

Curriculum Vitae

Name : CHUNG Shu hung, Henry (鍾樹鴻)

Marital Status : Married, two daughters

Date of Birth : Jan. 25, 1966

Area of Specialism : Power Electronics

Contact Address : Dept. of Electronic Engineering, City University of Hong Kong, Tat Chee Avenue, Kowloon Tong, Kowloon, Hong Kong.

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Educational Qualifications :



Year	Award	Discipline	Institution
1994	Doctor of Philosophy	Power Electronics	Hong Kong Polytechnic University
1991	Bachelor (First Class Honours)	Electrical Engineering	Hong Kong Polytechnic University
1988	Higher Diploma (Distinction)	Electrical Engineering	Hong Kong Polytechnic University
1985		Secondary School	Raimondi College
1983		Primary and secondary	St. Joan of Arc School

Membership of Professional Bodies

Fellow of HKIE
Fellow of IEEE

Appointments

2016 Assistant Head, Department of Electronic Engineering, *City University of Hong Kong*

2013 - 2016 Specially Appointed Chair Professor under Eastern Scholar Award Program

2005 – Present

- Professor, *City University of Hong Kong*
- Director, *Centre for Smart Energy Conversion and Utilization Research, CityU*
- Visiting professor, *SUN Yat-Sen University, China*
- Affiliate Professor, School of Energy and Environment, CityU

2006 – 2010

- Associate Dean, College of Science and Engineering, *CityU*
- Chief Technical Officer, *e.Energy Technology Limited (An Associated Company of the CityU Enterprises Limited - www.eenergy.com.hk)*

1998 - 2005

- Associate Professor, *City University of Hong Kong*
- Chief Technical Officer, *e.Energy Technology Limited (An Associated Company of the CityU Enterprises Limited - www.eenergy.com.hk)*

1995 - 1998 Assistant Professor, *City University of Hong Kong*

1994 - 1995 Electronic Engineer, *Bert Corporation Ltd.*

Prizes, Scholarships, and Records

- [1] Teaching Excellence Award, CityU, 2018.
- [2] CSE Discovery and Innovation Gala Award 2016 for the project entitled “Intelligent Battery Tester”.
- [3] Best Paper Award at ECCE 2015 conference, for the paper, entitled “Modeling and Experimentation of Loosely-Coupled Coils with Transmitter Having Orthogonally-Placed Windings,” selected by the Technical Committee on High Performance and Emerging Technologies, IEEE Power Electronics Society, on Sep 20 2016.
- [4] The President’s Award, CityU, 2016.
- [5] Second Prize for ECCE 2014 conference, for the paper, entitled “Inductive Power Transfer System for Driving Multiple OLED Lighting Panels”, selected by the Renewable and Sustainable Energy Conversion Systems Committee of the Industry Applications Society, on Sep 22, 2015.
- [6] The HKIE Outstanding Paper Award for Young Engineers/researchers 2015, Hong Kong Institution of Engineers
- [7] Eastern Scholar Award, Shanghai Institutions of Higher Education, Jan 15, 2013.
- [8] Excellent Product Awards for two projects “*An Apparatus for Reducing DC-link Capacitance*” and “*LED Replacement Lamp Driver with Universal Compatibility*” at the 14th China Hi-Tech Fair, Shenzhen, China, Nov 16-21, 2012
- [9] Innovation and creativity Award, 2011 Hong Kong Awards for Industries
- [10] Silver Award, Best Green ICT Award (Adoption – SME), 2011
- [11] The HKIE Outstanding Paper Award for Young Engineers/researchers 2010, Hong Kong Institution of Engineers
- [12] First Class Prize in the Natural Science Award 2009, Ministry of Education, PRC
- [13] Machinery and Machine Tools Design Award, 2009 Hong Kong Awards for Industries
- [14] Outstanding Teacher Awards, Dept. of Electronic Engineering, CityU, first prize in 2008/09, 2010/2011, and 2013/2014, and second prize in 2009/2010, 2011/2012, 2012/2013, 2014/2015, 2017/2018.
- [15] Notable Mention, Hong Kong Eco-Products Award 2006
- [16] Best New Product 2005 award, Australia Electrical and Electronic Manufacture's Association (AEEMA)
- [17] Consumer Product Design Award, Hong Kong Awards for Industries 2004
- [18] Technological Achievement Award, Hong Kong Awards for Industries 2001
- [19] Grand award in the 3rd Applied Research Excellence Award Competition
- [20] Silver Prize in International Chinese Invention Expo '98
- [21] *Who's Who in the World*, 16th Edition.
- [22] *Dictionary of International Biography*, 28th Edition
- [23] Li Po Chun Scholarship
- [24] NanShing/Nanco Scholarships [Twice]
- [25] China Light and Power Prize
- [26] Sir Edward Youde Memorial Fund Scholarship
- [27] Sir Edward Youde Memorial Fund Fellowship
- [28] Taipei Trade Centre Scholarship
- [29] Croucher Foundation Scholarship.

Publications

Book

- [1] *Reliability of Power Electronic Converter Systems*, edited by **Henry Shu-hung Chung**, Frede Blaabjerg, Huai Wang, and Michael Pecht, IET Research Book, September 2015.

Book Chapters

- [1] S.Y.R. Hui and **H. Chung**, "Resonant and Soft-Switching Converters," *Power Electronics Handbook*, edited by M. H. Rashid, Academic Press, 2000, pp. 271-304.
- [2] J. Zhang, **H. Chung**, S.Y.R. Hui, W.L. Lo, and A. Wu, "Decoupled Optimization of Power Electronics Circuits Using Genetic Algorithm," *Practical Handbook of Genetic Algorithms – Applications*, edited by L. Chambers, CRC Press, 2000, pp. 135-166.
- [3] **H. Chung**, E. Tam, W. L. Lo, S.Y.R. Hui, "An optimized fuzzy logic controller for active power factor corrector using genetic algorithms," *Practical Handbook of Genetic Algorithms – Applications*, edited by L. Chambers, CRC Press, 2000, pp. 363-390.
- [4] **H. Chung**, S.Y.R. Hui, K.K. Tse, "Use of chaotic switching for EMI suppression in power converters," *Chaos in Circuits and Systems*, edited by G. Chen and T. Ueta, World Scientific, 2002, pp. 341-365.
- [5] Jun ZHANG, **H. Chung**, W.L. Lo, and B.J. Hu "Fuzzy Knowledge Incorporation in Crossover and Mutation", *Knowledge Incorporation in Evolutionary Computation Series: Studies in Fuzziness and Soft Computing*, edited by Yaochu Jin, Springer Press, 2004, ISBN:3-540-22902-7, pp. 123-143.
- [6] S.Y.R. Hui and **H. Chung**, "Resonant and Soft-Switching Converters," *Power Electronics Handbook*, edited by M. H. Rashid, Academic Press, 2006, pp. 405-449.
- [7] **H. Chung**, "Minimization of DC Link Capacitance in Power Electronic Converter systems," *Reliability of Power Electronic Converter Systems*, edited by Henry Shu-hung Chung, Huai Wang, Frede Blaabjerg, and Michael Pecht, IET Research Book, September 2015, pp. 141-163.
- [8] H. Wang, F. Blaabjerg, **H. Chung**, and M. Pecht, "Reliability Engineering in Power Electronic Converter systems," *Reliability of Power Electronic Converter Systems*, edited by Henry Shu-hung Chung, Frede Blaabjerg, Huai Wang, and Michael Pecht, IET Research Book, September 2015, pp. 1-30.
- [9] W. Wang, H. Chung, J. Zhang, and W.L. Lo, "Chapter 15 - Use of Computational Intelligence for Designing Power Electronic Converters," *Control Circuits in Power Electronics: Practical Issues in Design and Implementation* edited by Miguel Castilla, IET Research Book, pp. 407- 426, March 2016.

Journal Papers :

- [1] S.V. Cheong, **H. Chung**, and A. Ioinovici, "Duty-cycle Control Boosts DC-DC Converters," *IEEE Circuits and Devices*, vol. 9, no. 2, Mar. 1993, pp. 36-37.
- [2] **H. Chung** and A. Ioinovici, "Fast Computer-Aided Simulation of Switching Power Regulators Based on Progressive Analysis of the Switches' State," *IEEE Trans. Power Electronics*, vol. 9, no. 2, pp. 206-212, Mar., 1994.
- [3] S.V. Cheong, **H. Chung**, and A. Ioinovici, "Inductorless DC-to-DC Converter with High Power Density," *IEEE Trans. Ind. Electronics*, vol. 41, no. 2, pp. 208-215, Apr. 1994.

