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Power Electronics, Motor Drive, Electric Machine Control

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**Dr. Liaw** was born in Taichung, Taiwan, ROC, on June 19, 1951. He received the B.S. degree in electronic engineering from Tamkang College of Arts and Sciences, Taipei, Taiwan, in 1979, and the M.S. and Ph.D. degrees in electrical engineering from National Tsing Hua University, Hsinchu, Taiwan, in 1981 and 1988, respectively. In 1988, he joined the faculty of National Tsing Hua University as an associate professor in electrical engineering. Since 1993, he has been a professor in the Department of Electrical Engineering. His areas of research interest are Power Electronics, Motor Drive and Electric Machine Control. Dr. Liaw is a life member of the CIEE, a member of the IEEE, an editor of International Journal of Electrical Engineering, ROC., and an editorial board member of Advances in Power Electronics.

**Publication List (2011-2017)**

**1. Journal Papers:**

- [1] M. C. Chou, C. M. Liaw, S. B. Chien, F. H. Shieh, J. R. Tsai and H. C. Chang, "Robust current and torque controls for a PMSM driven satellite reaction wheel," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 47, no. 1, pp. 58-74, January 2011. (Impact factor: 1.672) (JCR Journal Ranking: 94/257) (SCI,25)
- [2] H. C. Chang and C. M. Liaw, "An integrated driving/charging switched reluctance motor drive using three-phase power module," *IEEE Transactions on Industrial Electronics*, vol. 58, no. 5, pp. 1763-1775, May 2011. (Impact factor: 6.383) (JCR Journal Ranking: 4/257) (SCI,56)
- [3] M. C. Chou and C. M. Liaw, "Dynamic control and diagnostic friction estimation for a PMSM driven satellite reaction wheel," *IEEE Transactions on Industrial Electronics*, vol. 58, no. 10, pp. 4693-4707, October 2011. (Impact factor: 6.383) (JCR Journal Ranking: 4/257) (SCI,23).
- [4] Y. C. Chang and C. M. Liaw, "Establishment of a switched-reluctance generator based common DC micro-grid system," *IEEE Transactions on Power Electronics*, vol. 26, no. 9, pp. 2512-2527, 2011. (Impact factor: 4.953) (JCR Journal Ranking: 9/257) (SCI,70).
- [5] Y. C. Chang and C. M. Liaw, "A flyback rectifier with spread harmonic spectrum," *IEEE Transactions on Industrial Electronics*, vol. 58, no. 8, pp. 3485-3499, July 2011. (Impact factor: 6.383) (JCR Journal Ranking: 4/257) (SCI,11).
- [6] Y. J. Tu, T. L. Jong and C. M. Liaw, "Development of a class-D audio amplifier with switch-mode rectifier front-end and its waveform control," *IET Power Electronics*, vol. 4, no. 9, pp. 1002-1014, 2011 (Impact factor: 1.68) (JCR Journal Ranking: 89/249) (SCI,2).
- [7] Y. W. Lin, K. F. Chou, M. J. Yeh, C. C. Wang, S. L. Yu, C. C. Yang, Y. C. Chang and C. M. Liaw, "Design and control of a switched-reluctance motor-driven cooling fan," *IET Power Electronics*, 2012, vol. 5, no. 9, pp. 1813-1826. (Impact factor: 1.68) (JCR Journal Ranking: 89/249) (SCI,10).
- [8] K. W. Hu and C. M. Liaw, "On an auxiliary power unit with emergency AC power

