

# Wanchak Lenwari

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CONTACT INFORMATION	Department of Control System and Instrumentation Engineering King Mongkut's University of Technology Thonburi 126 Prachauthit Road , Bangmod, Tungkru Bangkok, THAILAND 10140	office: +66 2 470 9096 +66 2 470 9101 fax: +66 2 470 9100 e-mail: wanchak.len@kmutt.ac.th
RESEARCH INTERESTS	Power Electronics and Drives, Power Quality, Smart Instrumentation, Industrial Automation, Advanced Control and Optimisation, Renewable Energy, AI, IoT	
EDUCATION	<b>University of Nottingham</b> , Nottingham, United Kingdom <ul style="list-style-type: none"><li>• Ph.D.(Electrical and Electronic Engineering) <b>October 2003 – July 2007</b></li></ul> Thesis: High performance current control for shunt active filters using resonant compensators Advisors: Professor Mark Sumner and Professor Pericle Zanchetta  <b>University of Birmingham</b> , Birmingham, United Kingdom <ul style="list-style-type: none"><li>• M.Sc.(Power Electronics and Drives) <b>September 1999 – December 2000</b></li></ul> Thesis: Investigation of a new high performance control technique for induction motor drive  <b>King Mongkut's Institute of Technology Thonburi</b> , Bangkok, Thailand <ul style="list-style-type: none"><li>• B.Eng.(Control System and Instrumentation) <b>June 1992 – March 1996</b></li></ul>	
HONOURS AND AWARDS	Royal Thai Government Ph.D Scholarship, 2003-2007	
PROFESSIONAL EXPERIENCE	<b>King Mongkut's University of Technology Thonburi (KMUTT)</b> , Bangkok, Thailand <i>Associate Professor</i> <b>June 2016 – present</b> <i>Assistant Professor</i> <b>March 2010 – June 2016</b> <i>Lecturer</i> <b>June 1996 – March 2010</b> <ul style="list-style-type: none"><li>• INC 222 Electronics for Automation Systems</li><li>• INC 225 Electronics and Digital Laboratory for Automation Engineering</li><li>• INC 227 Industrial Electronics</li><li>• INC 352 Industrial Process Measurement</li><li>• INC 371 Mini Project II</li><li>• INC 102 Fundamental of Instrumentation and Process Control</li></ul> <b>The University of Nottingham</b> , Nottingham, United Kingdom <i>Teaching Assistant</i> <b>2005</b> <ul style="list-style-type: none"><li>• H51EA2 Microprocessor Design Project</li></ul> <b>Electricity Generating Authority of Thailand(EGAT)</b> , Thailand <i>Engineering Practice</i> (Summer Internship) <b>Summer 1995</b>	

RESEARCH ACTIVITIES [Co-Principal Investigator], “Development of Multi-functional Egg Boiler,” ITAP(Innovation and Technology Assistance Program), 2019-2020

[Principal Investigator], “Advanced Control System Design for Power Electronics and Motor Drives using a New Heuristic Optimization Algorithm,” Research Strengthening Project of the Faculty of Engineering, King Mongkut’s University of Technology Thonburi, 2014-2017

[Principal Investigator], “Performance Enhancement and Development of Thread Winding Machine,” Dechapanich Fishing Net Phase II, Khon Kaen, Thailand, 2014-2015

[Principal Investigator], “Performance Enhancement and Development of Thread Winding Machine,” Dechapanich Fishing Net, Khon Kaen, Thailand, 2013

[Team Member], “A Study of Electrical Service Quality Standards in Thailand,” Energy Regulatory Commission, Thailand, 2010-2011

[Principal Investigator], “A High Performance Harmonic Current Control in Power System using Active Filter,” King Mongkut’s University of Technology Thonburi Research Fund, 2008-2010

[Principal Investigator], “The Study of Performance Enhancement in Ready Mixed Concrete Production System of Boral Concrete (Thailand) Co, Ltd (Concrete Production System),” Boral Concrete (Thailand) Co, Ltd, 2009

