

# **Tian-Hua Liu**

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## **EDUCATION**

1. 1989 - Ph. D. –National Taiwan University of Science and Technology, Taipei, Taiwan
2. 1982 - M. S. – National Taiwan University of Science and Technology, Taipei, Taiwan
3. 1980 - B. S. – National Taiwan University of Science and Technology, Taipei, Taiwan

## **EXPERIENCES**

- Feb. 2019–Present: Distinguished Professor, National Taiwan University of Science and Technology
- Aug. 2015–Feb. 2019: Provost, National Taiwan University of Science and Technology
- Feb. 2012-Present: Distinguished Professor, National Taiwan University of Science and Technology
- Feb. 2011–Jan. 2015: Dean, College of Electrical Engineering & Computer Science, National Taiwan University of Science and Technology
- Aug. 2009 – Jan. 2011: Dean, Applied Science College, National Taiwan University of Science and Technology
- Aug. 2006 – July 2009: Chairman, Department of Electrical Engineering, National Taiwan University of Science and Technology
- July 2015-Nov. 2015: Visiting Professor, The University of Auckland, New Zealand
- 2000-2001: Visiting Professor , Virginia Polytechnic Institute and State University, USA.
- 1996 - PRESENT: Professor, National Taiwan University of Science and Technology
- 1989 - 1996: Associate Professor, National Taiwan University of Science and Technology
- 1990-1991 Visiting Associate Professor , University of Wisconsin- Madison, USA.
- 1984- 1989: Instructor, National Taiwan University of Science and Technology

## **PROFESSIONAL SERVICE AND PROFESSIONAL MEMBERSHIPS**

- 1999 - 2017: Associate Editor, IEEE Trans. on Industrial Electronics
- 2015-now: Associate Editor, IET Electric Power Applications
- 2009-2016: Associate Editor, Journal of The Chinese Institute of Engineering (SCI)
- 2013-now: Editorial Boards, International Journal of Electrical Engineering and Informatics
- 2015-now: Associate Editor, Journal of Engineering
- 2019-now: Editorial Board, Heliyon Elsevier.

- 2010-2015: Editorial Board, ISRN Signal Processing
- 2020 : Associate Editor, Energies (SCI)
- 2020: Associate Editor, Frontiers in Electronics
- 2013-2015 Chairman of IEEE IES/PELS Taipei Chapter
- 2015-2017 Chairman of IEEE IAS Taipei Chapter
- 2017: Honorary General Co-Chair: 2017 IEEE IFEEC & IEEE ECCE-Asia Conference
- 2015: *General Co-Chair* –IEEE IFEEC-2015 International Conference (Taipei, Taiwan)
- Local Arrangement Chair, 2016 IEEE-ISIE.
- Special Session Chair, 2014 IEEE-ISIE.
- Publication Chair, 2013 IEEE-ISIE.
- Motor Drive Technical Chair, 2013 IEEE-IECON.
- Special Session Organizer Chair on Permanent Magnet Synchronous Motor, 2012 IEEE IECON.
- Honorary Chair, 2012 IEEE-ASID.
- 2009: *Program Chair* –IEEE PEDS-2009 International Conference (Taipei, Taiwan)
- 2001 - PRESENT: IET Fellow
- 1999 - PRESENT: IEEE Senior Member

## **HONORS AND AWARDS**

- 2010: Fellow – IET
- 2019: Fellow- Taiwan Firmware Association
- 2018: Outstanding Service Award- National Taiwan University of Science and Technology
- 2017-2019: Outstanding Research Award – National Taiwan University of Science and Technology
- 2015-2017: Outstanding Research Award – National Taiwan University of Science and Technology
- 2015: Excellent Industry-Project Award, Ministry of Science and Technology, Taiwan.
- 2015: Best University-Industry Project Award, TECO Group
- 2012-2015: Outstanding Research Award – National Taiwan University of Science and Technology.

- 2009-2012: Outstanding Research Award – National Taiwan University of Science and Technology.
- 2007: Outstanding Research Professor – Chinese Electrical Engineering Institute .
- Best Paper Award, Taiwan Power Electronics Conference-2004, 2007, 2008, 2010, 2011, 2012, 2013, 2014, 2017, 2018.
- Best Paper Award –Electrical Power Engineering Conference- 2008,2009,2010,2011, 2013, 2014, 2015, 2017, 2018, 2019.

