DR. GEORGIOS KONSTANTINOU

Lecturer, School of Electrical Engineering and Telecommunications
ARC Discovery Early Career Research Fellow, UNSW Sydney

1 Personal Information

Date of Birth :	14 March 1985
Place of Birth :	Serres, Greece
Nationality:	Greek
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3 Education and Qualifications

PhD in Electrical Engineering: The University of New South Wales (UNSW), Sydney, Australia, May 2012.
Thesis title: *"Harmonic Elimination Pulse Width Modulation of Modular and Hybrid Multilevel Converter Topologies"*
Supervisor: Professor Vassilios G. Agelidis

Bachelor of Electrical Engineering (BEng): Aristotle University of Thessaloniki, Thessaloniki, Greece, November 2007 (Five-year degree).
Dissertation title: *"Simulation of High-Voltage substations using ATP-EMTP and estimation of overvoltage levels due to lightning strikes" (in Greek)*
Supervisor: Assoc. Professor Pantelis Mikropoulos

Graduate Diploma in University Learning and Teaching: The University of New South Wales (UNSW), Sydney, Australia, October 2015

4 Employment

4.1 Professional employment

- **UNSW Australia (The University of New South Wales), Sydney**
  - January 2016 – , Lecturer in Energy Systems, School of Electrical Engineering and Telecommunications
  - January 2014 – December 2015, Snr Research Associate, Australian Energy Research Institute (AERI)
  - July 2012 – December 2013, Research Associate, Australian Energy Research Institute (AERI)
  - March 2013 – July 2013, Casual Lecturer
  - April 2012 – July 2012, Casual Research Associate
- **The University of Sydney, Sydney, Australia**
  - March 2012 – July 2014, Casual Academic
  - March 2009 – March 2012, Tutor and Laboratory Demonstrator

4.2 Casual employment

- **Serres Racing Circuit, Serres, Greece**
  - March 2005 – July 2008, Chief time-keeper and results officer
- **Infomega Race Results, Athens, Greece**
  - August 2007 – July 2008, Time-keeper for the world enduro championship (WEC)

5 Membership of Professional Institutes and Societies

- **Institute of Electrical and Electronic Engineers (IEEE) NSW Section:** Chapter Chair for 2017, Vice Chair for 2015 & 2016, Secretary and Treasurer of the Power & Energy (PES) Section for 2013 & 2014.
- **Institute of Electrical and Electronic Engineers (IEEE) US:**
  Student member 2008-2011; Graduate member 2011-2012; Member since 2012; member of:
  - Power and Energy Society
  - Power Electronics Society
  - Industrial Electronics Society
  - Industry Applications Society
  - Smart Grids Society
- **Engineers Australia (EA)** : Assessment of qualifications and skills - 2012
- **The Electric Energy Society of Australia (EESA)**, Since 2013
- **Australian Institute of Energy (AIE)**, Since 2013
- **The Institute of Engineering and Technology (IET)**, Since 2014

6 Awards, Scholarships and Fellowships

6.1 Awards

- **Best Paper Award,** IEEE Power Electronics and Drives Symposium (PEDS 2015).
- **Dean's award for Excellence in Tutoring (2013),** School award for Electrical and Information Engineering, The University of Sydney.
- **Best Session Presentation**, Awarded at IEEE International conference of Industrial Electronics Society, IECON 2013, Vienna, Austria.
- **IEEE Transactions on Power Electronics (TPEL)**, Outstanding Reviewer Award for 2013.
- **Elsevier Electric Power System Research (EPSR)**, Reviewer Contribution Award for 2013 & 2014.

6.2 Grants, Fellowships and Scholarships

- **Australian Research Council (ARC)**: Discovery Early Career Research Award - (DECRA 2017 - DE170100370) (Nov. 2016) (AU $ 360,000)
- **Department of Industry and Science (DIS) - Australian Academy of Technological Sciences and Engineering (ATSE)**: Next Steps Initiative (Aug. 2016) (AU $ 3,360)
- **Department of Industry and Science (DIS) - Australian Academy of Technological Sciences and Engineering (ATSE)**: Australia - China Young Scientists Exchange Program (Nov. 2015)
- **UNSW Australia**: Post-doctoral Writing Fellowship Grant (2012) (AU $ 25,000 for 3 months)
- **IEEE Industrial Electronics Society (IES)**: ICIT 2012 Student Travel Scholarship (US$ 750)
- **UNSW Australia**: Postgraduate Research Support Scheme, 2012 (AU $ 3,300)
- **UNSW Australia**: Energy Research scholarship, 2010, 2011, 2012 (AU $ 25,000 pa)
- **UNSW Australia**: International student tuition fees, 2010, 2011, 2012 (approx. AU $ 28,000 pa)
- **IEEE Power Electronics Society (PELS)**: ECCE 2010 Student Travel Scholarship (US$ 500)
- **The University of Sydney**: Postgraduate Research Support Scheme, 2009 (AU $ 1,500)
- **The University of Sydney**: Research Conversazione, 1st place award, 2008 (AU $ 500)
- **The University of Sydney**: Research Scholarship, 2008, 2009 (AU $ 23,000 pa)
- **The University of Sydney**: International student tuition fees, 2008, 2009 (approx. AU $ 26,000 pa)
- **The University of Sydney**: Norman I. Postgraduate Scholarship, 2008, 2009 (AU $ 7,000 pa)

7 Scholarly Activities

7.1 Publications

7.1.1 Citations

Total Citations: 1150 (Google Scholar, April 2017)

7.1.2 Book Chapters

[1] J. Pou, S. Ceballos, **G. Konstantinou**, "Multilevel converters: topologies, modulation and control," in *Control circuits in power electronics*, ed. 1, The IET, Michael Faraday House, Six Hills Way, Stevenage, SG1 2AY, UK, 2016.