- [4] **H. Chung** and A. Ioinovici, "Local and Global Stability of Switching Regulators," Special Issue on Power Electronics, *Journal of Circuits, Systems, and Computers* vol. 5, no. 3, pp. 305-315, Sept. 1995.
- [5] **H. Chung**, S.Y.R. Hui, and K.K. Tse, "Reduction of EMI Emission from Power Converter Using Soft-Switching Technique," *IEE Electronics Letter*, vol. 32, no. 11, pp. 977-979, 1996.
- [6] Y. Shrivastava, S.Y.R. Hui, S. Sathiakumar, **H. Chung**, K.K. Tse, "Effects of continuous noise in randomised switching dc-dc converters," *IEE Electronics Letter*, vol. 33, no. 11, pp. 919-921, 1997.
- [7] **H. Chung**, "Simulation of PWM Switching Regulators Using Linear Output Predictions and Corrections," *IEEE Trans. Circuits Syst. - Part I*, vol. 44, no. 7, pp. 636-639, Jul. 1997.
- [8] S.Y.R. Hui and **H. Chung**, "Parallelism of power converters for automatic power factor correction," *IEE Electronics Letter*, vol. 33, no. 15, pp. 1274-1276, Jul. 1997.
- [9] **H. Chung** and A. Ioinovici, "Design of Feedback Gain Vector of Two-State Basic PWM Multi-Feedback Regulators for Large-Signal Stability," *IEEE Trans. Circuits Syst. - Part I*, vol. 44, no. 8, pp. 676-683, Aug 1997.
- [10] B.K.H. Wong and **H. Chung**, "A general-oriented simulation technique for the power electronic systems using quadratic branch voltage extrapolations," *IEEE Trans. Ind. Electron.*, vol. 44, no. 4, pp. 492-501, Aug. 1997.
- [11] **H. Chung**, K.K. Tse, and A. Ioinovici, "Computer-aided analysis of power electronic circuits by stepwise topological identification," *Int. J. Numerical Modelling, Electron. Networks, Devices and Fields*, vol. 10, pp. 283-301, 1997.
- [12] K.K. Tse and **H. Chung**, "Decoupled technique for the simulation of PWM switching regulators using second order output extrapolations," *IEEE Trans. Power Electron.*, vol. 13, no. 2, pp. 222-234, Mar. 1998.
- [13] B.K.H. Wong and **H. Chung**, "An Efficient Technique for the Time-Domain Simulation of Power Electronic Circuits," *IEEE Trans. Circuits Syst. - Part I*, vol. 45, pp. 364-376, Apr. 1998.
- [14] S.Y.R. Hui, S.C. Tang, and **H. Chung**, "Coreless Printed-Circuit Board (PCB) Transformers for Signal and Energy Transfer," *IEE Electronics Letters*, vol. 34, no. 11, pp. 1052-1054, May 1998.
- [15] B.K.H. Wong and **H. Chung**, "Steady-state analysis of PWM dc/dc switching regulators using iterative cycle time-domain simulation," *IEEE Trans. Ind. Electron.*, vol. 45, no. 3, pp. 421-432, June 1998.
- [16] **H. Chung**, S.Y.R. Hui, and W.H. Wang, "An Isolated ZVS/ZCS Flyback Converter using the Leakage Inductance of the Transformer," *IEEE Trans. Ind. Electron.*, vol. 45, no. 4, pp. 679-682, Aug. 1998.
- [17] **H. Chung**, S.Y.R. Hui, and K.K. Tse, "Reduction of Power Converter EMI Emission Using Soft-Switching Technique," *IEEE Trans. Electromagnetic Compatibility*, vol. 40, no. 3, pp. 282-287, Aug. 1998.
- [18] Y. Shrivastava, S.Y.R. Hui, S. Sathiakumar, K.K. Tse, and **H. Chung**, "A comparison of nondeterministic and deterministic switching methods for dc-dc converters," *IEEE Trans. Power Electron.*, vol. 13, no. 6, pp. 1046-1055, Nov. 1998.
- [19] K.K. Tse, **H. Chung**, and S.Y.R. Hui, "Stepwise Quadratic State-Space Modeling Technique for Simulation of Power Electronics Circuits," *IEEE Trans. Ind. Electron.*, vol. 46, no. 1, pp. 91-99, Feb. 1999.
- [20] **H. Chung**, S.Y.R. Hui, and W.H. Wang, "A zero-current-switching PWM Flyback Converter with a simple auxiliary switch," *IEEE Trans. Power Electron.*, vol. 14, no. 2, pp. 329-342, Mar. 1999.

- [21] S.Y.R. Hui and **H. Chung**, "Paralleling Power Converters for AC-DC Step-Down Power Conversion with Inherent Power Factor Correction," *IEE Proceedings - Electric Power Applications*, vol. 146, no. 2, pp. 247-252, Mar. 1999.
- [22] B.K.H. Wong and **H. Chung**, "Dual-Loop Iteration Algorithm for Steady-State Determination of Current-Programmed DC/DC Switching Converters," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 4, pp. 521-526, April. 1999.
- [23] S.Y.R. Hui, **H. Chung**, S.C. Tang, "Coreless-based Transformers for Power MOSFET/IGBT Gate Drive Circuits," *IEEE Trans. Power Electron.*, vol. 14, no. 3, pp. 422-430, May 1999.
- [24] S.C. Tang, S.Y.R. Hui, and **H. Chung**, "Coreless PCB Transformer with Multiple Secondary Windings for Complementary Gate Drive Circuits," *IEEE Trans. Power Electron.*, vol. 14, no. 3, pp. 431-437, May 1999.
- [25] S.Y.R. Hui, S.C. Tang, and **H. Chung**, "Optimal Operation of Coreless PCB Transformer-Isolated Gate Drive Circuits with Wide Switching Frequency Range," *IEEE Trans. Power Electron.*, vol. 14, no. 3, pp. 506-514, May 1999.
- [26] C.M. Wu, W.H. Lau, **H. Chung**, "Analytical Technique for Calculation of Output Harmonics in H-Bridge Inverter Output with Dead Time," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 5, pp. 617-627, May 1999.
- [27] B.K.H. Wong and **H. Chung**, "Time-Domain Simulation of Power Electronics Circuits Using State Variable Quadratic Extrapolations," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 6, pp. 751-756, June 1999.
- [28] **H. Chung** and Y.K. Mok, "Development of Switched-Capacitor DC/DC Boost Converter with Continuous Input Current Waveform," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 6, pp. 756-759, June 1999.
- [29] **H. Chung**, "Design and Analysis of a Switched-Capacitor-Based Step-up DC-DC Converter with Continuous Input Current," *IEEE Trans. Circuits Syst. - Part I*, vol. 46, no. 6, pp. 722-730, June 1999.
- [30] S.Y.R. Hui, Y.K.E. Ho, and **H. Chung**, "Modular single-stage, 3-phase full-bridge converter with inherent power factor correction and isolated output," *IEE Proceedings - Electric Power Applications*, vol. 146, no. 4, pp. 407-414, Jul. 1999.
- [31] K.K. Tse, **H. Chung**, and S.Y.R. Hui, "Quadratic State-Space Modeling Technique for Analysis and Simulation of Power Electronic Converters" *IEEE Trans. Power Electron.*, vol. 14, no. 6, pp. 1086-1100, Nov. 1999.
- [32] B. K. H. Wong and **H. Chung**, "A Systematic Graphing Technique for Small-Signal Low Frequency Characterization of PWM DC/DC Converters," *IEEE Trans. Ind. Electron.*, vol. 47, no. 1, pp. 45-54, Feb. 2000.
- [33] W.H. Lau, **H. Chung**, N.K. Poon, and C.M. Wu, "Realization of Digital Amplifier Using Soft-switched PWM Power Converter," *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 3, pp. 303-311, Mar. 2000.
- [34] K. K. Tse, **H. Chung**, S. Y. R. Hui, and H. C. So "Analysis and spectral characteristics of a spread-spectrum technique for conducted EMI suppression", *IEEE Trans. Power Electron.*, vol. 15, no. 2, pp. 399-410, Mar. 2000.
- [35] K. K. Tse, **H. Chung**, S. Y. R. Hui, and H. C. So "A comparative investigation on the use of random modulation schemes for dc/dc converters," *IEEE Trans. Ind. Electron.*, vol. 47, no. 2, pp. 245-252, Apr. 2000.
- [36] B. Yi, C.B. Chu, K.S. Chiang, and **H. Chung**, "New design of optical electric-current sensor for sensitivity improvement," *IEEE Trans. Instrumentation and Measurement*, vol. 49, no. 2, pp. 418-423, Apr. 2000.