- output and its robust controls,” *IEEE Transactions on Industrial Electronics*, vol. 60, no. 10, pp. 4387-4402, October 2013. (Impact factor: 6.383) (JCR Journal Ranking: 4/257) (SCI,11).
- [9] K. W. Hu and C. M. Liaw, “On a bidirectional adapter with G2B charging and B2X emergency discharging functions” *IEEE Transactions on Industrial Electronics*, vol. 61, no. 1, pp. 243-257, Jan. 2014. (Impact factor: 6.383) (JCR Journal Ranking: 4/257) (SCI,15).
- [10] M. C. Chou and C. M. Liaw, “A permanent-magnet synchronous motor driven satellite reaction wheel system with adjustable DC-link voltage,” *IEEE Transactions on Aerospace and Electronic Systems*, vol. 50, no. 2, pp. 1359-1373, 2014. (Impact factor: 1.672) (JCR Journal Ranking: 94/257) (SCI,6).
- [11] K. W. Hu and C. M. Liaw, “Development of a wind interior permanent-magnet synchronous generator based microgrid and its operation control,” *IEEE Trans. Power Electron.* vol. 30, no. 9, pp. 4973-4985, 2015. (Impact factor: 4.953) (JCR Journal Ranking: 9/257) (SCI,17).
- [12] K. W. Hu, J. C. Wang, T. S. Lin and C. M. Liaw, “A switched-reluctance generator with interleaved interface DC-DC converter,” *IEEE Trans. Energy Convers.* Vol. 30, no. 1, pp. 273-284, 2015. (Impact factor: 2.596) (JCR Journal Ranking: 35/257)(SCI,9)
- [13] K. W. Hu, Y. Y. Chen and C. M. Liaw, “A reversible position sensorless controlled switched-reluctance motor drive with adaptive and intuitive commutation tuning,” *IEEE Trans. Power Electron.*, vol. 30, no. 7, pp. 3781-3793, 2015. (Impact factor: 4.953) (JCR Journal Ranking: 9/257)(SCI,13).
- [14] K. W. Hu and C. M. Liaw, “A position sensorless surface-mounted permanent-magnet synchronous generator and its operation control,” *IET Power Electron.*, vol. 8, no. 9, pp. 1636-1650, 2015. (Impact factor: 1.683) (JCR Journal Ranking: 89/248) (SCI,4).
- [15] K. W. Hu, P. H. Yi and C. M. Liaw, “An EV SRM drive powered by battery/super-capacitor with G2V and V2H/V2G capabilities,” *IEEE Trans. Ind. Electron.*, vol. 62, no. 8, pp. 4714-4727, 2015. (Impact factor: 6.383) (JCR Journal Ranking: 4/257) (SCI,20).
- [16] Y. S. Lin, K. W. Hu, T. H. Yeh and C. M. Liaw, “An electric vehicle IPMSM drive with interleaved front-end DC/DC converter,” *IEEE Transactions on Vehicular Technology*, vol. 65, no. 5, pp. 4493-4504, 2016. (Impact factor: 2.243) (JCR Journal Ranking: 55/257) (SCI,11).
- [17] K. W. Hu and C. M. Liaw, “Incorporated operation control of DC Microgrid and electric vehicle,” *IEEE Trans. Ind. Electron.*, vol. 63, no. 1, pp. 202-215, 2016. (Impact factor: 6.498) (JCR Journal Ranking: 4/257)(SCI,16).
- [18] H. N. Huang, K. W. Hu, Y. W. Wu, T. L. Jong and C. M. Liaw, “A current control scheme with back-EMF cancellation and tracking error adapted commutation shift for switched-reluctance motor drive,” *IEEE Trans. Ind. Electron.*, vol. 63, no. 12, pp. 7381-7392, 2016. (Impact factor: 6.498) (JCR Journal Ranking: 4/257)(SCI,1).
- [19] H. N. Huang, K. W. Hu and C. M. Liaw, “A switch-mode rectifier fed switched-reluctance motor drive with dynamic commutation shifting using DC-link current,” *IET Electric Power Applications*, vol. 11, no. 4, pp. 640-652, 2017.
- [20] P. Y. Chen, K. W. Hu, Y. G. Lin and C. M. Liaw, “Development of a prime mover emulator using a permanent-magnet synchronous motor drive,” *IEEE Transactions on Power Electronics*, to appear, 2018.
- [21] Y. C. Hsu, S. C. Kao, C. Y. Ho, P. H. Jhou, M. Z. Lu and C. M. Liaw, “On an electric scooter with G2V/V2H/ V2G and energy harvesting functions,” *IEEE Transactions on Power Electronics*, to appear, 2018.