7.1.3 Peer-Reviewed International Journal Articles

[1] K. Song, **G. Konstantinou**, M. Wu, and V.G. Agelidis, "A high performance control strategy for single-phase three-level NPC traction four-quadrant converters", *accepted for publication in IET Power Electronics*, Feb. 2017.

[2] H.R. Wickramasinghe, **G. Konstantinou**, J. Pou, "Comparison of Bipolar Sub-Modules for the Alternate Arm Converter," *accepted for publication in Elsevier Electric Power System Research (EPSR)*, Jan. 2017.

[3] K. Song, **G. Konstantinou**, M. Wu, P. Acuna, R. Aguilera, and V.G. Agelidis, "Windowed SHE-PWM of interleaved four-quadrant converters for resonance suppression in traction power supply systems," *accepted for publication in IEEE Trans. Power Electronics*, Nov. 2016.

[4] Y. Yu, **G. Konstantinou**, C.D. Townsend, and V.G. Agelidis, "Comparison of zero-sequence methods in cascaded H-bridge multilevel converters for large-scale photovoltaic integration," *accepted for publication in IET Renewable Power Generation*, Nov. 2016.

[5] H. D. Tafti, A. I. Maswood, **G. Konstantinou**, J. Pou, K. Kandasamy, Z. Lim, and G. H. P. Ooi, "Study on the low-voltage ride-through capability of photovoltaic grid-connected neutral-point-clamped inverters with active/reactive power injection," *accepted for publication in IET Renewable Power Generation*, Nov. 2016

[6] Y.Yu, **G. Konstantinou**, C.D. Townsend, R. Aguilera, and V.G. Agelidis, "Delta-connected cascaded H-bridge multilevel converters for large-scale PV grid integration," *accepted for publication in IEEE Trans. Ind. Electronics*, Nov. 2016.

[7] I. Lopez, S. Ceballos, J. Pou, J. Zaragoza, J. Andreu, I. Edorta, and **G. Konstantinou**, "Generalized PWM-Based Method for Multiphase Neutral-Point-Clamped Converters with Capacitor Voltage Balancing Capability," *accepted for publication in IEEE Trans. Power Electron.*, 2016.

[8] R. Aguilera, P. Lezana, P. Acuna, **G. Konstantinou**, S. Bernet, B. Wu, and V.G. Agelidis, "Selective harmonic elimination model predictive control for multilevel power converters", *IEEE Trans. Power Electron.*, vol. 32, no. 3, pp. 2416-2426, Mar. 2017.

[9] R. Aguilera, Y.Yu, P. Acuna, **G. Konstantinou**, C.D. Townsend, B. Wu and V.G. Agelidis, "Predictive control of cascaded H-Bridge converters under unbalanced power generation," *IEEE Trans. Ind. Electronics*, vol. 64, no. 1, pp. 4-13, Jan. 2017.

[10] **G. Konstantinou**, J. Pou, D. Pagano and S. Ceballos, "A hybrid multilevel converter with partial embedded energy storage," in *Energies, invited submission to Special Issue from 2nd Energy Future Conference*, Vol. 9, no. 12, Dec. 2016.

[11] **G. Konstantinou**, J. Pou, S. Ceballos, R. Picas, J. Zaragoza and V.G. Agelidis, "Control of circulating currents in modular multilevel converters through redundant voltage levels", *IEEE Trans. Power Electron.*, vol. 31, no. 11, Nov. 2016, pp. 7761 - 7769.

[12] G. Wang, **G. Konstantinou**, C.D. Townsend, J. Pou, S. Vasquez, G. Demetriades, and V.G. Agelidis, "A review of power electronics for grid connection of utility-scale battery energy storage systems," *IEEE Trans. Sustainable Energy*, vol. 7, no.4, Jul.-Aug. 2016, pp. 1778-1790.

[13] **G. Konstantinou**, J. Pou, G.J. Capella, K. Song, S. Ceballos, and V.G. Agelidis, "Interleaved operation of three-level neutral-point clamped converter legs and reduction of circulating currents under SHE-PWM", *IEEE Trans. Ind. Electronics*, vol. 63, no.6, Jun. 2016, pp. 3323-3332.

[14] C. Townsend, Y. Yu, **G. Konstantinou**, and V.G. Agelidis, "Cascaded H-bridge multi-Level PV topology for alleviation of per-phase power imbalances & reduction of second harmonic voltage ripple", *IEEE Trans. Power Electron.*, vol. 61, no. 8, Aug. 2016, pp. 5574-5586.

[15] R. Darus, J. Pou, **G. Konstantinou**, S. Ceballos, and V.G. Agelidis, "Controllers for eliminating the AC components in the circulating current of modular multilevel converters," *IET Power Electronics*, vol. 8, no. 1, pp. 1-8, Jan. 2016.

[16] Y.Yu, **G. Konstantinou**, B. Hredzak, and V.G. Agelidis, "Power balance optimisation of cascaded H-bridge multilevel converters for large-scale photovoltaic integration," *IEEE Trans. Power Electron.*, vol. 31, no. 2, pp. 1108-1120, Feb. 2016.

[17] Y.Yu, **G. Konstantinou**, B. Hredzak, and V.G. Agelidis, "Power balance of cascaded H-bridge multilevel converters for large-scale photovoltaic grid integration," *IEEE Trans. Power Electron.*, vol. 31, no. 1, pp. 292-303, Jan. 2016.