PROFESSIONAL&  
ACADEMIC SERVICES

*Conference Session Chairs*

- EECON 39(Control 2), Thailand
- ECTI-CON 2014(Power Quality Control), Thailand
- IEEE ICIT 2013(Power Systems and Smart Grid 6), South Africa
- ICCAS 2010(Power System and Control), Korea
- ECTI-CON 2009(Power Electronics II), Thailand
- EECON 30(General Topics), Thailand

*Reviewers*

- IEEE Transactions on Industrial Electronics, IEEE Access
- IET Power Electronics, IET Generation, Transmission & Distribution
- International Transactions on Electrical Energy Systems
- ECTI Transactions on Electrical Engineering, Electronics, and Communications (EEC)
- Many conferences

LIST OF PUBLICATIONS

INTERNATIONAL  
JOURNALS

Warda Gul, Qiang Gao, and **Wanchak Lenwari**, “Optimal Design of a 5MW Double-Stator Single-Rotor PMSG for Offshore Direct Drive Wind Turbines,” *IEEE Transactions on Industry Applications*, vol.56, no.1, pp.216-225, January/February 2020

**W. Lenwari**, and N. Okaeme, “A Novel Heuristic Optimisation Algorithm for Automated Design of Resonant Compensators for Shunt Active Filters,” *IET Power Electronics*, vol.6, issue 9, pp.1842-1850, November 2013

S. Patthamakunchai, M. Konghirun, and **W. Lenwari**, “An Anti-Islanding for Multiple Photovoltaic Inverters using Harmonic Current Injections,” *ECTI Transactions on Electrical Eng. Elect, ronics, and Communications*, vol.11, no.1, pp.18-24, February 2013

**W. Lenwari**, and M. Odavic, “A Comparison of High Performance Control Algorithms for Three-Phase Shunt Active Power Filters,” *International Review on Modelling and Simulations*, vol.4, no.6, pp.2851-2857, December 2011

**W. Lenwari**, M. Sumner, and P. Zanchetta, "The Use of Genetic Algorithms for the Design of Resonant Compensator for Active Filters," *IEEE Transactions on Industrial Electronics*, vol.56, no.8, pp.2852-2861, August 2009

NATIONAL JOURNALS Kanapot Yodmanee, Songklod Sriprang, Anurak Katwattanakul, Sakrit Noosawang, **Wanchak Lenwari**, "Experiment of PI Controller for Indirect Current Control for Single-Phase Shunt Active Filter," *Engineering and Technology Horizons*, vol.41, no.4, Art. no. 410405, [October - December 2024]

Jumpol Chaiyabin, Kunyanat Thongtep, Kamon Jirasereeamornkul, **Wanchak Lenwari**, Sermsuk Buochareon, Yingrak Auttawaitkul, "An Analysis and Comparison of Battery Size Selection and Economic Worthiness of Two Industrial Plants based on Electricity-generating from Solar Power for Self-Consumption," *Journal of Renewable Energy and Smart Grid Technology*, vol.16, no.2, pp.66-76, [January - June 2021]

K. Podumrongchai, **W. Lenwari**, and K. Yodmanee, "Design and Implementation of Proportional-Resonant Controller for Single-Phase Shunt Active Power Filter Using Indirect Current Control Technique," *Engineering Journal Chiang Mai University*, vol.23(6), pp.128-141, [September-December 2019]

Bordin Senanon, Kunyanat Thongtep, Kamon Jirasereeamornkul, **Wanchak Lenwari**, Sermsuk Buochareon and Yingrak Auttawaitkul, "An Economic Analysis of Eight Megawatts Solar Power Plants Between The Fixed System and The Sun Tracking System in Thailand," *Academic Journal Utrarat Rajabhat University (Science and Technology)*, vol.14, no.2, pp.1-19, [July-December 2019]

