

## Recent Publications

2022-2025

### Journal Paper:

1. C. J. Hsu, Y. C. Zhuo, Z. H. Qiu, and Y. S. Lai, "An Auto Bandwidth Boost Tuning Method of Current Control for Servo Motor Drives Considering Time Delay" accepted by IEEE *Access*, September, 2025.
2. Z. H. Qiu and Y. S. Lai, "Rapid Prototyping of Digital Twins Control System for IPM Drives Considering Both Saturation and Spatial Harmonics to Achieve Fast Development and Accurate Emulation," accepted by IEEE *Trans. On Industrial Electronics*, 2025.
3. Y. S. Lai, X. Y. Wu and Y. Y. Huang, "New Seamless Switching Control Technique between CCM and DCM for Boost PFC without Additional Zero Crossing Point Sensing Circuit," IEEE *Trans. On Industrial Electronics*, Vol. 70, No. 1, pp. 12100 -12110, Oct. 2024.
4. Z. H. Qiu and Y. S. Lai, "New On-Line MTPA Angle Search and Control Methods Based on Digital Twins for IPM Synchronous Motor Drives Considering Motor Non-Linearity," IEEE *Access*, Vol. 11, pp. 146185 – 146193, Dec. 8, 2023.
5. Y. Y. Huang and Y. S. Lai, "Optimal Inductor Design Method for GaN-Based PFC," IEEE *Access*, Vol. 11, 2023.

### Conference Paper:

1. Y. Y. Huang and Y. S. Lai, "Optimized Inductor Design for MHz CrM Totem-Pole PFC to Minimize Inductor Losses," IEEE *IFEEC 2025*.
2. C. C. Chen and Y. S. Lai, "Seamless Mode Transition Method Considering Voltage-Second Balance of Magnetic Component Between Transition to Reduce the Voltage Stress for Wide Output Voltage Range of Full Bridge Resonant Converter," IEEE *IFEEC 2025*.
3. Y. S. Lai, Y. H. Su and S. Y. Lai, "Seamless Transition Switching Control Technique Between DCM and CCM for Four-Switch Buck-Boost DC-DC Converters," accepted by IEEE *IFEEC 2025*.
4. A. Lin, H. Y. Chang, and Y. S. Lai, "New Matrix Transformer for High Efficiency and Slim Form-Factor Power Converters," IEEE *IFEEC 2025*.
5. Y. Y. Huang, Y. S. Lai, S. Y. Ou and C. P. Chang, "Switching Instants Optimization for MHz CrM Totem-Pole PFC without Real-Time Calculations," Nov. 9-13, ICRERA, Nagasaki, 2024.
6. Z. H. Qiu, Y. S. Lai, C. J. Hsu, W. M. Chiou and S. H. Lai, "Rapid Development Framework of Motor Control Technology for IPM Synchronous Motor Drivers Based on Multi-verification In the Loop," IEEE *IECON*, Nov. 3-6, Chicago, 2024.

7. C. J. Hsu, Y. S. Lai, Z. H. Qiu and P. Y. Lin, "New ECE Motor Model Considering Tolerance of Manufacturing and Material for High Speed Application Under Field Weakening Control," IEEE IECON, Nov. 3-6, Chicago, 2024.
8. Y. S. Lai, X. Y. Wu and Y. Y. Huang, "Novel Continuous Transition of CCM and DCM Switching Control Method for Efficiency Improvement of PFC," Nov. 20-23, IEEE IFEEC 2023.
9. K. W. Wang, Z. H. Qiu, C. J. Hsu and Y. S. Lai, "Optimum On-Line DC-Link Voltage Regulation for Efficiency Improvement of Motor Drives," IECON 2022 – 48th Annual Conference of the IEEE Industrial Electronics Society, 2022.
10. Y. Y. Huang and Y. S. Lai, "Novel Efficiency Optimized Inductor Design for GaN-Based Totem-Pole PFC," IEEE ISIE, 2022.
11. C. Y. Li and Y. S. Lai, "Novel Hybrid Switching Control Technique for Light Load Efficiency Improvement of GaN-based Totem Pole Power Factor Corrector", IEEE ISIE, 2022.