[18] **G. Konstantinou**, J. Pou, S. Ceballos, R. Darus, and V.G. Agelidis, "Switching frequency analysis of staircase modulated modular multilevel converters and equivalent PWM techniques", *IEEE Trans. Power Del.*,, vol. 31, no. 1, Jan. 2016, pp. 28-36.

[19] Y.Yu, **G. Konstantinou**, B. Hredzak, and V.G. Agelidis, "Operation of cascaded H-Bridge multilevel converters for large-scale photovoltaic power plants under bridge failures," *IEEE Trans. Ind. Electron.,* vol 62, no.11, pp. 7228-7236, Nov. 2015.

[20] R. Picas, S. Ceballos, J. Pou, J. Zaragoza, **G. Konstantinou**, V.G. Agelidis, "Closed loop discontinuouus modulation technique for capacitor voltage ripples and switching losses reduction in modular multilevel converters" *IEEE Trans. Power Electron.*, vol. 30, no.9, pp. 4714-4725, Sep. 2015.

[21] R. Darus, J. Pou, **G. Konstantinou**, S. Ceballos and V.G. Agelidis "A modified voltage balancing algorithm for the modular multilevel converter: evaluation for staircase and phase-disposition PWM," *IEEE Trans. Power Electron.*, vol. 30, no. 8, pp. 4119 - 4127, Aug. 2015

[22] M.S.A. Dahidah, **G. Konstantinou**, and V.G. Agelidis, "A review of multilevel selective harmonic elimination PWM: formulations, solving algorithms, implementation and applications," *IEEE Trans. Power Electron.*, vol. 30, no. 8, pp. 4091-4106, Aug. 2015

[23] G. Capella, J. Pou, C. Ceballos, **G. Konstantinou**, J. Zaragoza, and V.G. Agelidis, "Enhanced phase-shifted PWM carrier disposition for interleaved voltage source inverters," *IEEE Trans. Power Electron.*, vol. 30, no. 3, Mar. 2015, pp. 1121-1125.

[24] J. Pou, C. Ceballos, **G. Konstantinou**, V.G. Agelidis, R. Picas, and J. Zaragoza, "Circulating current injection methods based on instantaneous information for the modular multilevel converter," *IEEE Trans. Ind. Electr.*, vol. 62, no. 2, pp. 777-788, Feb. 2015.

[25] **G. Konstantinou**, V.G. Agelidis, and J. Pou, "Theoretical considerations for single-phase interleaved converters operated with selective harmonic elimination PWM," in *IEEE Trans. Power Electron.*, vol. 29, no. 10, pp. 5124-5128, Nov. 2014.

[26] **G. Konstantinou** and V.G. Agelidis, "On re-examining symmetry requirements of two-level selective harmonic elimination PWM: novel formulations, solutions and performance evaluation," in *Elsevier Electric Power System Research (EPSR)*, vol. 108, Jan. 2014, pp. 185-197.

[27] S.R. Pulikanti, **G. Konstantinou**, V.G. Agelidis, "Hybrid seven-level cascaded active-neutral-point-clamped based multilevel converter under SHE-PWM," *IEEE Trans. on Industrial Electronics,* vol. 60, no. 11, pp. 4794-4804, Nov. 2013.

[28] **G. Konstantinou**, J. Pou, S. Ceballos, and V.G. Agelidis, "Active redundant sub-module configuration in modular multilevel converters," *IEEE Trans. on Power Delivery*, Vol. 28, No. 4, pp. 2333-2341, Oct. 2013.

[29] **G. Konstantinou**, M. Ciobotaru, V.G. Agelidis, "Selective harmonic elimination pulse width modulation of the modular multilevel converter," *IET Power Electronics*, Vol. 6, No. 1, pp. 96-107 , Jan. 2013.

[30] M.S.A. Dahidah, **G. Konstantinou**, V.G. Agelidis, "Selective harmonic elimination pulse width modulation seven-level cascaded H-bridge converter with optimised DC voltage levels," in *IET Power Electronics*, Vol. 5, No. 6, pp. 852-862, Jul. 2012.

[31] S.R. Pulikanti, **G. Konstantinou**, V.G. Agelidis, "DC-link voltage ripple compensation for multilevel active-neutral-point-clamped converters under SHE-PWM," *IEEE Trans. on Power Delivery,* Vol. 27, No. 4, pp. 2176-2184, May 2012.

[32] S.R. Pulikanti, **G. Konstantinou**, V.G. Agelidis, "Generalization of flying-capacitor based active-neutral-point-clamped Multilevel Converter Using Voltage-Level Modulation" in *IET Power Electronics*, Vol. 5, No. 4, 2012, pp. 456–466, May 2012.

[33] **G. Konstantinou**, M.S.A. Dahidah, V.G. Agelidis, "Solution trajectories for selective harmonic elimination PWM for seven-level waveforms: analysis and implementation", in *IET Power Electronics*, Vol. 5, No. 1, pp. 22–30, Jan. 2012.

[34] M.S.A. Dahidah, **G. Konstantinou**, N. Flourentzou, V.G. Agelidis, "On comparing the symmetrical and non-symmetrical SHE-PWM technique for two-level three-phase voltage source converters" in *IET Power Electronics*, Vol. 3, No. 6, pp. 829-842, Jul. 2010.

7.1.4 Peer-Reviewed International Conference Papers

[1] **G. Konstantinou**, H.R. Wickramasinghe, J. Pou and S. Ceballos, "Offset PWM in modular multilevel converters for stored arm energy reduction," in *IEEE SPEC 2016,* Auckland, Dec. 2016.