- [37] **H. Chung**, S.Y.R. Hui, S.C. Tang, and A.Wu, "On the Use of Current Control Scheme for Switched-Capacitor DC/DC Converters," *IEEE Trans. Ind. Electron.*, vol. 47, no. 2, pp. 238-244, Apr. 2000.
- [38] Y. Shrivastava, S.Y.R. Hui, S. Sathiakumar, **H. Chung**, and K.K. Tse, "Harmonic analysis of non-deterministic switching methods for dc-dc power converters," *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 6, pp. 868-884, June 2000.
- [39] **H. Chung**, S.Y.R. Hui, and S.C. Tang, "Development of a multi-stage current-controlled switched-capacitor step-down dc/dc converter with continuous input current," *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 7, pp. 1017-1025, July 2000.
- [40] S. C. Tang, S.Y.R. Hui, and **H. Chung**, "Some electromagnetic aspects of coreless PCB transformer," *IEEE Tran. Power Electron.*, vol. 15, no. 4, pp. 805-810, July 2000.
- [41] **H. Chung**, A. Ioinovici, and J. Zhang "Describing Functions of Power Electronics Circuits Using Progressive Analysis of Circuit Waveforms," *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 7, pp. 1026-1037, July 2000.
- [42] K. K. Tse, **H. Chung**, S. Y. R. Hui, and H. C. So, "Spectral characteristics of randomly switched PWM dc/dc converters operating in discontinuous conduction mode," *IEEE Trans. Ind. Electron.*, vol. 47, no. 4, pp. 759-769, Aug. 2000.
- [43] S.Y.R. Hui, **H. Chung**, and S.C. Yip, "A bi-directional ac-dc power converter with power factor correction," *IEEE Trans. Power Electron.*, vol. 15, no. 5, pp. 942-948, Sept. 2000.
- [44] S.Y.R. Hui, S.C. Tang, and **H. Chung**, "Coreless planar printed-circuit-board (PCB) transformers – A new concept for signal and energy transfer," *IEEE Trans. Power Electron.*, vol. 15, no. 5, pp. 931-941, Sept. 2000.
- [45] **H. Chung**, W.C. Chow, S.Y.R. Hui, and S.T. Lee, "Development of a switched-capacitor dc/dc converter with bi-directional power flow," *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 9, pp. 1383-1389, Sept. 2000.
- [46] B. K. H. Wong, **H. Chung**, and T.S. Lee "Computation of State Variable Sensitivity Matrix of PWM DC/DC Converters and its Applications," *IEEE Trans. Circuits Syst. - Part I*, vol. 47, no. 10, pp. 1542-1548, Oct. 2000.
- [47] S.C. Tang, S.Y.R. Hui, **H. Chung**, "Characterization of coreless printed circuit board (PCB) transformers," *IEEE Trans. Power Electron.*, vol. 15, no. 6, pp. 1275-1282, Nov. 2000.
- [48] S.C. Tang, S.Y.R. Hui, and **H. Chung**, "A low-profile low-power converter with coreless PCB isolation transformer," *IEEE Trans. Power Electron.*, vol. 16, no. 3, pp. 311-315, May 2001.
- [49] S.Y.R. Hui, L. M. Lee, **H. Chung**, Y.K. Ho, "An electronic ballast with wide dimming range, high PF, and low EMI," *IEEE Trans. Power Electron.*, Vol. 16, no. 4, pp. 465-472, July 2001.
- [50] S. C. Tang, S.Y.R. Hui, and **H. Chung**, "A low-profile power converter using printed-circuit board (PCB) power transformer with ferrite polymer composite," *IEEE Trans. Power Electron.*, vol. 16, no. 4, pp. 493-498, July 2001.
- [51] J. Zhang, **H. Chung**, W. L. Lo, S.Y.R. Hui, and A. Wu, "Implementation of a decoupled optimization technique for design of switching regulators using genetic algorithm," *IEEE Trans. Power Electron.*, vol. 16, no. 6, pp. 752-763, Nov. 2001.
- [52] Y.K.E. Ho, S.T.S. Lee, **H. Chung**, and S.Y.R. Hui, "A comparative study on dimming control methods for electronic ballasts," *IEEE Trans. Power Electron.*, vol. 16, no. 6, pp. 828-836, Nov. 2001.

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- [55] X. Cao, W. Yan, S.Y.R. Hui, **H. Chung**, "Lamp arc resistance modelling of high-intensity-discharge (HID) lamps," *IEE Proc. Science, Measurement and Technology*, vol. 149, no. 1, pp. 45-48, Jan 2002.
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- [57] K.K. Tse, **H. Chung**, S.Y.R. Hui, and H.C. So, "A comparative study of carrier frequency modulation techniques for conducted EMI suppression in PWM converters," *IEEE Trans. Ind. Electron.*, vol. 49, no. 3, pp. 618-627, Jun. 2002.
- [58] C. K. Lee, S. Y. R. Hui, and **H. Chung**, "A 31-Level Cascade Inverter for Power Applications," *IEEE Trans. Ind. Electron.*, vol. 49, no. 3, pp. 613-617, June 2002.
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- [63] K.K. Tse, W.N. Ng, **H. Chung**, S.Y.R. Hui, "An evaluation of the spectral characteristics of switching converters with chaotic carrier frequency modulation," *IEEE Trans. Ind. Electron.*, vol. 50, no. 1, pp. 171-182, Feb. 2003.
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- [66] D.Y. Qiu, S.C. Yip, **H. Chung**, S.Y.R. Hui, "On the use of current sensors for control of power converters," *IEEE Trans. Power Electron.*, vol. 18, no. 4, pp. 1047-1055, July 2003.
- [67] C.K. Lee, J.S.K. Leung, S.Y.R. Hui, and **H. Chung**, "Circuit-level comparison of STATCOM technologies," *IEEE Trans. Power Electronics*, vol. 18, no. 4, pp. 1084-1092, July 2003.
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- [76] W.H. Lau, B. Zhou, and **H. Chung**, "Compact Analytic Solutions For Determining The Spectral Characteristics Of Multi-carrier Based Multilevel PWM," *IEEE Trans. Circuit Syst. - Part I*, vol. 51, no. 8, pp. 1577-1585, August 2004.
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- [210] K. Siu, Y. He, C. Ho, **H. Chung** and R. Li, “Design, Implementation and Analysis of an Advanced Digital Controller for Active Virtual Ground-Bridgeless PFC,” in *Proc. 2017 Applied Power Electronics Conference and Exposition*, Tampa, Florida, USA, March. 25-30, 2017, pp. 52-59.
- [211] W. Wu, C. Zou, H. Wang, M. Huang, F. Blaabjerg and **H. Chung**, “A High Control Bandwidth Design Method for Aalborg Inverter under the Weak Grid Condition,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 645-651.
- [212] S. Cheung, S. Yeung, **H. Chung**, W. Lo and W. Wu, “A Transformer-Less Unified Power Quality Conditioner having Fast Dynamic Control,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 2962-2968.
- [213] X. Zhan, W. Wang and **H. Chung**, “Application of Artificial Neural-Network to Control the Light of Multi-Color LED System,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 3669-3675.
- [214] R. Zhang, **H. Chung**, X. Wu, X. Wu, X. Zhang and J. Wang, “Capacitor-Isolated Structure with Brightness and Color Controlling for Multicolor LED Strings,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 2823-2830.
- [215] Y. He, C. Lai, **H. Chung** and W. Wu, “Comparative Evaluations on Three High Resolution Sampling Schemes for Digital Boundary Control,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 1452-1456.
- [216] X. Zhang, **H. Chung**, Y. He, C. Lai and W. Wu, “DAH-FF Approach to Improve the Current Quality and Stability of the LCL Type Grid-Connected Inverter,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 3390-3397.
- [217] X. Zhang, **H. Chung**, L. L. Cao, J. Chow and W. Wu, “Impedance-based Stability Criterion for Multiple Offshore Inverters Connected in Parallel with Long Cables,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 3383-3389.
- [218] W. Wang, **H. Chung**, R. Cheng, C.S. Leung, X. Zhan, A. Lo, J. Kwok, C. Xue and J. Zhang, “Training Neural-Network-based Controller on Distributed Machine Learning Platform for Power Electronics Systems,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 3083-3089.
- [219] J. Chow, **H. Chung**, L. Chan, N. McDannold and S. Tang, “Design of Wireless Power Transfer System for Devices Carried by a Freely Moving Animal in Cage,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 4398-4405.
- [220] K. Tse and **H. Chung**, “Maximum Power Point Tracker for Electromagnetic Energy Harvesting System,” in *Proc. IEEE Energy Conversion Congress and Exposition*, Cincinnati, OH, USA, Oct 1-5, 2017, pp. 5515-5522.