K. Podumrongchai, **W. Lenwari**, and K. Yodmanee, "Optimization of Proportional-Resonant Controller For Single-Phase Shunt Active Power Filters Based On Indirect Current Control Technique," *Ladkrabang Engineering Journal*, vol.35, no.2, pp.41-48, [June 2018]

P. Chottiyant, **W. Lenwari**, and M. Konghirun,, "Automated genetic algorithm based proportional plus integral controller parameters for permanent magnet synchronous motor drive system," *RMUTP Research Journal*, vol.10, no.2, pp.157-169, [September 2016]

Kanapot Yodmanee, and **Wanchak Lenwari**, "PI Controller Optimization for Indirect Current Control for Single-Phase Shunt Active Filter," *Ladkrabang Engineering Journal*, vol.33, no.1, pp.42-47, [March 2016]

K. Wongkinee, B. Bomsuwan, and **W. Lenwari**, "Design of Feedforward Compensator for Temperature Control System in Electric Water Heater," *KKU Research Journal*, vol.17, no.3, pp.459-468, [May-June 2012]

**W. Lenwari**, "Review of a High Performance Control of AC Signals based on a Proportional plus Resonant Compensator,"[Review Article] *Suranaree Journal of Science and Technology*, vol.15, no.4, pp.333-344, [October-December 2008]

INTERNATIONAL CONFERENCES Santi Nuratch, Thanrada Thanyaphoo, Panuthat Boonpramuk,**Wanchak Lenwari** "A Cross-Browser 3D Graphics Engine with Real-Time Interaction and Communication for Industrial Digital Twins," In Proc. The 2025 SICE Festival with Annual Conference (SICE FES 2025), Chiang Mai, Thailand, September 2025

Sneeyaporn Pengsook, Siritiwa Pangvuthiwani,**Wanchak Lenwari**, and Santi Nuratch "Smart System for Reducing the Spread of Covid-19," In Proc. The 6th International Conference on Power, Energy and Innovations (ICPEI 2024), Korat, Thailand, October 2024

P. Phowanna, S. Boonto, M. Konghirun, and **W. Lenwari**, "Inductance Estimation of IPMSM Using Affine Projection Algorithm," In Proc. of The SICE Annual Conference 2020, Chiang Mai, Thailand, September 2020

Kritapras Mee-im, Santi Nuratch, and **Wanchak Lenwari**, “Design and Development of Embedded Networked Wireless Digital Controller for Multiple Plants using Bit-Representation Data Formation,” In Proc. 19th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications, Information Technology (ECTI-CON 2019), Pattaya, Thailand, July 2019

Nitikorn Eamnapha, Santi Nuratch, and **Wanchak Lenwari**, “The Graphics and Physics Engines for Rapid Development of 3D Web-based Applications,” In Proc. 19th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications, Information Technology (ECTI-CON 2019), Pattaya, Thailand, July 2019

Warda Gul, Qiang Gao, and **Wanchak Lenwari**, “Optimal Design of a 5MW Double Stator Single Rotor Permanent Magnet Synchronous Generator for Offshore Direct Drive Wind Turbines using the Genetic Algorithm,” In Proc. International Conference on Electrical Machines and Systems (ICEMS2018), Jeju, Korea, 7-10 October 2018

Bordin Senanon, Kunyanat Thongtep, Kamon Jirasereeamornkul, **Wanchak Lenwari**, Sermsuk Buochareon and Yingrak Auttawaitkul, “Performance evaluation of sun tracking photovoltaic system in Thailand,” In proc. The 7th International Conference on Sustainable Energy and Green Architecture (SEGA-07), Bangkok, Thailand, 21-22 May 2018

Sakchaiwattana Sutont, Somthawin Khunkhet, Kamon Jirasereeamornkul, **Wanchak Lenwari**, Sermsuk Buochareon and Yingrak Auttawaitkul, “Comparison of 1MW solar power plants with “Arranging solar panel” and “Without arranging solar panels”,” In proc. The 6th International Conference on Sustainable Energy and Green Architecture (SEGA-06), Bangkok, Thailand, 30-31 August 2017