[2] C.D. Townsend, R. Aguilera, P. Acuna, **G. Konstantinou**, J. Pou, G. Mirzaeva, and G.C. Goodwin, "Capacitance minimisation in modular multilevel converters: Using predictive control to inject optimal circulating currents and zero-sequence voltage," in *IEEE SPEC 2016,* Auckland, Dec. 2016.

[3] C.D. Townsend, G. Mirzaeva, G.C. Goodwin, **G. Konstantinou**, and J. Pou "Fractionally-Rated DC-DC Stages for Use in Multilevel Cascaded Converter Utility-Scale Battery Energy Storage Systems," in *IEEE SPEC 2016,* Auckland, Dec. 2016.

[4] H.D. Tafti, A. I. Maswood, **G. Konstantinou**, J. Pou and C.D. Townsend, "Low-voltage ride-through of full-row connected cascaded H-bridge converters," in *IEEE TENCON 2016*, Singapore, Nov. 2016.

[5] H.D. Tafti, A. I. Maswood, **G. Konstantinou**, and J. Pou, "Low-voltage ride-through capability of cascaded H-Bridge multilevel converters for large-scale photovoltaic power plants," in *Proc. ISGT Asia 2016*.

[6] H.R. Wickramasinghe, **G. Konstantinou**, J. Pou and V.G. Agelidis, "Asymmetric overlap and hysteresis current control of zero-current switched alternate arm converter," in *Proc. IECON 2016*.

[7] H.R. Wickramasinghe, **G. Konstantinou**, J. Pou, R. Picas, S. Ceballos, and V.G. Agelidis, "Comparison of bipolar submodules for the alternate arm converter," in *Proc. IECON 2016*.

[8] R. Picas, J. Pou, J. Zaragoza, A. Watson, **G. Konstantinou**, S. Ceballos, and J. Clare, "Submodule power losses balancing algorithms for the modular multilevel converter," in *Proc. IECON 2016*.

[9] H.D. Tafti, A. I. Maswood, J. Pou, **G. Konstantinou**, and V.G. Agelidis "An algorithm for reduction of extracted power from photovoltaic strings in grid-tied photovoltaic power plants," in *Proc. IECON 2016*.

[10] A. Perez-Basante, S. Ceballos, **G. Konstantinou**, J. Pou, J. Andreu, and I.Martinez de Alegria "A Universal formulation for selective harmonic elimination PWM with half-wave symmetry for multilevel voltage source converters," in *Proc. IECON 2016*.

[11] **G. Konstantinou**, G. Wang, and Y. Zhan, "Current economic viability of combined PV and battery energy storage systems for australian households," in *Proc. AUPEC 2016*, pp. 1-6

[12] H.D. Tafti, A. I. Maswood, K. Kandasamy, Z. Lim, G.O.H. Peng, **G. Konstantinou**, and J. Pou, "Study on the unbalanced current injection capability of grid-connected photovoltaic neutral-point-clamped inverter," in *Proc. IEEE ECCE 2016*, pp. 1-6.

[13] A. L. Perez-Basante, S. Ceballos, **G. Konstantinou**, M. Liserre, J. Pou, I.M. de Alegria, "Circulating Current Control for Modular Multilevel Converter based on Selective Harmonic Elimination with Ultra-low Switching Frequency," in *Proc. IEEE EPE - ECCE Europe 2016*, pp. 1-10.

[14] **G. Konstantinou**, J. Pou, S. Ceballos, R. Picas, J. Zaragoza and V.G. Agelidis, "Utilising redundant voltage levels for circulating current control in modular multilevel converters" *accepted at the 41st Annual Conference of the IEEE Industrial Electronics Society (IECON2015)*, Yokohama, Japan, Nov. 2015.

[15] Y. Yu, **G. Konstantinou**, C. D. Townsend, R. Aguilera, B. Hredzak and V.G. Agelidis, "Delta connected cascaded H-bridge multilevel photovoltaic converters' " *accepted at the 41st Annual Conference of the IEEE Industrial Electronics Society (IECON2015)*, Yokohama, Japan, Nov. 2015.

[16] R. Aguilera, Y. Yu, P. Acuna, **G. Konstantinou**, and V.G. Agelidis, "Closed-loop SHE-PWM strategy for power converters by means of model predictive control" *accepted at the 41st Annual Conference of the IEEE Industrial Electronics Society (IECON2015)*, Yokohama, Japan, Nov. 2015.

[17] C. D. Townsend, Y.Yu, **G. Konstantinou**, V.G. Agelidis, and G.D. Demetriades, "Capacitance minimisation & alleviation of per-phase power imbalances in cascaded PV converters" *accepted at the 41st Annual Conference of the IEEE Industrial Electronics Society (IECON2015)*, Yokohama, Japan, Nov. 2015.

[18] R. Picas, J. Pou, J. Zaragoza, S. Ceballos, **G. Konstantinou**, V.G. Agelidis and J. Balcells, "Discontinuous modulation of modular multilevel converters without the need for additional SMs" *accepted at the 41st Annual Conference of the IEEE Industrial Electronics Society (IECON2015)*, Yokohama, Japan, Nov. 2015.

[19] A. Reinhardt, **G. Konstantinou**, D. Egarter, and D. Christine, "Worried About Privacy? Let Your PV Converter Cover Your Electricity Consumption Fingerprints", *accepted at the 6th IEEE International Conference on Smart Grid Communications (SmartGridComm 2015)*, 2-5 Nov., Miami, Florida.