### **Domestic Journals:**

- [1] J. H. Huang, C. Y. Chen and C. M. Liaw, "An air-conditioning system with sensorless PMSM driven compressor and cooling fan powered by power factor corrected rectifier (具功因矯正整流器無位置感測永磁同步馬達驅動壓縮機及散熱風扇之空調系統)," *Power Electronics*, vol. 10, no. 1, pp. 3-24, 2012.
- [2] J. M. Liu, M. J. Yeh and C. M. Liaw, "Development of a switched-reluctance motor drive for electric vehicles with driving-charging-discharging multiple function (電動車輛具驅動-充電-放電複合功能開關式磁阻馬達驅動系統之開發)," *Mechanical monthly magazine*, vol. 38, no. 10, pp. 100-118, 2012.
- [3] C. Y. Weng, H. H. Lin, P. H. Yi, M. J. Yeh, J. H. Huang, K. W. Hu and C. M. Liaw, "On a tiny DC microgrid with multiple input sources," *International Journal of Electrical Engineering*, vol. 19, no. 5, pp. 191-203, 2013.
- [4] C. Y. Chen, Y. S. Lin and C. M. Liaw, "Electric vehicle permanent-magnet synchronous motor drive incorporating with grid-to-vehicle and vehicle-to-home operation capabilities (具電網至車輛及車輛至家庭操作能力之電動車永磁同步馬達驅動系統)," *Journal of Mechatronic Industry (機械工業雜誌)*, vol. 364, pp. 18-32, July 2013.
- [5] K. W. Hu, J. H. Tseng, S. L. Yu, C. C. Yang, Y. C. Chang and C. M. Liaw, "Establishment of switched-reluctance motor drive and its operation capability experimental assessment (開關式磁阻馬達驅動系統之建立及其操控能力實測評定)," *電機月刊* 102年8月號第272期, *Electricity Monthly*, no. 272, pp. 108-125, 2013.
- [6] S. J. Peng, J. J. He, K. W. Hu and C. M. Liaw, "Development of a plug-in energy harvesting system for battery energy storage system (用於蓄電池儲能系統插入式能源收集系統之開發)," *電力電子技術雙月刊*, vol. 12, no. 6, pp. 49-67, 2014.
- [7] K. W. Hu, C. C. Wang, T. W. Hung and C. M. Liaw, "Development of a super high-speed position sensorless PMSM drive," *Electricity Monthly*, vol. 296, no. 8, pp. 99-118, 2015.
- [8] M. X. Zou, H. C. Yang, K. C. He and C. M. Liaw, "A switch-mode rectifier powered switched-reluctance driven cooling fan," *電力電子技術雙月刊*, vol. 14, no. 4, pp. 1-17, 2016.