Research Students Supervised:

A) **Successful supervision :** 16 PhD and 3 MPhil students

1) *Doctor of Philosophy*

- [1] TSE, Kwok Kuen *Analysis of switching power converters using random switching schemes for EMI suppression* (2000)
- [2] WONG, Ka Hou *Development of a unified analysis technique for power electronic circuits* (Jan 1999)
- [3] YIP, Siu Chung *A development of AC/DC converter with bi-directional power flow* (May 2002)
- [4] ZHANG, Jun *Research on using genetic algorithm to design and optimize power electronic circuits* (May 2002)
- [5] LEE, Tsz Sek *Research on dimming technology of electronic ballasts for fluorescent lamps* (Apr 2004)
- [6] HO, Ming Tai *Research on a grid-connected power inversion technique for photovoltaic systems with maximum power point tracking* (Nov 2004)
- [7] LEUNG, Ka Sing *Research on Boundary Control with Second-Order Switching Surface for Power Electronic Systems* (July 2005)
- [8] CHAN, Sau Man *Research on Operating and Integrating Inductive Elements in Dimmable Electronic Ballasts* (July 2005)
- [9] HO, Ngai Man *Research into Dynamic Voltage Regulation and Restoration Technology* (January 2007)
- [10] SONG, Ting ting *Research on High Input Voltage DC-DC Converter with Low Voltage Stress on Switches* (October 2007)
- [11] LI, Tin Ho *Research on High Energy-Efficiency and Fast Dynamic Response Technologies for Grid-Connected Inverter* (September 2010)
- [12] WANG, Huai *New Energy-efficient High-voltage DC-DC Power Conversion Technology* (March 2012)
- [13] CHEN, Nan *Investigation into Power Flow Control of Ballasted Lighting Equipment* (May 2012)
- [14] ZHANG, Ruihong *Investigation into New LED Driving Technologies* (Dec 2013)
- [15] WANG, Jianjing *Characterization and modeling of the switching behavior of Power MOSFET in Power Electronic Systems* (Jan 2014)
- [16] YUEN, Kuen Faat *Research on Active and Passive Overvoltage Suppression Techniques for Inverter-fed Motor Drive Systems* (Apr 2014)
- [17] HE, Yuanbin *Advanced Digital Control Strategies for DG-grid Interfacing Converters with High-order Output Filter* (Dec 2016)
- [18] CHOW, Po Wa *New Coupling and Power Regulation Technologies for Wireless Inductive Links* (Feb 2017)
- [19] CHEUNG, Sui Pung *Modular-based Power Quality Enhancement Technologies* (Nov 2017)

2) *Master of Philosophy*

- | | | |
|-----|-----------------|--|
| [1] | LI, Tin Ho | Development of an Active Modulation Technique for Single-Phase Grid-Connected CSI (December 2006) |
| [2] | CHIU, Yat Chung | Control of DC/AC Inverter with Low Harmonic Distortion (January 2007) |
| [3] | LEUNG, Siu wai | Research on a Zero-Current-Switched (ZCS) isolated Full-Bridge Boost Converter with Multiple Inputs (January 2007) |

B) Current supervision : 5 PhD students + 1 MPhil student

Research Grants Awarded

University-Industry Collaboration Programme (Innovation and Technology Commission)

1. Development of an Energy-efficient Burn-in System for Switching Mode Power Supplies - \$889,950 (Principal Investigator) [9440039 (UIT - 070)][1 Nov, 2004 – 31 Oct, 2006]

Collaborative Research Project (Innovation and Technology Commission)

1. A New Generation Smart Inverter for PV Applications - \$2,294,548 (Principal Investigator) [9440085 (GHX/ 004/11)] [1 Mar 2012 – 31 Aug 2014]
2. The Key Technologies of the Energy Storage System – Smart Battery Management System for Distributed Energy Resources - \$2,556,808 (Principal Investigator) [GHP/017/12SZ] [1 Oct 2013 – 30 Sep 2015]
3. Smart and Sustainable Campus - \$3,965,200 (Principal Investigator) [ITS/063/14FX] [1 Mar 2015 – 31 July 2017]
4. Smart real-time battery state and health diagnostics system - \$1,348,975 (Principal Investigator) [ITS/277/14] [1 Jul 2015 – 30 June 2017]
5. Interoperable M2M Service Platform for Global Fleet Management Transportation and Logistics - \$4,900,000 (Co-investigator) [ITP/059/14LI] [1 Mar 2015 – 31 Aug 2016]
6. Remote Online Condition Monitoring and Fault Diagnostic System for Photovoltaic Farms - \$1,304,800 (Principal Investigator) [ITS/308/15] [1 Mar 2016 – 31 Aug 2017]
7. Online Harmonic Filter and Network Monitoring System, \$1,328,629 (Principal Investigator) [ITS/050/16FP] [1 Jan 2017 – 30 Jun 2018]
8. Monolithic Integration of Power Semiconductor Filter Controller for AC/DC Power Conversion Systems, \$ 4,784,082 (Principal Investigator) [ITS/261/16FX] [1 Mar 2017 – 31 Aug 2018]
9. Working Software Tools for Dynamic Base Station Sleeping for Green Cellular Networks, \$1,131,600 (Associate Investigator) [ITS/191/16] [1 Feb 2017 – 31 Jul 2018]
10. Smart Geotechnical Monitoring Architecture, \$4,563,264 (Principal Investigator) [ITS/298/17FX] [1 July 2018 – 31 Dec 2019]

Innovation Fund Grand Solutions (Innovation Fund Denmark)

1. APETT - Advanced Power Electronic Technology and Tools, \$1,142,896 (Research Partner) [1 Jan 2017 – 30 Jun 2021]

Central Allocation Grant (Research Grant Council)

1. An investigation into the use of modern power Electronics Technology for Improving Power Quality and Stability in Power Systems - \$4.5M (Co-Investigator) [8730012 (CityU 1/00C)]

General Research Fund / Competitive Earmarked Research Grants (Research Grant Council)

1. Development of DC Power Conversion Technique Using Basic Inductorless Converter Cells - \$656,000 (Principal Investigator) [9040207 (CityU1005/96E)] [1 Dec 1996 – 30 Nov 1998]
2. Development of Versatile Switched-Capacitor-Based DC-DC Converters - \$770,000 (Principal Investigator) [9040359 (CityU1082/98E)] [1 Oct 1998 – 30 Sep 2000]
3. Novel Designs of Optical Sensors for Electric Current Measurement - \$842,600 (Co-Investigator) [9040274 (CityU1044/97E)]
4. Development of High Power Digital Audio Amplifier using Multilevel Inverter - \$405,000 (Co-investigator) [9040453 (CityU1192/99E)]
5. Statistical Design Framework for Power Electronics Circuit Optimization - \$405,000 (Co-investigator) [9040429 (CityU1090/99E)]
6. A Fundamental Integrated Study of Power Electronics Controlled High-Intensity Discharge (HID) Lamp Systems - \$ 846,817 (Co-Investigator) [9040525 (CityU1156/00E)]
7. Research into Ballast Technologies for Fluorescent Lamps with Wide Dimming Range and Operating Temperature - \$568,404 (Principal Investigator) [9040724 [CityU 1233/02E]] [1 Dec 2002 – 30 Nov 2004]
8. Research on Efficient and Reliable AC-Module Technology and System Configurations for Small-Scale Modular-based Photovoltaic Systems - \$467,653 (Principal Investigator) [9040820 (CityU 1221/03E)] [1 Aug 2003 – 31 Jul 2005]
9. Research into an Efficient Dimming Technology for a Plurality of HID Lamps with Magnetic Ballasts - \$ 434,657 (Principal Investigator) [9040926 (CityU 1319/04E)] [1 Dec 2004 – 30 Nov 2006]
10. Research into a High-Fidelity Subwoofer Technology - \$510,704 (Principal Investigator) [9040999 (CityU 1129/05)] [1 Dec 2006 – 30 Nov 2008]
11. New Energy-Efficient High-Voltage DC/DC Power Conversion Technology - \$995,700 (Principal Investigator) [9041123 (CityU 112406)] [1 Dec 2006 – 30 Nov 2009]
12. A New Concept of Voltage Restoration Technology with Versatile Power Management - \$341,693 (Principal Investigator) [9041227 (CityU 112407)] [1 Dec 2007 – 30 Nov 2009]
13. A New Energy-Recyclable Burn-in Technology for Electronic Ballast Industry - \$776,938 (Principal Investigator) [9041341 (CityU 112708)] [1 Jan 2009 – 31 Dec 2011]
14. Research on a new grid-connected inverter technology for building-integrated microgrid – \$1,142,560 (Principal investigator) [9041662 (CityU 112711)] [1 Jan 2012 – 31 Dec 2014]
15. Exploring the Concept of Active DC Capacitor for Power Conditioning Systems - \$700,000 (Principal investigator) [9041763 (CityU 112512)] [1 Jan 2013 – 31 Dec 2015]
16. Research on a New Coupling Technology for Wireless Inductive Links - \$645,500 (Principal investigator) [9041879 (CityU 112613)] [1 Jan 2014 – 31 Dec 2016]

17. Development of A Co-Simulator for Smart Grid with Communication Network - \$609,976 (Co-investigator) [1 Sep 2013 – 31 Aug 2016]
18. Study of Architecture for High-Power Color-Tunable LED Lighting System - \$ 696,029 (Principal investigator) [9042188 (CityU 11205115)] [1 Jan 2016 - 31 Dec 2018]

NSFC / RGC Joint Research Scheme

1. Characterization and Control of a System with Multiple Offshore Power Inverters Connected in Parallel with Long Cables - \$1,149,266 (Principal Investigator) [9054018 (N_CityU128/15)] [1 Jan 2016 – 31 Dec 2019]