[20] R. Aguilera, Y. Yu, P. Acuna, **G. Konstantinou**, C.D. Townsend, B. Wu, and V.G. Agelidis, "Predictive Control Algorithm to achieve power balance of cascaded H-Bridge converters", *Proc. PRECEDE 2015*, Valparaiso, Chile, Oct. 2015, pp. 1–6.

[21] ⋆**G. Konstantinou**, J. Zhang, S. Ceballos, J. Pou and V.G. Agelidis, "Comparison and evaluation of sub-module configurations in modular multilevel converters," in *Proc. IEEE PEDS 2015*, June 2015, Sydney, Australia, pp. 958–963.

[22] **G. Konstantinou**, J. Pou, S. Ceballos, G. J. Capella and V.G. Agelidis, "Reducing circulating currents in interleaved converter legs under selective harmonic elimination pulse-width modulation," *IEEE Int. Conf. on Ind. Tech. (ICIT), 2015*, March 2015, Seville, Spain, pp. 1136-1141.

[23] **G. Konstantinou**, J. Pou, S. Ceballos, R. Darus, and V.G. Agelidis, "Defining the exact number of submodule transitions in fundamental frequency modulated modular multilevel converters," *IEEE Int. Conf. on Ind. Tech. (ICIT), 2015*, March 2015, Seville, Spain, pp. 3052-3057.

[24] **G. Konstantinou**, R. Darus, J. Pou, S. Ceballos, and V.G. Agelidis, "Modified carrier frequency pulse-width modulation techniques for modular multilevel converters," *Proc. International Power Electronics Conference IPEC 2014 - ECCE Asia*, May 2014, pp. 3758-3763.

[25] R. Darus, **G. Konstantinou** J. Pou, S. Ceballos, and V.G. Agelidis, "Comparison of phase-shifted and level shifted PWM in the modular multilevel converter," *Proc. International Power Electronics Conference IPEC 2014 - ECCE Asia*, May 2014, pp. 3764-3770.

[26] Y.Yu, **G. Konstantinou**, B. Hredzak, and V.G. Agelidis, "Optimal zero sequence injection of multilevel cascaded H-Bridge converter under unbalanced photovoltaic power generation" *Proc. International Power Electronics Conference IPEC 2014 - ECCE Asia*, May 2014, pp. 1458-1465.

[27] R. Darus, J. Pou, **G. Konstantinou**, S. Ceballos and V.G. Agelidis, "A modified voltage balancing algorithm for the modular multilevel converter: Evaluation of staircase and phase-disposition PWM" in *Proc. IEEE Applied Power Electronics Conference (APEC) 2014*, Mar. 2014, pp. 255-260.

[28] **G. Konstantinou**, J. Pou, and V.G. Agelidis, "Selective harmonic elimination PWM for interleaved single-phase full-bridge and NPC rectifiers in traction applications," in *Proc. IEEE IECON 2013*, Nov. 2013.

[29] R. Picas, S. Ceballos, J. Zaragoza, J. Pou, **G. Konstantinou**, and V.G. Agelidis, "Improvements for modular multilevel converter capacitor voltage ripples and power losses with discontinuous modulation," in *Proc. IEEE Industrial Electronics Society (IECON) 2013*, Nov. 2013.

[30] Y. Yu, **G. Konstantinou**, B. Hredzak, and V.G. Agelidis, "On Extending the Energy Balancing Limit of Multilevel Cascaded H-Bridge Converters for Large Scale Photovoltaic Farms", in *Proc. Australasian Universities Power Engineering Conference 2013*, Oct. 2013, pp. 1-7.

[31] R. Darus, J. Pou, **G. Konstantinou**, S. Ceballos and V.G. Agelidis, "Circulating current control and evaluation of carrier disposition in modular multilevel converters", *Proc. of IEEE Energy Conversion Conference and Exposition (ECCE Asia) 2013*, July 2013, Melbourne, Australia.

[32] R. Picas, S. Ceballos, J. Zaragoza, J. Pou, **G. Konstantinou**, and V.G. Agelidis, "Optimal circulating current harmonics for minimization of the capacitor voltage ripple amplitudes of a modular multilevel

converter", in *Proc. of IEEE Energy Conversion Conference and Exposition (ECCE Asia) 2013*, July 2013, Melbourne, Australia.

[33] J. Pou, S. Ceballos, **G. Konstantinou**, G. Capella, and V.G. Agelidis, "Control strategy to balance operation of parallel connected legs of modular multilevel converters", in *Proc. of IEEE International Symposium on Industrial Electronics (ISIE) 2013*, May 2013, Taiwan, pp. 1-7.

[34] **G. Konstantinou**, S.R. Pulikanti, V.G. Agelidis, "Generalized modulator for the seven-level FC based ANPC converter," in *Proc. of IEEE Power Electronics for Distributed Generation (PEDG) 2012*, June 2012, pp. 586-591.

[35] **G. Konstantinou**, S.R. Pulikanti, M. Ciobotaru, V.G. Agelidis, and K. Muttaqi, "The seven-level flying capacitor based active neutral point clamped converter for grid integration of utility-scale PV systems," in *Proc. of IEEE Power Electronics for Distributed Generation (PEDG) 2012*, June 2012, pp. 592-597.

[36] W. Zhao, H. Choi, **G. Konstantinou**, M. Ciobotaru, and V.G. Agelidis "Cascaded H-bridge multilevel converter for large-scale PV grid-integration with isolated DC-DC stage," in *Proc. of IEEE Power Electronics for Distributed Generation (PEDG) 2012*, June 2012, pp. 849-856.

[37] L.K. Law, **G. Konstantinou**, M.S.A. Dahidah, and V.G. Agelidis, "SHE-PWM cascaded multilevel converter with adjustable DC sources control for STATCOM applications", *Proc. of IEEE Energy Conversion Congress and Exposition (ECCE) Asia*, June 2012, pp. 330-334.

