENT

- Led the specification, procurement and commissioning, at Edge Hill University, of a modern Electrical Engineering teaching laboratory, containing electrical machines, power electronics, drives, renewable energy and smart-grid equipment.

CURRICULUM DEVELOPMENT

- Designed and updated module content to align with current industrial practice.

PROFESSIONAL SERVICE

- Reviewer for peer-reviewed journals in electrical engineering and power electronics (as invited).
- Active contributor to outreach, open days and engineering student engagement activities.

TECHNICAL EXPERTISE

MATLAB/Simulink • OPAL-RT • PSIM • Software-in-the-Loop (SIL) • Renewable Energy Systems • Hybrid AC/DC Microgrids

REFERENCES – Available on request**.**