Contract Research

1. Research into LED lamp tubes / bulbs powered by ordinary electronic ballasts for discharge lamps - \$291,250 [CityU 9231009] (Principal Investigator) (Funded by Farbell Investment Limited)
2. An investigation into a new maximum power point tracking technology, \$315,840 [CityU 9231032] (Funded by Provista Technology Limited) (Principal Investigator) [Apr 1 2011 – 30 Sep 2013]
3. Investigation into the Lighting Control Technology for a Large-Scale Lighting Infrastructure, \$200,000 [CityU 9220056] (Funded by e.Energy Lighting Limited) (Principal Investigator) [Jan 17 2011 – Jan 15 2015]
4. Research into the phase-controlled dimmable electronic ballast technology, \$315,840 [CityU 9231038] (Funded by e.Energy Lighting Limited) (Principal Investigator) [1 Jun 2011 – 30 Jun 2013]
5. A DC System with Intelligent USB DC Power Supply Outlets for Mobile Gadgets, \$52,425 [CityU 9667093] (Funded by Timely Electronics Limited) (Co-investigator) [Mar 1 2015 – July 31 2015]
6. Forecasting Flexibility of a Smart Campus, \$1,200,000 [CityU 9231136] (Funded by ALSTOM) (Co-investigator) [1 Apr 2014 - 31 March 2017]
7. Apps for the Intelligent USB Power Supply Unit, \$41,358 [CityU 9231167] - eUSB (Funded by Premier Merchandises Limited) (Co-investigator) [1 Nov 2014 - 29 Mar 2017]
8. Double Pulse Testing System for Insulated Gate Bipolar Junction Transistors, \$80,828 [CityU 9211072] (Funded by ASTRI) (Principal Investigator) [Feb 1 2015 – May 31 2015]
9. High-frequency Household IH Cooker in Single-ended ZVS Resonant Topology, \$64,526 [CityU 9231170] (Funded by Infineon) (Principal Investigator) [1 Jan 2015 – 30 Apr 2015]
10. Design and Implementation of Battery Tester, \$660,000 [CityU 9231173] (Funded by Premier) (Co-investigator) [1 Jan 2015 – 8 Jun 2017]
11. Algorithm for the Intelligent USB Power Supply Unit, \$40,000 [CityU 9231213] (Funded by Marvel Digital) (Co-investigator) [Dec 1 2015 – Nov 30 2016]
12. Development of an AC/DC Converter with Power Semiconductor Filtering Technology, \$339,536 [CityU 9231293] (Funded by AnApp Technologies Limited) (Principal Investigator) [Apr 12, 2018 - Dec 31, 2018]
13. Pilot Study on IoT Application on Monitoring Solar-driven LED Lampposts, \$620,000 [CityU 9211146] (Funded by Electrical and Mechanical Services Department) (Co-investigator) [Mar 2018 – Sep 2018]

CityU Grants

A. *Small-Scale Research Grant*

1. Design of Power Electronic Regulators for Large Signal Stability - \$45,000 (Principal Investigator) [9030380]

B. *Direct Allocation Grant*

1. Development of a low-profile maximum power point tracker for photovoltaic arrays - \$100,000 (Principal Investigator) [7100152]

C. *Strategic Research Grants*

1. Development of Switched-Capacitor-Based DC/DC Converters - \$311,450 (Principal Investigator) [7000493]
2. Modeling, Analysis, and Design of Globally and Locally Stable Power Electronic Regulators - \$301,544 (Principal Investigator) [7000586]
3. Design and Implementation of Digital Power Amplifier for Digital Audio System - \$257,620 (Co-investigator) [7000526]
4. Development of a Unified Modeling Technique for Analysis and Design of Switching Power Regulators - \$ 200,000 (Principal Investigator) [7000808]
5. Development of an Integrated and Efficient Approach for Statistical Design of Power Electronics Systems - \$390,000 (Principal Investigator) [7000860]
6. An investigation into a novel voltage sensorless control scheme for power electronic converters – \$ 250,000 (Principal Investigator) [7001135]
7. Investigation into a low-profile integrated power conditioning technology for distributed grid-connected photovoltaic systems - \$225,040 (Principal Investigator) [7001211]
8. High-Efficient Energy-Processing Soft-Switching Three-Level Converter - \$179,120 (Principal Investigator) [7001595]
9. A New Control Theory for Switched-Capacitor Converters - \$166,148 (Principal Investigator) [7002460]
10. Power Semiconductor Filter - A New Concept of Filtering Technology for Power Electronic Systems - \$100,000 (Principal Investigator) [7004231] [Sep 1 2014 – Nov 30 2015]
11. Bidirectional AC/DC Conversion Technology for Hybrid AC-DC Microgrid - \$100,000 (Principal Investigator) [7004621] [Sep 1 2016 – Aug 31 2018]

C. *Teaching Development Grants*

- [1] A Virtual Learning Support Centre for Student - \$754,440 (Co-Investigator) [TDG0038]
- [2] Enhancing University Students' Learning Motivation. Phase 1: Helping Students Develop Their Own Learning Motivation - \$350,220 (Co-investigator) [6000124]
- [3] Designing a Problem-based-Learning Environment for Teaching Power Electronics Course - \$78,000 (Principal Investigator) [6980040]

D. *Innovation to Realization Funding (I2RF) and Applied Research Grants*

1. LED replacement lamp driver with universal compatibility - \$391,214 (Principal Investigator) [CityU 6351012] [Jun 1 2011 – Sep 28 2012]
2. Development of a Smart USB Hub - \$199,800 (Co-investigator) [ARG 9667132] [May 1 2016 – April 30, 2018]

E. CityU Seed Grant

1. The Design and Development of a Mood Sensing and Inducing Arduino Prototype for Promoting Employees' Positive Mood and Work Performance - \$82,658 (Co-investigator) [CityU 7003005]

F. Donation

1. Feasibility Study of Wireless Sensor Network - \$500,000 (Co-investigator)

NSFC projects

- [1] 运用自适应蚁群算法设计和优化功率电子电路的研究 – \$260000 (Co-PI) 60573066

Patents Granted

- [1] Shu Hung Henry CHUNG and Nan CHEN, "System and Method for Emulating a Gas Discharge Lamp / 用于模拟气体放电灯的系统和方法," China patent Application no., No. 201310244396.X, Oct 24 2017.
- [2] Shu Hung Henry CHUNG and Huai WANG, 用於減少直流鏈路電容之直流鏈路模組 / A DC Link Module for Reducing DC Link Capacitance, Chinese Patent ZL 2012 8 0033823.3, Oct 13, 2017.
- [3] Shu Hung Henry CHUNG, Kuen Faat YUEN, and Wing To FAN, Input Filter for a Power Electronic System, US Patent 9,698,672 B2, Jul. 4, 2017.
- [4] Shu Hung Henry CHUNG and Huai WANG, 用於減少直流鏈路電容之直流鏈路模組 / DC Link Module and Method for Reducing DC Link Capacitance, *Taiwan Patent 1584548*, May 21, 2017.
- [5] Shu Hung Henry CHUNG and Ruihong ZHANG, LED Lighting Circuit, *US Patent US 9,622,306*, Apr. 11, 2017.
- [6] Wei YAN and Shu Hung Henry CHUNG, Facilitating Improved Luminance Uniformity in Organic Light Emitting Diode Device Panels, US Patent, *US 9,559,336*, Jan 31, 2017.
- [7] Shu Hung Henry CHUNG and Sui Pung CHEUNG, Power Flow Control Apparatus, US Patent, *US 9,515,487 B2*, Dec 6, 2016.
- [8] Shu Hung Henry CHUNG, Current Distribution Apparatus, US Patent, *US 9,450,404*, Sep 20, 2016.
- [9] Shu Hung Henry CHUNG, Rui ZHOU, and Ruihong ZHANG, Inductive Power Transfer for Driving Multiple Organic Light Emitting Diode Panels, US Patent *US 9,414,462 B1*, Aug 9, 2016.
- [10] Shu Hung Henry CHUNG and Nan CHEN, Energy-Recycling Burn-In Apparatus and Method of Burn-In for Electronic Ballasts, US Patent *US 9,282,621 B2*, Mar 8, 2016.
- [11] Chung Fai Norman Tse, Shu Hung Henry Chung, Yau Chung John Chan, USB Power Supply, US Patent *US 9,257,893 B2*, Feb 9, 2016.