[38] **G. Konstantinou**,, M. Ciobotaru, and V.G. Agelidis, "Effect of redundant sub-module utilization on modular multilevel converters," in *Proc. of IEEE International Conference on Industrial Technology (ICIT) 2012*, Mar. 2012, pp. 826-831.

[39] M.S.A. Dahidah, **G. Konstantinou**, and V.G. Agelidis, "SHE-PWM control for asymmetrical hybrid multilevel flying capacitor and H-bridge converter," in *Proc. of IEEE International Conference on Power Electronics and Drives Systems (PEDS) 2011*, pp. 1-6, Dec. 2011.

[40] **G. Konstantinou**, M. Ciobotaru, and V.G. Agelidis, "Analysis of multi-carrier PWM methods for back-to-back HVDC systems based on modular multilevel converters," in *Proc. of IEEE Industrial Electronics Conference (IECON) 2011*, Nov. 2011, pp. 4238-4243.

[41] S.R. Pulikanti, **G. Konstantinou**, M. Ciobotaru, and V.G. Agelidis, "A DC-link voltage ripple compensation method for multilevel active-neutral-point-clamped converters operating with SHE-PWM," in *Proc of. IEEE Industrial Electronics Conference (IECON) 2011*, pp. 4201–4207.

[42] M.S.A. Dahidah, **G. Konstantinou**, and V.G. Agelidis,"Single-phase nine-level SHE-PWM inverter with single DC source suitable for renewable energy systems," in *Proc. of IEEE VPPC 2011*, Sept 2011, pp. 1-6.

[43] **G. Konstantinou**, M. Ciobotaru, and V.G. Agelidis, "Operation of a modular multilevel converter with selective harmonic elimination PWM," in *Proc. of IEEE Energy Conversion Congress and Exposition (ECCE) Asia 2011*, pp. 999 – 1004.

[44] M.S.A. Dahidah, **G. Konstantinou**, and V.G. Agelidis," SHE-PWM and optimized DC voltage levels for cascaded multilevel inverters control," in *Proc. of IEEE International Symposium on Industrial Electronics and Applications (ISIEA) 2010*, pp. 143–148.

[45] S.R.Pulikanti, **G. Konstantinou**, and V.G. Agelidis, "Seven-level cascaded ANPC-based multilevel converter," in *Proc. of IEEE Energy Conversion Congress and Exposition (ECCE) 2010*, pp. 4575-4582.

[46] **G. Konstantinou**, V.G. Agelidis, "Bidirectional rectifier-inverter multilevel topology without DC-link passive components," in *Proc. of IEEE Energy Conversion Congress and Exposition (ECCE) 2010*, Sept. 2010, pp. 2578 - 2583.

[47] **G. Konstantinou**, S.R. Pulikanti, V.G. Agelidis, "Harmonic elimination control of a five-level DC-AC cascaded H-bridge hybrid inverter" in *Proc. of IEEE Power Electronics for Distributed Generation (PEDG) 2010*, May 2010, pp. 352–357.

[48] S. R. Pulikanti, **G. Konstantinou**, and V. G. Agelidis "An n-level flying capacitor based active neutral point clamped converter," in *Proc. of IEEE Power Electronics for Distributed Generation (PEDG) 2012*, May 2010, pp.553-558.

[49] **G. Konstantinou**, V.G. Agelidis, "Bipolar switching waveform: novel solutions to the selective harmonic elimination problem," in *Proc. of IEEE International Conference on Industrial Technology (ICIT) 2010*, Mar. 2010 pp. 696-701.

[50] N. Flourentzou, **G. Konstantinou**, V.G. Agelidis, "DC-bus capacitorless rectifier-inverter motor drive with online optimized harmonic controlled PWM," in *Proc. of IEEE International Conference on Industrial Technology (ICIT) 2010*, Mar. 2010, pp. 344 - 349.

[51] **G. Konstantinou** and V. G. Agelidis, "Performance evaluation of half-bridge cascaded multilevel converters operated with multicarrier sinusoidal PWM techniques," in *Proc. of IEEE International Conference on Industrial Electronics and Applications (ICIEA) 2009*, May 2009, pp. 3399–3404.

7.1.5 Industrial Conference Presentations

[1] **G. Konstantinou**, G. Wang, B. Karanayil, and V.G. Agelidis, "Enhancing Australian protection system testing through Real Time Digital Simulations" ," in *2015 Australian Protection Symposium*, Sydney, Australia, 18-19 Aug. 2015.

7.2 Other Scholarly activities

7.2.1 International Conference Tutorials

- "**State-of-the-art in multilevel power electronics conversion**", AUPEC 2013, 29 Sept.-3 Oct. 2013, Hobart, Tasmania, Australia.
- "**Multilevel and hybrid multilevel power converters: topologies, modulation, control and applications**", IEEE TENCON Spring 2013,17-19 April 2013, Sydney, Australia.

7.2.2 Conference Advisory Committees

- AUPEC 2015, Wollongong, NSW, Australia - Technical Review Committee

7.2.3 Conference Session Chair

- IEEE ISGT Asia, November 2016, Melbourne, Australia.
- AUPEC 2013, 29 Sept. - 03 Oct. 2013, Hobart, Australia.
- IEEE TENCON Spring 2013, 17-19 April 2013, Sydney, Australia.