### **2. Conference Papers:**

- [1] H. X. Lin, Z. W. Dai and C. M. Liaw, "Development of a Bidirectional Three-phase Inverter and Its Operation Control Between DC Microgrid and Utility Grid," *R.O.C. 32<sup>th</sup> Symposium on Electrical Power Engineering*, 2011, December 2-3, Taipei, Taiwan, pp. 98-105.
- [2] L. Y. Lu, K. F. Chou, B. C. Lin and C. M. Liaw, "Development of DSP-Based Switched-Reluctance Wind Generator and Its Application to Power DC Micro-grid," *R.O.C. 32<sup>th</sup> Symposium on Electrical Power Engineering*, 2011, December 2-3, Taipei, Taiwan, pp. 414-421.
- [3] Y. W. Lin, B. C. Lin and C. M. Liaw, "Development of a Home Microgrid with Multiple Sources and Energy Storage Devices," *R.O.C. 32<sup>th</sup> Symposium on Electrical Power Engineering*, 2011, December 2-3, Taipei, Taiwan, pp. 433-441.
- [4] J. M. Liu, M. J. Yeh and C. M. Liaw, "On a switched-reluctance motor drive for electric vehicles with driving-charging-discharging functions," *R.O.C. 32<sup>th</sup> Symposium on Electrical Power Engineering*, 2011, December 2-3, Taipei, Taiwan, pp. 1557-1564.
- [5] Y. C. Lin, K. F. Chou, M. J. Yeh, C. C. Wang, S. L. Yu, C. C. Yang, Y. C. Chang and C. M. Liaw, "Development of a Switched-Reluctance Motor Driven Cooling Fan," *R.O.C. 32<sup>th</sup> Symposium on Electrical Power Engineering*, 2011, December 2-3, Taipei, Taiwan, pp. 1565-1572.
- [6] J. H. Huang, C. Y. Chen and C. M. Liaw, "An Air-Conditioning System with Sensorless PMSM Driven Compressor and Cooling Fan Powered by Common Front-End

- Switch-Mode Rectifier,” *R.O.C. 32<sup>th</sup> Symposium on Electrical Power Engineering*, 2011, December 2-3, Taipei, Taiwan, pp. 1593-1602.
- [7] K. W. Hu and C. M. Liaw, “Development of an Auxiliary Power Unit with 110V/60Hz Output and Its Robust Waveform Control,” *R.O.C. 32<sup>th</sup> Symposium on Electrical Power Engineering*, 2011, December 2-3, Taipei, Taiwan, pp. 1882-1888.
- [8] C. Y. Weng, H. H. Lin, M. J. Yeh and C. M. Liaw, “On a Tiny DC Microgrid with Multiple Input Sources,” *Taiwan Power Electronics Conference and Exhibition*, 2012, Paper ID: 517.
- [9] M. J. Yeh, P. H. Yi and C. M. Liaw, “A switched-reluctance motor drive for electric vehicles with grid-to-vehicle and vehicle-to-grid bidirectional operation capabilities,” *Taiwan Power Electronics Conference and Exhibition*, 2012, Paper ID: 516.
- [10] K. W. Hu and C. M. Liaw, “A permanent-magnet synchronous motor driven flywheel storage system and its application to DC microgrid,” *R.O.C. 33<sup>th</sup> Symposium on Electrical Power Engineering*, 2012, December 7-8, Taipei, Taiwan, pp. 2713-2720.
- [11] K. W. Hu, J. H. Tseng, S. L. Yu, C. C. Yang, Y. C. Chang and C. M. Liaw, “On position sensorless control of switched-reluctance motor drive,” *R.O.C. 33<sup>th</sup> Symposium on Electrical Power Engineering*, 2012, December 7-8, Taipei, Taiwan, pp. 2780-2787.