- [12] Shu Hung Henry CHUNG and Jianjing WANG, Signal Modulating Interface for a Solid State Electronic Device, US Patent US 9,237,288 B2, Jan 12, 2016.
- [13] Shu Hung Henry CHUNG and Nan CHEN, "An Apparatus or Circuit For Driving A DC Powered Lighting Equipment," HK patent No. HKS 1181105 B, Jan 8, 2016.
- [14] Shu Hung Henry CHUNG and Rui hong ZHANG, Electrical Load Driving Apparatus, US Patent 9,192,003 B2, Nov 17, 2015.
- [15] Shu Hung Henry CHUNG and Kuen-Faat YUEN, An Electric Filter for a Motor System, HK1201411, August 28, 2015.
- [16] Shu Hung Henry CHUNG and Nan CHEN, "Driving Circuit for Powering a DC Lamp in a Non-DC Lamp Fitting (用于為非 DC 燈具裝配中的 DC 燈具供電的驅動電路), China Patent 201280026520.9, June 17, 2015.
- [17] Shu Hung Henry CHUNG and Nan CHEN, "An Apparatus or Circuit for Driving a DC Powered Lighting Equipment (用于驅動 DC 供电的照明設備的裝置或电路)," China Patent no. 201080059826.5, May 27 2015.
- [18] Shu Hung Henry CHUNG and Nan CHEN, Energy-Recycling Burn-In Apparatus and Method of Burn-In for Electronic Ballasts, US Patent US 8,680,870 B2, Mar 25, 2014.
- [19] Shu Hung Henry CHUNG and Nan CHEN, Driving Circuit for Powering a DC Lamp in a Non-DC Lamp Fitting, US Patent US 8,575,856, Nov 5, 2013.
- [20] Shu-hung Henry CHUNG, Ngai-man HO, and Shu-yuen Ron HUI, "Apparatus and method of providing dimming control of lamps and electrical lighting systems," Europe Patent, EP 1658759, Dec 12, 2012.
- [21] Shu-Hung Henry CHUNG and Wai-to YAN, "Method and apparatus to provide active cancellation of the effects of the parasitic elements in capacitors," US Patent US 8264270 B2, Sept 11, 2012.
- [22] Wing-choi HO, Chi-kwan LEE, Shu-yuen HUI, and Shu-hung Henry CHUNG, "Electronic control method for a planar inductive battery charging apparatus," US Patent 8,228,025, Jul 24, 2012.
- [23] Shu-hung Henry CHUNG, Siu-wai LEUNG, and Kee-ming CHAN, "Multi-input DC/DC converters with zero-current switching," US patent 8,189,351, May 29, 2012.
- [24] Shu-Hung Henry CHUNG and Wai-to YAN, "Output Compensator for a Regulator, US Patent 8,169,201, May 1, 2012.
- [25] Shu-Hung Henry CHUNG and Wai-to YAN "Method and apparatus for suppressing noise caused by parasitic capacitance and/or resistance in an electronic circuit or system," US Patent 8,115,537, Feb 14, 2012.
- [26] Shu Hung Henry CHUNG and Tin Ho LI, Passive Lossless Snubber Cell for a Power Converter, US8,107,268 B2, Jan 31, 2012.
- [27] Shu-hung Henry CHUNG and Ngai-man HO, "Dimmable Lighting System," Australia Patent, 2005291756, August 4, 2011.
- [28] Shu-hung Henry CHUNG and Ngai-man HO "Dimmable Lighting System, China Patent ZL200580033502.3, June 8, 2011.
- [29] Shu-hung Henry CHUNG, Ngai-man HO, and Shu-yuen Ron HUI "Apparatus and method of providing dimming control of lamps and electrical lighting systems," South Korean patent, 9-5-2011-001915093, 520060078151, Jan 11, 2011

- [30] Shu-hung Henry CHUNG, Ngai-man HO, and Shu-yuen Ron HUI, “用於給燈和電子照明系統提供調光控制的裝置和方法,” ZL 20048000989.0, Oct 9, 2010
- [31] Shu-hung Henry CHUNG, Ngai-man HO, and Shu-yuen Ron HUI “Apparatus and method of providing dimming control of lamps and electrical lighting systems,” Japan patent, 4531048, June 18, 2010.
- [32] Shu-hung Henry CHUNG and Ngai-man HO, “Dimmable Lighting System,” 130874 [WO/2006/037265], Singapore Patent, Oct 30, 2009.
- [33] Shu-yuen Ron HUI and Shu-hung Henry CHUNG, “熒光燈的調光控制裝置與方法,” China patent ZL02103113.4, Mar 25, 2009.
- [34] Shu-yuen Ron HUI and Shu-hung Henry CHUNG ‘Circuit designs and control techniques for high frequency electronic ballasts for high intensity discharge lamps’, US Patent 7,521,873B, Apr 21, 2009.
- [35] Pak-chuen TANG, Yiu-hung Lam, Shu-hung Henry CHUNG, and Shu-yuen Ron HUI, “具有極寬調光範圍的螢光燈相控可調光電子鎮流器,” China patent ZL02142472.1, July 29, 2009.
- [36] Shu-hung Henry CHUNG, Ngai-man HO, and Shu-yuen Ron HUI ‘Apparatus and method of providing dimming control of lamps and electrical lighting systems,” US patent 7411359, Aug 12, 2008.
- [37] Pak-chuen TANG, Yiu-hung Lam, Shu-hung Henry CHUNG, and Shu-yuen Ron HUI ‘Phase-controlled dimmable electronic ballasts for fluorescent lamps with very wide dimming range,’ US patent 7,304,439, Dec 4, 2007.
- [38] Shu-yuen Ron HUI, Shu-hung Henry CHUNG, and Ngai-man HO, ‘Dimming Control of Lamps and Electrical Lighting Systems’, HK1076977, Nov 9, 2006.
- [39] Shu-yuen Ron HUI and Shu-hung Henry CHUNG ‘Circuit designs and control techniques for high frequency electronic ballasts for high intensity discharge lamps’, US Patent 7,119,494, Oct 10, 2006.
- [40] Shu-hung Henry CHUNG and Ngai-man HO, ‘Dimmable Lighting System,” GB2418786, Oct 31, 2006.
- [41] Shu-yuen Ron HUI and Shu-hung Henry CHUNG, “高輝度放電ランプ用の高周波電子安定器の新しい回路設計および制御技術,” Japan Patent 3839729, Aug 11, 2006.
- [42] Shu-yuen Ron HUI, Shu-hung Henry CHUNG, and Ngai-man HO ‘Apparatus and method of providing dimming control of lamps and electrical lighting systems,” UK patent, Publication no. GB2405540, Apr. 11, 2006.
- [43] Shu-yuen Ron HUI, Shu-hung Henry CHUNG, and Tsz-sek LEE ‘可調光式電子鎮流器, China patent ZL01129403.5, July 28, 2004.
- [44] Shu-hung Henry CHUNG, Eric HO, Shu-yuen Ron HUI, and Tsz-sek Stephen LEE, ‘Dimmable electronic ballast’, Europe patent EP 1,164,819 B1, Feb 11 2004. (including UK, Germany, and France,)
- [45] Shu-yuen Ron HUI and Shu-hung Henry CHUNG, ‘Single sensor control of power converters’, US patent 6,580,275, June 17, 2003.
- [46] Shu-yuen Ron HUI, Shu-hung Henry CHUNG, Eric HO, and Tsz-sek Stephen LEE, ‘Dimmable electronic ballast’, US patent 6,545,431, Apr 8 2003.
- [47] Shu-yuen Ron HUI and Shu-hung Henry CHUNG, ‘Dimming control of electronic ballasts’, US patent 6,486,615, Nov 26 2002.
- [48] Shu-yuen Ron HUI and Shu-hung Henry CHUNG, ‘Bi-directional Switched-Capacitor Based Voltage Converter’, US patent 6,304,068, Oct 16 2001.

- [49] Shu-yuen Ron HUI and Shu-hung Henry CHUNG, “Voltage sensorless control of power converters”, US patent 6,297,621, Oct 2 2001.

Patents filed

- [1] HE Yuanbin, Shu Hung Henry CHUNG, and Chun Tak LAI, Electric Circuit and Associated Method for Regulating Power Transfer in a Power Grid, US 15/859,888 Jan 2, 2018.
- [2] Shu Hung Henry CHUNG, Chun For LIU, and Wing Hon LAU, A Method of Diagnosing an Electrical Energy Storage Apparatus, and Electronic Device for use in an Electrical Energy Storage Apparatus as an Electrical Energy Storage Apparatus, US 62/475,350, Mar 23, 2017.
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- [11] Shu Hung Henry CHUNG and Kuen Faat YUEN, Electric Filter for a Motor System, PCT Application PCT/CN2015/078472, 7 May 2015.
- [12] Shu Hung Henry CHUNG, Kuen Faat YUEN, and Wing To FAN, 電流控制裝置, Chinese Patent, 201410591643.8, Oct 29, 2014.
- [13] Shu Hung Henry CHUNG, Shun Cheung YEUNG, and Walter MARIN, 一種用于調節電源的方法, Chinese Patent, 201410521279.8, Sep 30, 2014.
- [14] Shu Hung Henry CHUNG and Jianjing WANG, 用于固態電子設備的信號調制接口, Chinese Patent 201410469018.6, Sep 15, 2014.
- [15] Shu Hung Henry CHUNG, Kuen Faat YUEN, and Wing To FAN, Current Control Apparatus, US Patent Application No. 14/305,302, Jun 16, 2014.