7.2.4 Journals and Conferences

Associate Editor (AE)

- IEEE Power Electronics (since October 2016)
- IET Power Electronics (since March 2014)

Reviewer for Journals

- IEEE Transactions on Power Delivery (since 2011)
- IET Power Electronics (since 2011)
- IEEE Transactions on Industrial Electronics (since 2011)
- IEEE Transactions on Power Electronics (since 2012)
- Elsevier Electrical Power System Research (since 2012)
- International Journal of Electronics (since 2013)
- Engineers Australia (since 2013)
- IEEE Power Electronics Letter (since 2013)
- Ain Shams Engineering Journal (since 2013)
- IEEE Transactions on Industry Application (since 2013)
- Elsevier Simulation and Modeling: Practice and Theory (since 2014)
- IEEE Transactions on Smart Grid (since 2014)
- Elsevier Expert Systems with Applications (since 2015)
- Elsevier Control Engineering Practice (since 2015)
- IEEE Power and Energy Technology Systems Journal (since 2015)
- Taylor and Francis Electric Power Components and Systems (since 2015)

- MDPI Energies and Applied Science (Since 2016)

Technical Committee Member

- Australasian Power Engineering Conference (AUPEC): 2015

Reviewer for Conferences

- IEEE Energy Conversion Congress and Exhibition (ECCE): 2010, 2011, 2012, 2013, 2014, 2015, 2016
- IEEE Energy Conversion Congress and Exhibition (ECCE) Asia: 2012, 2013, 2014, 2015, 2016
- IEEE Applied Power Electronics Conference (APEC): 2011, 2012, 2013, 2014, 2015, 2016
- IEEE Industrial Electronics Conference (IECON): 2011, 2012, 2013, 2014, 2015, 2016
- IEEE International Conference on Industrial Electronics and Applications (ICIEA): 2011, 2012
- IEEE TENCON Spring Conference: 2013
- IEEE Power Electronics and Drives Symposium (PEDS): 2015
- IEEE International Conference on Industrial Technology (ICIT): 2015
- IEEE PerEnergy: 2015, 2016, 2017

Assessor for Research Proposals

- Australian Research Council (ARC): 2017
- FONDECYT, National Fund for Scientific and Technological Development, Chile: 2015, 2016
- King Fahd University of Petroleum and Minerals, Saudi Arabia: 2013

7.2.5 Training and Self Development

- **Foundations of University Learning and Teaching (FULT - August 2013)** - A five day seminar offered to UNSW academics who wish to develop their practice by exploring a range of perspectives, ideas, theories, and practical approaches to learning and teaching in the higher education context.
- **First Aid course (March 2013)**- 2-day course on first aid (Medilife - UNSW)
- **Self Management (November 2012)** - 1-day course on self management (UNSW)
- **Project Management (November 2012)** - 2-day course on the fundamentals of Project Management (UNSW).
- **Building specific emergency response training** - 1-day course on building risk response and management (Risklogic & UNSW)
- **MathWorks (May 2012)** - Concept to Implementation: Faster System Design with Simulink. How you can use dynamic simulation to model, design and verify control systems before testing on hardware.)
- **TEQuipment Power System Simulator (April 2009)** - A 5-day training course of the PSS, a scaled model of a complete power system, capable of performing load flow and fault studies including calculations and programming of modern digital relays, an integrated SCADA system and systems with distributed generation.

8 Teaching

8.1 Teaching Statement

8.2 Student supervision

- PhD students supervised: Current 1, Completed 2.
  - Rosheila Darus (2015), "Modulation, circulating current control and voltage balancing techniques for the modular multilevel converter".
  - Yifan Yu (2016), "Multilevel power electronics and renewable energy integration".
  - Harith Wickramasinghe (Current), .
- Master's by research students as co-supervisor: Completed 1.
  - Dong Feng (2016), "EMI compatibilty in SiC based converters for renewable energy applications".
- Coursework Master's thesis co-supervisor: Current: 12, Completed: 20.
- 4th year student projects as supervisor: Current: 3, Completed: 8.

8.3 Lecturing / Tutoring responsibilities

8.3.1 UNSW Australia

- **Lecturer & Course Coordinator**
  - **GSOE 9141 – Smart Grids and Distribution Networks** (Semester 1, 2013, 2014, 2015, 2016, 2017)
    Graduate course on smart grids, intelligent electricity networks, smart metering, protection, security, informatics and the associated challenges on implementation.
  - **ELEC 1111 – Electric Circuits** (Semester 1, 2016 & 2017, Summer 2017)
    First year undergraduate course on electric circuits offered to multiple Schools from across the faculty of Engineering.

    In 2017, I was project leader in the redesign of the ELEC1111 course with the inclusion of blended elements, revision of teaching methods used in the course, tutorials and laboratory exercises. The project was supported by the Faculty of Engineering The changes have been trialled in Summer 2017 and the course is currently run in full scale (410 enrollments) in Semester 1, 2017.
  - **ELEC 9123 – Design Proficiency** (Semester 2, 2016)
    Postgraduate laboratory based design course in Electrical Engineering.
  - **ELEC 9781 – Special Topics in Electrical Engineering** (Under Preparation for Semester 2, 2017)
    Laboratory based course on real-time digital simulation of power systems and power electronics. The first of its kind in Australia and among very few courses globally, the course will provide access and training of postgraduate students to the state-of-the-art real-time digital simulation facilities of UNSW.