## **RESEARCH INTERESTS**

Electrical Machine Drives, Power Electrics, Controller Design

### **Tian-Hua Liu Publications (Jan. 16, 2021)**

#### **A. Transaction Papers (International Journal Papers)**

1. T. H. Liu, M. S. Mubarak, D. Hendriyono, and Suwarno, “Speed-loop frequency-adaptive and current-loop optimal harmonic periodic controllers for fault-tolerant SPMSM drive systems,” *IET Electric Pow. Appl.*, vol. 15, no. 1, Jan./Feb. 2021 (to appear). (SCI)
2. M. S. Mubarak, T. H. Liu, C. Y. Tsai, and Z. Y. Wei, “A wide-adjustable sensorless IPMSM speed drive based on current deviation detection under space-vector modulation,” *Energies* 2020, 13 (17), 4431, Aug. 2020, pp. 1-21. (SCI)
3. T. H. Liu, M. S. Mubarak, and Y. H. Xu, “Design and implementation of position sensorless field-excited flux-switching motor drive systems,” *Energies* 2020, 13 (14), 3672, July 2020, pp. 1-26. (SCI)
4. T. H. Liu, S. Ahmad, M. S. Mubarak, and J. Y. Chen, “Simulation and implementation of predictive speed controller and position observer for sensorless synchronous reluctance motors,” *Energies* 2020, 13 (11), 2712, May 2020, pp. 1-18. (SCI)
5. T. H. Liu, M. S. Mubarak, and Z. S. Yang, “Implementation of a high-power-factor interior permanent magnet synchronous motor drive system with a small film DC-link capacitor,” *IET The Journal of Engineering*, vol. 2020, no. 8, July 2020, pp. 717-726. (SCI)
6. M. S. Mubarak and T. H. Liu, “Implementation of predictive controllers for matrix-converter based interior permanent magnet synchronous motor position control systems,” *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 7, no. 1, pp. 261-273, 2019 (SCI).
7. T. H. Liu, M. S. Mubarak, M. Ridwan, and Suwarno, “Design and

- implementation of a speed-loop-periodic-controller-based fault-tolerant SPMSM drive system, *Energies*, 12 (19), 3593, Sep. 2019, pp. 1-31 (SCI).
8. T. H. Liu and S. F. Chang, "Fault-tolerant matrix-converter-controller IPMSM-drive system using a predictive controller and sliding-mode estimator," *IET The Journal of Engineering*, 2019 (SCI).
  9. T. H. Liu and Y. C. Tu, "Design and Predictive controllers for fault-tolerant surface-mounted PMSM drive systems," *IET The Journal of Engineering*, 2019 (SCI).
  10. T. H. Liu, Y. Chen, S. K. Tseng, and M. J. Wu, "Implementation of maximum efficiency control for matrix-converter-based interior permanent magnet synchronous motor drive systems," *IET The Journal of Engineering*, vol. 2018, no. 5, pp. 296-303, 2018 (SCI).
  11. T. H. Liu and J. J. Huang, "Improved efficiency of a fan drive system without using an encoder or current sensors," *IET The Journal of Engineering*, vol. 2018, no. 4, pp. 222-229, 2018 (SCI).
  12. T. H. Liu, H. S. Haslim, and S. K. Tseng, "Predictive controller design for high-frequency injection sensorless synchronous reluctance drive system," *IET Electric Pow. Appl.*, vol. 11, no. 5, pp. 902-910, 2017 (SCI).
  13. T. H. Liu, S. K. Tseng, and Y. C. Tu, "Design and implementation of predictive controllers for dual-permanent magnet synchronous motor drive systems," *IET The Journal of Engineering*, vol. 2017, no. 12, pp. 616-626, 2017 (SCI).
  14. T. H. Liu, Y. Chen, M. J. Wu, B. C. Dai, "Adaptive controller for an MTPA IPMSM drive system without using a high-frequency sinusoidal generator," *IET The Journal of Engineering*, vol. 2017, no. 2, pp. 13-25, 2017 (SCI).
  15. W. C. Wang, T. H. Liu, and Y. Syaifudin, "Model predictive controller for a micro-PMSM-based five-finger control system," *IEEE Trans. Ind. Electron.*, vol. 63, no. 6, pp. 3666-3676, 2016 (SCI).
  16. P. C. Pan, T. H. Liu, and U. K. Madawala, "Adaptive controller with an improved high-frequency injection technique for sensorless synchronous reluctance drive systems," *IET Electric Pow. Appl.*, vol. 10, no. 4, pp. 240-250, 2016 (SCI).
  17. Y. Chen, T. H. Liu, and N. M. Cuong, "Implementation of Sensorless DC-link capacitor-less inverter-based interior permanent magnet synchronous motor drive via measuring switching-state current ripples," *IET Pow. Appl.*, vol. 10, no. 3, pp.