Peerasin Phowanna, Sudchai Boonto, Ekkachai Mujjalinvimut, Mongkol Konghirun, and **Wanchak Lenwari**, “Improved Performance of Sliding Mode Observer using Parameter Adaptation in Sensorless IPMSM drive,” In Proc. The 12th IEEE Conference on Industrial Electronics and Applications (ICIEA 2017), Siem Reap, Cambodia, June 2017

Aphisak pholsriphim, Santi Nuratch, and **Wanchak Lenwari**, “Half-Bridge Resonance Inverter for Induction Heating using Digital-Controlled Pulse Density Modulation Technique,” In Proc. The 12th IEEE Conference on Industrial Electronics and Applications (ICIEA 2017), Siem Reap, Cambodia, June 2017

Sittichok Kaewoonruan, Santi Nuratch, and **Wanchak Lenwari**, “Three Level Single-phase half-bridge NPCVSI Induction Heating with Combined Phase shift PWM and PFM Digital Power Control,” In Proc. 18th International Conference on Electrical Machines and Systems (ICEMS2015), Pattaya City, Thailand, October 2015

P. Chottiyant, M. Konghirun, and **W. Lenwari**, “Automated design of non-overshooting PI controllers for IPMSM drive,” In Proc. 17th European Conference on Power Electronics and Applications (EPE’15 ECCE Europe), Geneva, Switzerland, September 2015

P. Chottiyant, M. Konghirun, and **W. Lenwari**, “The Use of Genetic Algorithms for Speed and Current Controller Designs for IPMSM Drive,” In Proc. 17th International Conference on Electrical Machines and Systems (ICEMS2014), Hangzhou, China, October 2014

W. SriArt, S. Boonto, S. Naetiladdanon, and **W. Lenwari**, “Two-Degree-of-Freedom Robust  $\mathcal{H}_\infty$  Repetitive Control for Grid-Connected Inverter,” In Proc. 11th IEEE International Conference on Control & Automation (ICCA 2014), Taiwan, June 2014

P. Chottiyant, M. Konghirun, and **W. Lenwari**, “Genetic Algorithm Based Speed Controller Design for IPMSM Drive,” In Proc. 11th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications, Information Technology (ECTI-CON 2014), Nakorn Ratchasima, Thailand, May 2014