8.3.2 The University of Sydney

- **Tutor & Teaching Assistant.** Tutored year 3, year 4 and Masters level courses in Power Engineering at the University of Sydney.
  - ELEC 3204 – Power Electronics (Semester 1, 2009 & 2010)
    Introductory course of power electronics covering AC-DC, DC-DC and DC-AC converters. I was responsible for the tutorial exercises and computer simulation laboratories of the course.
  - ELEC 5203 – Topics in Power Engineering (Semester 2, 2009, 2010 & 2011)
    Master's course in power engineering covering aspects of reactive power compensation, control in power systems, HVDC systems and power electronics converters in power systems. I was responsible for the tutorial exercises of the course.
  - ELEC 5204 – Power Systems Analysis (Semester 2, 2011, 2012 & 2013)
    Master's course covering analysis of power systems, faults and power system protection. I was responsible for the tutorial exercises of the course.
  - ELEC 5205 – High Voltage Engineering (Semester 2, 2009, 2010, 2011, 2012 & 2013)
    Master's course in High voltage engineering. I was assisting the tutorial exercises of the course.
  - ELEC 5206 –Sustainable Energy Systems (Semester 2, 2011)
    Master's course in Renewable energy systems, solar and wind power. I was assisting the tutorial exercises of the course.
- **Laboratory demonstrator.** As a laboratory demonstrator I was responsible for delivering laboratory exercises, assignments and marking for Masters level courses in power engineering at the Sir William Tyree Laboratory of Power Engineering and the ABB technology center at the University of Sydney. I developed and continuously updated the lab exercises manual and all necessary additional material for the TEQuipment Power System Simulator available at the laboratory, marking assignment and examination. I have been actively engaged with teaching at the University of Sydney and have been acting as a outside laboratory demonstrator.
  - ELEC 5204 – Power Systems Analysis (Semester 1, 2011, 2012, 2013 & 2014)
    Lab exercises on system analysis, fault calculation and overcurrent protection of power systems based on the Power System Simulator.

- ELEC 5203 – Topics in Power Engineering (Semester 2, 2009, 2010, 2011 & 2012)
  Lab exercises on transmission lines, cables, generation, reactive power compensation and load flow studies.
- ELEC 5205 – High Voltage Engineering (Semester 2, 2009 & 2010)
  Assisted in the high voltage engineering lab.
- ELEC 5206 – Sustainable Energy Systems (Semester 2, 2011)
  Assisted in laboratories regarding solar power, maximum power point tracking and wind power integration (computer simulations).

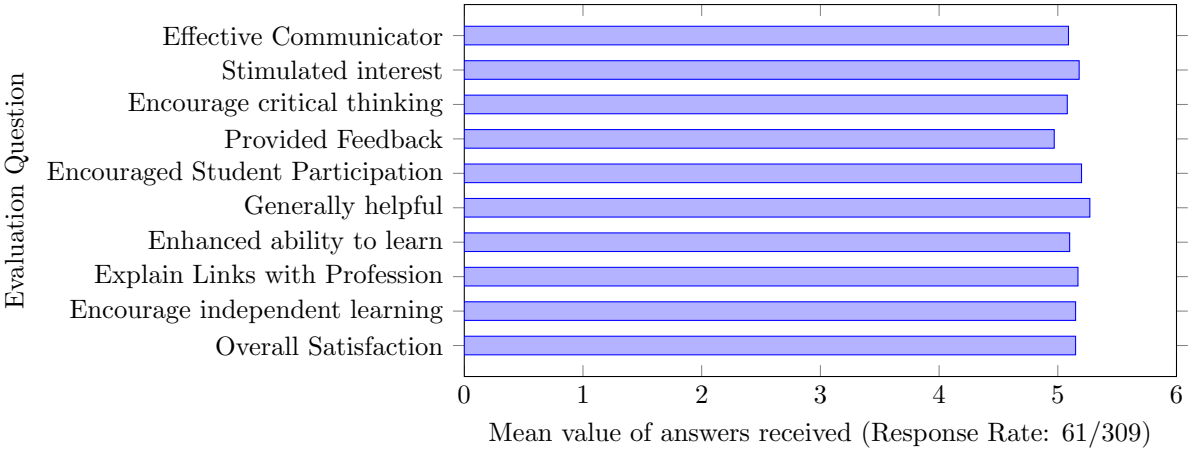
8.4 Evidence of teaching performance

I believe that teaching and learning duties are an integral part of an academic. My teaching philosophy focuses on using blended learning concepts and integrate technological aspects in order to deliver an interesting, rewarding and fulfilling experience to the student.

My first course as a lecturer was **GSOE 9141 - Smart Grids and Distribution Networks**, a postgraduate course of the graduate school of Engineering, for Semester 1, 2013. I have been the course coordinator and lecturer for the past four years. A summary of the latest Course Evaluation (CATEI & MyExperience) reports for GSOE 9141 is provided below:

GSOE9141 - Course Evaluation	**2013**	**2014**	**2015**	**2016**
Q1 - Clear Course Aims	4.89	5.21	5.13	5.63
Q2 - Helpful feedback	4.33	5.21	5.08	5.69
Q3 - Challenging and interesting	4.88	5.21	5	5.5
Q4 - Active student participation	4.78	5	4.9	5.4
Q5 - Developing my thinking skills	5	5.14	4.96	5.75
Q6 - Clear assessment	5.11	5.29	5.38	5.5
Q7 - Appropriate assessment methods	4.67	5.07	5.17	5.88
Q8 - Independent learning	4.78	5.21	5.21	5.75
Q9 - Development of original ideas	4.38	4.93	4.95	5.63
Q10 - Overall Satisfaction	4.89	5.07	5.04	5.69

I have participated in peer reviews of learning and teaching and a summary of the Teacher Evaluation for ELEC 1111 (Semester 1, 2016) is provided below.



I was awarded the **2013 Dean's Award for Excellence in Tutoring** for the School of Electrical and Information Engineering, The University of Sydney.