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- [17] Shu Hung Henry CHUNG, Nan CHEN, Po Wa CHOW, and Lai Hang CHAN, Apparatus for transferring Electromagnetic Energy, International Patent Application PCT/CN2014/079589, Jun 10, 2014.
- [18] Shu Hung Henry CHUNG and Kuen Faat YUEN, An Electric Filter for a Motor System, HK Short Term Patent Application No. 14105142.0, May 30, 2014.
- [19] Shu Hung Henry CHUNG and Wei YAN, Active heat sink that can be used to improve the luminance non-uniformity of OLEDs, US Patent Application No. 61/994,061, May 15, 2014.
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- [21] Shu Hung Henry CHUNG, Sui Pung CHEUNG, and Adam TO, 功率流控制裝置, China Patent Application No. 201410092906.0, Mar 13, 2014.
- [22] Shu Hung Henry CHUNG, Adam TO, and Rui hong ZHANG, Electrical Load Driving Apparatus, International Patent Application No. PCT/CN2014/073185, Mar 11, 2014.
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- [27] Chung Fai Norman, Shu Hung Henry CHUNG, and Yau Chung John CHAN, USB 電源, China Patent Application No. 201310538205.0, Nov 4, 2013.
- [28] Shu Hung Henry CHUNG, Walter MARIN, and Shun Cheung YEUNG, A Method for Regulating an Electrical Power Source, US Patent Application No. 14/045,124, Oct 3, 2013.
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- [30] Chung Fai Norman, Shu Hung Henry CHUNG, and Yau Chung John CHAN, USB Power Supply, US Patent Application No. 13/952,824, Jul 29, 2013.
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- [33] Shu Hung Henry CHUNG, Adam TO, and Rui hong ZHANG, TRIAC-dimmable LED Lamp Driver, US Patent Application No. 13/836,648, Mar 15, 2013.
- [34] Shu Hung Henry CHUNG and Nan CHEN, "Apparatus or Circuit For Driving A DC Powered Lighting Equipment," US patent Application No.13/505,483, Jul 20, 2012.
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- [38] Shu Hung Henry CHUNG and Nan CHEN, Driving Circuit for Powering a DC Lamp in a Non-DC Lamp Fitting, International Patent Application PCT/CN2012/076375, Jun 1, 2012.
- [39] Shu Hung Henry CHUNG and Huai WANG, A DC Link Module for Reducing DC Link Capacitance, International Patent Application PCT/CN2011/076955, Jul 4, 2011.
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Services to Hong Kong Government, Professional Bodies, and Industry

A. Hong Kong Government

- 2012, 2017 **Assessor**, Assessment Panel on Technology Education Key Learning Area, Chief Executive’s Award for Teaching Excellence (2012/2013)
- 2012 – Present **External Examiner** of the HKDSE Applied Learning - Course Cluster of Services Engineering, HK Examinations and Assessment Authority
- 2012 – Present **Member** of Disciplinary Tribunal Panel of EMSD
- 2010 – 2016 **Member** of the Public Examination Board
- 2009 - 2015 **Member** of Curriculum Development Council Committee on Technology Education
- 2006 - 2011 **Member** of the Engineering Panel of the Hong Kong Research Grants Council
- 1996 - 2012 **Chairman** of the AS-level electronics subject committee in the Hong Kong Examination Authority
- 1996 - 2012 **Chief Examiner** of 1999 HKASL Electronics
- 1996 - 2003 **Panel member** of the Disciplinary Tribunal Panel under the Electricity Ordinance
- 1996 - 2012 **Examination Question Setter** of the questions for the following public examinations:
- (a) HKAL - Engineering Science
 - (b) HKASL - Electronics (Sample questions)
 - (c) HKCEE - Engineering Science
 - (d) HKCEE - Electricity and Electronics

B. Professional Bodies

- 2017 **Guest speaker**, “CIBSE Hong Kong Branch Annual General Meeting (AGM)” on March 7, 2017. The topic is “Smart Battery Diagnostic System”
- 2017 **Invited speaker**, Industry and University Collaboration Forum 2017, HK Science Park, Nov 14, 2017.
- 2017 **Co-General Chair**, IEEE 11th Annual Asia-Pacific Power and Energy Engineering conference (IEEE PES APPEEC 2019)
- 2017 **Invited speaker**, Connecting the Dots for Re-industrialization – The Greater Bay Area Landscape, Oct 17, 2017.
- 2017 **Invited speaker**, Smart Power Electronics for the Smart Grid, Hangzhou Danzi, July 8, 2017.
- 2017 **Invited speaker**, Smart Power Electronics for the Smart Grid, University of Bristol, May 30, 2017.
- 2017 **Invited speaker**, Smart Power Electronics for the Smart Grid, workshop on emerging devices, circuits and systems, Shanghai, July 7, 2017.
- 2017 **Member**, LSCM’s Expert Review Panel (ERP) from Jan 2017 to Dec 2018.
- 2017 **Member**, International Steering Committee of Asian Conference on Energy, Power and Transportation Electrification (ACEPT 2017)
- 2017 **Evaluator**, IEEE Industrial Electronics Society Fellow Evaluating Committee
- 2017 **Assessor**, Shanghai Jiao Tong University. Electronic, Information and Electrical Engineering
- 2017 **Reviewer**, Canada Research Chair in Intelligent Energy Systems
- 2017 **Member**, Community Rehabilitation Service Support Centre Advisory Group, Hospital Authority
- 2017 **Member**, Engineering Panel, Research Grants Council
- 2017 **Panelist**, ASTRI Technology Review Panel
- 2016 **Keynote Speaker**, “High-level Architecture for Co-simulation of Power Grids, Information Systems and Communication Networks, International Conference on Signal Processing, Communications, and Computing, Aug 6, 2016.
- 2016 **Invited Speaker**, “Smart Power Electronics for Smart Grids”, International Future Energy Challenge Workshop, July 20, 2016.
- 2016 **Invited Speaker**, “Smart Grid”, 2016 工程與可持續城市發展學術研討會, NSFC-HKUST, June 20-24, 2016.
- 2016 **Invited Speaker**, “Seminar on Smart Power Electronics”, Shanghai Maritime University, May 18, 2016.
- 2015 **Invited Speaker**, “Smart Power Electronics for the Smart Grid” International Workshop CNRS-ALSTOM « From Industry 4.0 to Smart cities », Paris, France, Nov 26-27, 2015.

- 2015 **Invited Speaker**, “From Energy Generation and Conversion to System Prognostics in Microgrid,” IEEE Macau, Macau on October 23, 2015.
- 2015 **Invited Speaker**, “Smart and Sustainable Campus,” The 14th Annual Power Symposium 2015 – A Global Pursuit For Zero Carbon Building: Challenges and Solutions – The Hong Kong Story, Organized by the Power and Energy Section of the IET Hong Kong, Kowloon Shangri-La Hotel, June 26, 2015.
- 2014 **Organizer**, Symposium on Advanced Power Electronics and Its Application, Hong Kong Science and Technology Park, 5 September 2014.
- 2014-present **Editor-in-chief**, IEEE Power Electronics Letters
- 2014-2016 **Guest Editor**, “Special Issue on Power Electronics for Biomedical Applications,” IEEE Journal of Emerging and Selected Topics in Power Electronics
- 2014-2016 **Guest Associate Editor**, “Special Issue on LED Drivers,” IEEE Journal of Emerging and Selected Topics in Power Electronics
- 2013-2015 **Guest Associate Editor**, “Special Issue on Robust Design and Reliability in Power Electronics,” IEEE Transactions on Power Electronics, August 2015.
- 2013-present **Associate Editor**, IEEE Journal of Emerging and Selected Topics in Power Electronics
- 2004-present **Associate Editor**, IEEE Transactions on Power Electronics
- 2011 **Member** of the peer review panel of the Danish Council for Strategic Research
- 2011-2014 **Associate Editor**, IEEE Transactions on Circuits and Systems – Part I
- 2013 **Assessor** of research projects, Italian Ministry of Education, University and Research (MIUR) General Directorate for the coordination and development of Research, 2012-2013
- 2013 **Assessor**, Research proposal of The Pazi Foundation is a joint foundation established by the Israeli University Planning and Budgeting Committee (UPBC) and the Israeli Atomic Energy Commission (IAEC).
- 2013 **Guest speaker**, IEEE International Future Energy Electronics Conference (IFEEC), Tainan, Taiwan on November 03-06, 2013.
- 2013 **Guest speaker**, Taiwan Power Electronics Conference 2013, Tainan, Taiwan, Nov 2, 2013.
- 2013 **Organizer**, Symposium on High-Performance and Emerging Technologies: Green Power Electronics and 3D Packaging, Hong Kong Science and Technology Parks, August 30, 2013.
- 2013 **Invited speaker**, Daisy-Chain Transformer Structure and its applications, Aalborg University, Denmark, July 9, 2013.
- 2012 **Technical Co-chair**, IEEE International Future Energy Electronics Conference (IFEEC), Tainan, Taiwan on November 03-06, 2013.
- 2012 **Member**, Review Committee of the 2013 IEEE International Symposium on Circuits and Systems, May 19-23, Beijing, China.
- 2012 **Guest speaker**, World of Solar Conference 2012, Electronic Asia, Oct 15, 2012.