- W. SriArt, S. Boonto, S. Naetiladdanon, and **W. Lenwari**, “Grid Connected Inverter Control by Two-Degree-of-Freedom Robust  $\mathcal{H}_\infty$  Repetitive Control,” In Proc. 11th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications, Information Technology (ECTI-CON 2014), Nakorn Ratchasima, Thailand, May 2014
- R. Sungworavit, C. Jomdecha, I. Pueng-On, and **W. Lenwari**, “Eddy Current Measurement for Residual Stress Estimation in Stainless Steel Grade 304,” In Proc. International Conference on Materials and Processing Technology 2013 (MAPT 2013), Bangkok, Thailand, June 2013
- W. Lenwari**, “Optimized Design of Modified Proportional-Resonant Controller for Current Control of Active Filters,” In Proc. IEEE International Conference on Industrial Technology (ICIT 2013), Cape Town, South Africa, February 2013
- S. Boonto and **W. Lenwari**, “Two-Degree-of-Freedom  $\mathcal{H}_\infty$  Control Design for Harmonic Current Control of Shunt Active Filters,” In Proc. 15th IEEE International Conference on Harmonics and Quality of Power(ICHQP 2012), Hong Kong, June 2012
- S. Patthamakunchai, M. Konghirun, and **W. Lenwari**, “An Anti-Islanding for Multiple Photovoltaic Inverters using Harmonic Current Injections,” In Proc. 9th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications, Information Technology (ECTI-CON 2012), Hua Hin, Thailand, May 2012
- W. Lenwari**, “Genetic Algorithm-Based Gain Optimization of a Simple Learning Control for Single-Phase Shunt Active Filters,” In Proc. International Conference on Control, Automation, and Systems 2010 (ICCAS 2010), Gyeonggi-do, Korea, October 2010
- W. Lenwari** and M. Odavic, “A Comparative Study of Two High Performance Current Control Techniques for Three-Phase Shunt Active Power Filter,” In Proc. 8th IEEE International Conference on Power Electronics and Drive Systems(PEDS’09), Taipei, Taiwan, November 2009
- W. Lenwari**, K. Tabaiya, and C. Prapanavarat, “An Improved Grid-Connected Photovoltaic System using Two-cell Boost Converter Based on Maximum Power Point Tracking,” In Proc. the Commemorative International Conference on the Occasion of the 4th cycle celebration of KMUTT:Sustainable Development to Save the Earth; Technologies and Strategies Vision(SDSE 2008), Bangkok, Thailand, April 2009
- B. Cheowait, B. Panomruttanarug, and **W. Lenwari**, “Design and Analysis of Current Control for Shunt Active Filter Based on Repetitive Control Technique using Optimization in the Frequency Domain,” In Proc. IEEE International Conference on Robotic and Biomimetic(ROBIO 2008), Bangkok, Thailand, February 2009
- K. Tabaiya, **W. Lenwari**, and C. Prapanavarat, “A Single-Phase Grid-Connected Inverter using a Boost Two-Cell Switching Converter with Maximum Power Point Tracking Algorithm,” In Proc. 5th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications, Information Technology(ECTI-CON 2008), Krabi, Thailand, May 2008
- W. Lenwari**, M. Sumner, and P. Zanchetta, “Automated Design and Implementation of Resonant Controllers for Current Control of Shunt Active Filters,” In Proc. 7th IEEE International Conference on Power Electronics and Drive Systems(PEDS’07), Bangkok, Thailand, November 2007
- W. Lenwari**, M. Sumner, P. Zanchetta and M. Culea, “A High Performance Harmonic Current Control for Shunt Active Filters based on Resonant Compensators,” In Proc. 32nd Annual Conference of the IEEE Industrial Electronics Society(IECON’06), Paris, France, November 2006
- W. Lenwari**, M. Sumner, and P. Zanchetta, “A novel high performance current control for shunt active filters,” In Proc. 12th International Power Electronics and Motion Control Conference(EPE-PEMC 2006), Portoroz, Slovenia, September 2006

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**W. Lenwari**, M. Sumner, and P. Zanchetta, "Design and analysis of high performance current control for shunt active filters," In Proc. 3rd IET International Conference Power Electronics Machines and Drives(PEMD 06), Dublin, Ireland, April 2006

Apisak polsripim, Santi Nuratch, and **Wanchak Lenwari**, "Half Bridge Resonance Inverter for Induction Heating using Digital-controlled Pulse Density Modulation Technique," In Proc. 7th Conference of Electrical Engineering Network of Rajamangala University of Technology 2015(EENET2015), Pattaya, May 2015

K. Tabaiya, **W. Lenwari**, and C. Prapanavarat, "Comparison of Fault Current Behaviors in Two Single-Phase Grid-Connected Photovoltaic Inverters," In Proc. 32nd Electrical Engineering Conference(EECON 32), Prachinburi, October 2009

K. Tabaiya, **W. Lenwari**, and C. Prapanavarat, "Fault Current Behaviors of a Single-Phase Grid-Connected Photovoltaic Inverter," In Proc. 31st Electrical Engineering Conference(EECON 31), Nakhon Nayok, October 2008

B. Cheowait, B. Panomruttanarug, and **W. Lenwari**, "Design and Analysis of Current Control for Shunt Active Filter Based on Repetitive Control Technique using Optimization in the Frequency Domain," In Proc. 31st Electrical Engineering Conference(EECON 31), Nakhon Nayok, October 2008