- [12] B. C. Lin, K. W. Hu, J. H. Tseng and C. M. Liaw, “On a DC micro-grid with wind permanent-magnet synchronous generator and photovoltaic source,” *R.O.C. 33<sup>th</sup> Symposium on Electrical Power Engineering*, 2012, December 7-8, Taipei, Taiwan, pp. 2804-2811.
- [13] C. Y. Cheng, Y. S. Lin and C. M. Liaw, “Electric vehicle permanent-magnet synchronous motor drive incorporating with grid-to-vehicle and vehicle-to-home operation capabilities,” *R.O.C. 33<sup>th</sup> Symposium on Electrical Power Engineering*, 2012, December 7-8, Taipei, Taiwan, pp. 2772-2779.
- [14] K. F. Chou, J. C. Wang and C. M. Liaw, “A wind switched-reluctance generator based DC micro-grid supported by energy storages of battery and flywheel,” *R.O.C. 33<sup>th</sup> Symposium on Electrical Power Engineering*, 2012, December 7-8, Taipei, Taiwan, pp. 2812-2819.
- [15] Z. W. Dai, Z. H. Zheng and C. M. Liaw, “A battery energy storage system with auxiliary charging source for DC micro-grid and electric vehicle to perform grid-connected operation,” *R.O.C. 33<sup>th</sup> Symposium on Electrical Power Engineering*, 2012, December 7-8, Taipei, Taiwan, pp. 2796-2803.
- [16] M. J. Yeh, P. H. Yi and C. M. Liaw, “An EV SRM drive having integrated G2V charging and G2X discharging functions,” *R.O.C. 33<sup>th</sup> Symposium on Electrical Power Engineering*, 2012, December 7-8, Taipei, Taiwan, pp. 2788-2795.
- [17] K. W. Hu and C. M. Liaw, “Development of permanent-magnet synchronous generator system and its operation control approaches,” *IEEE ISIE 2013*, pp. 1-7, May 28-31, Taipei.
- [18] K. W. Hu and C. M. Liaw, “Establishment of an IPMSG System with Vienna SMR and Its Applications to Microgrids,” *IEEE IECON13*, Nov. 10-13, 2013, Vienna.
- [19] K. W. Hu and C. M. Liaw, “On the flywheel/battery hybrid energy storage system for DC microgrid,” *International Future Energy Electronics Conference 2013 (IFEEC 2013)*, Nov. 3-6, 2013, Tainan, Taiwan.
- [20] K. W. Hu and C. M. Liaw, “A neutral-point clamped three-level inverter-fed PMSM driven flywheel and its application to DC microgrid,” *R.O.C. 34<sup>th</sup> Symposium on Electrical Power Engineering*, 2013, December 6-7, Taichung, Taiwan, pp. 2517-2523.
- [21] Y. S. Lin, T. H. Yeh, P. Y. Chen, K. W. Hu and C. M. Liaw, “Performance evaluations for EV IPMSM drive using standard and position sensorless controls,” *R.O.C. 34<sup>th</sup> Symposium on Electrical Power Engineering*, 2013, December 6-7, Taichung, Taiwan, pp. 2509-2516.
- [22] C. H. Cheng, S. J. Peng, K. W. Hu and C. M. Liaw, “A multifunctional battery energy storage system with multiple auxiliary charging sources and its operation control,” *R.O.C. 34<sup>th</sup> Symposium on Electrical Power Engineering*, 2013, December 6-7, Taichung,