197-207, 2016 (SCI).

18. S. K. Tseng, T. H. Liu, J. W. Hsu, and L. R. Ramelan, E. Firmansyah, "Fault-tolerant control for a dual-PMSM drive system," *IET The Journal of Engineering*, vol. 2016, no. 9, pp. 344-351, 2016 (SCI).
19. S. K. Tseng, T. H. Liu, J. W. Hsu, L. R. Ramelan, E. Firmansyah, "Implementation of online maximum efficiency tracking control for a dual-motor drive system," *IET Electr. Power Appl.*, vol. 9, no. 7, pp. 449-458, 2015 (SCI).
20. T. H. Liu, Y. Chen, P. H. Yi, and J. L. Chen, "Integrated battery charger with power factor correction for electric-propulsion systems," *IET Electr. Power Appl.*, vol. 9, no. 3, pp. 229-238, 2015 (SCI).
21. Y. Chen, T. H. Liu, C. F. Hsiao, C. K. Lin, "Implementation of adaptive inverse controller for an IPMSM adjustable speed drive system based on predictive current control," *IET Electr. Power Appl.*, vol. 9, no. 1, pp. 60-70, 2015 (SCI).
22. S. K. Tseng, C. C. Tseng, T. H. Liu, and J. L. Chen, "Wide-range adjustable speed control method for dual-motor drive systems," *IET Electr. Power Appl.*, vol. 9, no. 2, pp. 107-116, 2015 (SCI).
23. S. K. Tseng, T. H. Liu, and J. L. Chen, "Implementation of a sensorless interior permanent synchronous drive based on current deviations of pulse-width modulation switching," *IET Electr. Power Appl.*, vol. 9, no. 2, pp. 95-106, 2015 (SCI).
24. H. K. S. Ransara, U. Madawala, and T. H. Liu, "Buck converter based model for a brushless dc motor drive without a dc link capacitor," *IET Electr. Power Appl.*, vol. 8, no. 4, pp. 628-635, 2015 (SCI).
25. S. K. Tseng, T. H. Liu, J. W. Hsu, L. R. Ramelan, and E. Firmansyah, "Reliability improvement of a dual-PMSM speed control system," *International Journal of Electrical Engineering*, vol. 22, no. 1, pp. 27-35, 2015 (EI).
26. W. C. Wang, T. H. Liu, Y. Syaifudin, and T. K. Wang, "Design and implementation of adaptive inverse control algorithm for a micro-hand control system," *IET The Journal of Engineering*, pp. 1-11, Jan. 2014 (SCI).
27. K. Lin, T. H. Liu, J. T. Yu, L. C. Fu, and C. F. Hsiao, "Model-free predictive current control for interior permanent-magnet synchronous motor drives based on current difference detection technique," *IEEE Trans. Ind. Electron.*, vol. 61, no.2, pp. 667-681, Feb. 2013 (SCI).