- 2012 **Guest Editor**, Special Issue on ISCAS 2012, *IEEE Transactions on Circuits and Systems, Part I*.
- 2012 **Track Chair** of the IEEE Asia Pacific Conference on Circuits and Systems, Dec 2-5, The Splendor Hotel, Kaohsiung, Taiwan, 2012.
- 2012 **Member**, Product Certification scheme for LED Bulkhead Lighting, Hong Kong Electronic Industries Association.
- 2012 **Chair of a special session**, 9th IET International Conference on Advances in Power System Control, Operation and Management, APSCOM 2012, Nov 18-21, 2012.
- 2012 **Member**, Technical Program Committee of 2012 IEEE SmartGridComm, Nov 5-8, 2012, Tainan City, Taiwan.
- 2012 **Vice-Chairman**, Technical Committee, Energy Conversion Congress and Exposition (ECCE), Sept. 15-20, 2012, Raleigh, NC, USA, 2012
- 2011 **Member**, Task Force on Engineering Development in secondary School, Hong Kong Institution of Engineers, 2011
- 2011 **Member** of Incu-Tech Programme – Admission Panel, Hong Kong Science and Technology Parks Corporation
- 2011 **Advisor** of the Force Working Group on Environmental Conservation, Hong Kong Police Force
- 2011 **Invited speaker** of Power Electronics Workshop organized by the National Cheng Kung University, Tainan, Taiwan, Dec. 14, 2011.
- 2011 **Invited speaker** of the Computational Intelligence Summer School, organized by the Sun-Yat-Sen University, Guangzhou, China, Aug 25, 2011.
- 2011 **Invited speaker** of the Emerging Technologies Forum – Advanced technologies in Energy Harvesting, CityU, May 27, 2011
- 2011 **Chairman** of the IEEE Workshop on Solid-State Lighting, Science Park, April 15, 2011.
- 2011 **Member** of IEEE Senior Member Review Panel
- 2011 **Chairman** of the Technical Committee on High Performance and Low Cost Applications, IEEE Power Electronics Society
- 2011 **Invited speaker** for China Sourcing Fair: Electronics & Components (Hong Kong) 2011 conference program (April 14 2011)
- 2011 **External examiner** for an MPhil Examination at HK PolyU (Feb 2011)
- 2011 **Invited speaker** for the Winter School on Computer Intelligence 2011, Sun-Yat-Sen University, Guangzhou, Jan 24-28, 2011.
- 2010 **Invited speaker** at the HKIS 18th Annual Conference 2010 (Nov 2010)
- 2010 **Invited speaker** at the NWS Holdings Environmental Seminar 2010 organized by NWS Holding Limited (Sep 2010)
- 2010 **Invited speaker** at the "20th Anniversary Celebration Kick-off Ceremony cum Symposium on Building a Green City" organized by the Hong Kong Association of Property Management Companies

- 2010 **Member** of the Technical Program Committee of the International Conference on Green Circuits and Systems in Shanghai, 21-23 June 2010
- 2010-2012 **Associate Editor** of IEEE Transactions on Circuits and Systems, Part II
- 2009 **Member** of the Editorial Board of the *Advances in Power Electronics*
- 2009 **Track chair**, 8th International Conference on Power Electronics and Drive Systems 2009.
- 2008-2010 **Associate Editor** of IEEE Transactions on Circuits and Systems, Part I
- 2008 **Member** of the Editorial Board of the *Research Letters in Electronics*.
- 2007 **Vice-Chair** of the Technical Committee of the Power Electronics Specialists Conference 2008
- 2006 **Members** of the Expert Panel, Automotive Parts and Accessory Systems R&D Centre
- 2006 **Organizing committee member** of 2nd Workshop on Industrial Applications
- 2003-Present **Member** of the International Program Committee for EuroPES
Member of the International Program Committee for AsiaPES
- 2001- Present **External examiner** for Chu Hai College
- 2006 **Track Chair** of 2006 IEEE Asia Pacific Conference on Circuits and Systems
- 2001-2003 **Guest Editor** of the special issue on Analysis, Design and Applications of Switching Circuits and Systems, IEEE Transactions on Circuits and Systems, Part I.
- 1999-2003 **Associate Editor** of IEEE Transactions on Circuits and Systems, Part I.
- 2000 **Technical Program Chairman** of the 3rd Hong Kong IEEE Switched-Mode Power Supplies
- 1999-2000 **Technical Committee Member** of the IEEE International Symposium on Circuits and Systems, Geneva, Switzerland, 2000
- 1998 **Organizing Committee Member** of the IEEE 3rd International Conference on Power Electronics and Drives
- 1998 **Invited speaker** for the Symposium on Hong Kong Electronic Technology Development Strategy.
- 1998-2000 **Secretary** of the Technical Committee on Power Systems and Power Electronic Circuits of IEEE Circuits and Systems Society, U.S.A.
- 1998 **Committee member** of the Conference on Applications of Automation Science and Technology, Nov., Hong Kong.
- 1998 **Panel Member** of the IEEE Region 10 Student Branch Website Contest
- 1998 **Technical Committee Member** of the IEEE 3rd International Conference on Power Electronics and Drives
- 1998 **Committee member** of IEEE Hong Kong Joint Chapter on Circuits and Systems and Communications

- 1998 - 2003 **IEEE Student Branch Counselor**
- 1997 **Chairman** of the Technical Committee on Power Systems and Power Electronic Circuits of IEEE Circuits and Systems Society, U.S.A.
- 1997 - 1999 **Chairman** of the Council of the Sir Edward Youde Scholar's Association
1996 - 1997 **Publications Chairman** of the 1997 IEEE International Symposium on Circuits and Systems, Hong Kong
- 1995 - Present **Reviewers** of the following book, journals, conferences, contest
- (a) Applied Power Electronics Conference
 - (b) Power Electronic Circuit Review
 - (c) IEEE Transactions on Circuits and Systems, Part I
 - (d) IEEE Transactions on Power Electronics
 - (e) IEEE Transactions on Industrial Electronics
 - (f) Automatica
 - (g) Journal of Electrical and Electronics Engineering, Australia
 - (h) Electric Power Systems Research Journal
 - (i) IEEE Student Paper Contest
 - (j) IEEE International Symposium on Circuits and Systems
 - (k) IEE Student Paper Contest
- 1995 - Present **Session Chairman** of the following conferences:
- (a) IEEE International Symposium on Circuits and Systems
 - (b) 23rd Annual Conference of the IEEE Industrial Electronics Society, 1997
 - (c) IEEE International Symposium on Circuits and Systems
 - (d) IEEE International Symposium on Circuits and Systems
 - (e) 2nd International Conference on Personal, Mobile and Spread Spectrum Communications
 - (f) European Conference on Circuit Theory and Design
- 1995 **Organizing Committee Member** of the 2nd International Conference on Personal, Mobile and Spread Spectrum Communications
- 1995 **Visiting Lecturer** of the module "Power Electronics and Drives" for the Department of Electrical Engineering, The Hong Kong Polytechnic University.
- 1995 **Committee Member** of the 2nd International Conference on Mechatronics and Machine Vision in Practice
- 1995 **Honorary speaker** of the "Hitachi Frequency Inverter Seminar"
- 1995 **Invited speaker** of the 2nd Hong Kong IEEE Workshop on Switched-mode Power Supplies
- 1994 - 1997 **Vice-Chairman** of the Council of The Sir Edward Youde Scholar's Association
- 1994 **Secretary** of the 1994 IEEE Symposium on Power Electronics Circuits
- 1992 – 1994 **Executive Committee Member** of the Sir Edward Youde Scholar's Association
- 1991 - 1992 **Chairman** of The Executive Committee of The Sir Edward Youde Scholar's Association

C. Industrial Consultancy

2017	Consultancy Service for IoT for Building Automation, Future Data Limited, HK\$76,500
2017	Consultancy Services on Assessment of Data Accuracy of Tramcar #123, Electrical and Mechanical Services Department, HK\$130k
2016	Solution for reducing the bearing voltage of iFUC motor, REC Green Technologies Co. Ltd., HK\$64k
2015	Efficiency measurement for iFCU PM motor, REC Green Technologies Co. Ltd., HK\$45k
2013	Provision of consultancy service on RFI shielding, Shui On Construction Company Limited – HK\$50k
2013	Installation of a 250kW Grid-tied photovoltaic system, Provista New Energy Technology (Dongguan) Limited – HK\$40k
2010	Fabrication of Compact Fluorescent Lamp (CFL) Test Chambers and Testing and Studying the Performances of a Plurality of Compact Fluorescent Lamp, Hong Kong Productivity Council – HK\$160k
2010	Technical advisor for e.Energy Lighting Limited – HK\$24k
2009	Technical advisor for Pylon International Limited
2006	Independent Report on Problem with the Trial Run of Foam Pump in HAECO Hangar No.2 for Kaden STAMsteel Joint Venture - HK\$125k
2004	Feasibility study of using single sensor control for power factor correction circuits for ST Microelectronics - HK\$240k
2003	Ballast design for e.Energy Technology Limited – HK\$80k
2001	Design of power supplies for Bontech Technology Limited – HK\$30k
2000	Expert witness report for Cable & Wireless HKT Regarding RF amplifiers for Herbert Smith – HK\$ 162.5k
2000	Investigation of a drive system for Kent Engineering Co. Ltd. – HK\$ 9.72k
1999	Development of Information Technology Network for Lik On Security Ltd. – HK\$ 2.98M.
1999	Design and Development of Two Modules of Ballasts for MH Lamps for Suga Electronics – HK\$ 240k.
1998	Evaluation of an energy saving equipment EPOCH for Universe Dragon Ltd. – HK\$278k.
1997	Development of a "High Efficiency Temperature Controller" for ECO-GEA Ltd - HK\$ 12k.