- Taiwan, pp. 2557-2565.
- [23] J. H. Tseng, Y. Y. Chen, T. L. Fu, K. W. Hu and C. M. Liaw, "On a four-quadrant three-phase switch-mode rectifier powered switched-reluctance motor drive," *R.O.C. 34<sup>th</sup> Symposium on Electrical Power Engineering*, 2013, December 6-7, Taichung, Taiwan, pp. 2566-2572..
- [24] P. S. Yi, Y. J. Sun, T. L. Fu and C. M. Liaw, "On an EV SRM Drive powered by battery/super-capacitor with G2V and V2H/V2G functions," *R.O.C. 34<sup>th</sup> Symposium on Electrical Power Engineering*, 2013, December 6-7, Taichung, Taiwan, pp. 2529-2537.
- [25] J. C. Wang, T. S. Lin, K. W. Hu and C. M. Liaw, "Development and Control for a SRM-Driven Flywheel Energy Storage System," *R.O.C. 34<sup>th</sup> Symposium on Electrical Power Engineering*, 2013, December 6-7, Taichung, Taiwan, pp. 2545-2551.
- [26] J. C. Wang, T. S. Lin, K. W. Hu and C. M. Liaw, "On a wind switched-reluctance generator for DC microgrid," *R.O.C. 34<sup>th</sup> Symposium on Electrical Power Engineering*, 2013, December 6-7, Taichung, Taiwan, pp. 2538-2544.
- [27] K. W. Hu and C. M. Liaw, "Position sensorless control for switched-reluctance motor drive with adaptive commutation tuning," in *Proc. IEEE ISEEE*, 2014, pp. 119-125.
- [28] S. J. Peng, J. J. He, K. W. Hu and C. M. Liaw, "Development of a plug-in energy harvesting system for battery energy storage system," *15<sup>th</sup> Taiwan Power Electron. Conf. and Exhibition*, 2014, Taipei, Taiwan, pp. 2509-2516.
- [29] Y. J. Sun, J. J. He, K. W. Hu and C. M. Liaw, "Development of an electric vehicle switched-reluctance motor drive with supercapacitor storage," *R.O.C. 35<sup>th</sup> Symposium on Electrical Power Engineering*, 2014, December 5-6, Kaohsiung, Taiwan.
- [30] T. H. Yeh, W. F. Cheng, K. W. Hu and C. M. Liaw, "An EV IPMSM drive with upercapacitor energy storage and PV energy harvesting," *R.O.C. 35<sup>th</sup> Symposium on Electrical Power Engineering*, 2014, December 5-6, Kaohsiung, Taiwan.
- [31] T. S. Lin, Y. C. Chen, K. W. Hu and C. M. Liaw, "On a SRG-based micro-grid with flywheel/battery hybrid energy storages," *R.O.C. 35<sup>th</sup> Symposium on Electrical Power Engineering*, 2014, December 5-6, Kaohsiung, Taiwan.
- [32] T. S. Lin, Y. C. Chen, K. W. Hu and C. M. Liaw, "Development of a wind SRG based microgrid with plug-in energy support," *R.O.C. 35<sup>th</sup> Symposium on Electrical Power Engineering*, 2014, December 5-6, Kaohsiung, Taiwan.
- [33] K. W. Hu and C. M. Liaw, "On a DC micro-grid incorporating with electric vehicle as movable energy storage source," in *Proc. IEEE ICIT*, 2015.
- [34] J. J. He, K. W. Hu and C. M. Liaw, "On a battery/supercapacitor powered SRM drive for EV with integrated on-board charger," in *Proc. IEEE ICIT*, 2015.
- [35] K. W. Hu, J. J. He and C. M. Liaw, "On a SynRM speed drive with intuitive commutation tuning," in *Proc. IEEE ICPE ECCE-Asia*, 2015.
- [36] Y. Y. Chen, T. C. Hsu, K. W. Hu and C. M. Liaw, "On the PFC AC-DC Converter Fed SRM drives with Reversible and Regenerative Braking Capabilities," *International Future Energy Electronics Conference 2015 (IFEEC 2015)*, November 1-4, 2015, Taipei, Taiwan.
- [37] H. N. Huang, K. W. Hu, Y. W. Wu, T. L. Jong and C. M. Liaw, "On the winding current improvement control for switched-reluctance motor drive," *R.O.C. 36<sup>th</sup> Symposium on Electrical Power Engineering*, 2015, December 12-13, Taoyuan, Taiwan.
- [38] H. N. Huang, K. W. Hu, Y. W. Wu, T. L. Jong and C. M. Liaw, "Development of switched-reluctance motor drive with dynamic commutation shift based on DC-link current," *R.O.C. 36<sup>th</sup> Symposium on Electrical Power Engineering*, 2015, December 12-13, Taoyuan, Taiwan.
- [39] J. J. Ho, K. W. Hu, K. C. Ho and C. M. Liaw, "Development of a battery/supercapacitor powered EV SRM drive," *R.O.C. 36<sup>th</sup> Symposium on Electrical Power Engineering*, 2015, December 12-13, Taoyuan, Taiwan.
- [40] W. F. Cheng, K. W. Hu, C. Y. Song and C. M. Liaw, "A battery/SC powered EV PMSM drive," *R.O.C. 36<sup>th</sup> Symposium on Electrical Power Engineering*, 2015, December 12-13, Taoyuan, Taiwan.

- [41] Y. C. Chen, K. W. Hu, L. S. Jian and C. M. Liaw, "A plug-in energy harvesting system for wind SRG-based microgrid," *R.O.C. 36<sup>th</sup> Symposium on Electrical Power Engineering*, 2015, December 12-13, Taoyuan, Taiwan.
- [42] B. Y. Chen, K. W. Hu, Y. K. Lin and C. M. Liaw, "A permanent-magnet synchronous motor driven prime mover emulator," *R.O.C. 36<sup>th</sup> Symposium on Electrical Power Engineering*, 2015, December 12-13, Taoyuan, Taiwan.
- [43] K. W. Hu, C. C. Wang, T. L. Hsiao, K. C. Wang and C. M. Liaw, "Development of a super high-speed position sensorless PMSM drive," *Taiwan Power Electronics Conference and Exhibition*, 2016, September 30, Changhua, Taiwan..
- [44] M. X. Zou, H. C. Yang, K. C. He, K. Y. Chou and C. M. Liaw, "A switch-mode rectifier powered switched-reluctance driven cooling fan," *Taiwan Power Electronics Conference and Exhibition*, 2016, September 30, Changhua, Taiwan.
- [45] S. W. Su, K. W. Hu and C. M. Liaw, "A Bidirectional SMR fed synchronous- reluctance motor drive with adaptive commutation tuning," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [46] Y. W. Wu, C. Y. Ho, T. L. Jong and C. M. Liaw, "A Bidirectional switch-mode rectifier fed switched-reluctance motor drive," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [47] Y. W. Wu, C. Y. Ho and C. M. Liaw, "A switched-reluctance motor drive with energy supported DC-link," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [48] K. C. Wang, C. Y. Song and C. M. Liaw, "A battery/supercapacitor powered EV IPMSM Drive with varied-voltage DC-link," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [49] K. C. Wang, C. Y. Song, K. W. Hu and C. M. Liaw, "An EV position sensorless IPMSM drive," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [50] L. S. Jian , P. H. Jhou and C. M. Liaw, "On a plug-in energy support system for wind SRG-based microgrid," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [51] T. C. Hsu, K. M. Tien and C. M. Liaw, "Development and comparative evaluation of bidirectional three-phase switch-mode rectifiers for Switched-reluctance Motor Drive," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [52] G. C. He, K.Y. Chou, K. W. Hu and C. M. Liaw, "An energy harvesting system for EV SRM drive," *R.O.C. 37<sup>th</sup> Symposium on Electrical Power Engineering*, 2016, December 10-11, Taichung, Taiwan.
- [53] S. W. Su, K. W. Hu, Chiu-Fa Lee, Yu-Te Su and C. M. Liaw, "Development of a position sensorless synchronous reluctance motor drive," *International Future Energy Electronics Conference 2017 (IFEEC 2017)*, June 3-7, 2017, Kaohsiung, Taiwan.
- [54] Y. C. Hsu, S. C. Kao, C. Y. Ho, P. H. Jhou, M. Z. Lu and C. M. Liaw, "An electric scooter with grid-connected and energy harvesting functions," *R.O.C. 38<sup>th</sup> Symposium on Electrical Power Engineering*, 2017, December 01-02, Chiayi, Taiwan.
- [55] C. Y. Ho, C. S. Li, K. W. Hu and C. M. Liaw, "SRM drive with energy supported DC-link," *R.O.C. 38<sup>th</sup> Symposium on Electrical Power Engineering*, 2017, December 01-02, Chiayi, Taiwan.
- [56] K. M. Tien, W. M. Ma, T. C. Hsu and C. M. Liaw, "SRM Drive powered by three-phase single-switch DCM SMR assisted by active power filter," *R.O.C. 38<sup>th</sup> Symposium on Electrical Power Engineering*, 2017, December 01-02, Chiayi, Taiwan.
- [57] K. M. Tien, W. M. Ma, K. W. Hu and C. M. Liaw, "Position sensorless controlled SRM drive using high-frequency narrow voltage pulse injection with continuous current," *R.O.C. 38<sup>th</sup> Symposium on Electrical Power Engineering*, 2017, December 01-02, Chiayi, Taiwan.

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