28. M. Y. Wei and T. H. Liu, "Design and implementation of an online tuning adaptive controller for synchronous reluctance motor drives," *IEEE Trans. Ind. Electron.*, vol. 60, no. 9, pp. 3644-3657, Sep. 2012 (SCI).
29. M. Y. Wei, T. H. Liu, and P. C. Pan, "Rotor position estimator and adaptive controller design for wide-range adjustable speed synchronous reluctance motor drive systems," *International Journal of Electrical Engineering*, vol. 20, no. 1, pp. 1-14, Apr., 2013 (EI)
30. W. C. Wang, T. H. Liu, and K. Y. Fan, "Design and implementation of a wavelet speed controller with application to micro-permanent magnet synchronous motor drives," *IET Electr. Pow. Appl.*, vol. 7, no. 4, pp. 245-255, Aug. 2013 (SCI).
31. J. L. Chen and T. H. Liu, "Implementation of a predictive controller for a sensorless IPMSM drive system," *IET Proc.- Electr. Power Appl.*, vol. 6, no. 8, pp. 513-525, Aug. 2012. (SCI).
32. J. L. Chen, S. K. Tseng, and T. H. Liu, "Implementation of high-performance sensorless interior permanent-magnet synchronous motor control systems using a high-frequency injection technique," *IET Proc.- Electr. Power Appl.*, vol. 6, no. 8, pp. 533-544, Aug. 2012. (SCI).
33. M. Y. Wei and T. H. Liu, "A high-performance sensorless position control system of a synchronous reluctance motor using dual current estimating technique," *IEEE Trans. Ind. Electron.*, vol. 59, no. 9, pp. 3411-3426, Aug. 2011 (SCI).
34. K. Lin and T. H. Liu, "Design and implementation of a chattering-free nonlinear sliding-mode controller for interior permanent magnet synchronous drive systems," *IET Proc.-Electr. Power Appl.*, vol. 6, no. 6, pp. 332-344, June 2012 (SCI).
35. T. Y. Chou and T. H. Liu, "Implementation of a motion control system using micro-permanent magnet synchronous motors," *IET Proc.-Electr. Power Appl.*, vol. 6, no. 6, pp. 362-374, Feb. 2012. (SCI).
36. N. D. Khiem, T. H. Liu, D. F. Chen, and J. Y. Hung, "Improvement of matrix converter drive reliability by online fault detection and a fault-tolerant switching strategy," *IEEE Trans. Ind. Electronic.*, vol. 59, no. 1, pp. 244-256, Jan. 2011. (SCI.)
37. T. Y. Chou, T. H. Liu, and T. T. Cheng, "A sensorless micro-permanent magnet synchronous motor control system with a wide adjustable speed range," *IET Proc.- Electr. Power Appl.*, vol. 6, no. 2, pp. 62-72, Feb. 2012. (SCI)
38. T. H. Liu, C. G. Chen, and C. Y. Lu, "Implementation of a sensorless switched reluctance drive system for a washing machine with reduced vibration and acoustic

- noise,” *Electric Power Components and Systems*, vol. 39, no. 7, pp. 605-620, Apr. 2011 (SCI)
39. M. Y. Wei, T. H. Liu, and C. K. Lin, “Design and implementation of a passivity-based controller for sensorless synchronous reluctance motor drive systems,” *IET Proc.-Electr. Power Appl.*, vol. 5, no. 4, pp. 335-349, July 2011 (SCI).
  40. T. H. Liu, H. T. Pu, and C. K. Lin, “Implementation of an adaptive position control system of a permanent magnet synchronous motor and its application,” *IET Proc.-Electr. Power Appl.*, vol. 4, no. 2, pp. 121-130, Mar. 2010 (SCI).
  41. T. H. Liu and C. G. Chen, “Design and implementation of sensorless techniques for switched reluctance drive systems,” *International Journal of Electronics*, vol. 97, no. 9, Sep. 2009 (SCI).
  42. T. H. Liu and K. S. Wang, “Design and implementation of a novel synchronous-rectifier forward converter with improved performance,” *International Journal of Electronics*, vol. 98, no. 8, pp. 927-943, Aug. 2010 (SCI).
  43. J. L. Chen, T. H. Liu, and C. L. Chen, “Design and implementation of a novel high-performance sensorless control system for interior permanent magnet synchronous motors,” *IET Proc.-Electr. Power Appl.*, vol. 4, no. 4, pp. 226-240, July 2010.(SCI).
  44. K. Lin, T. H. Liu, and C. H. Lo, “Implementation of a sensorless interior permanent magnet synchronous motor drive system,” *International Journal of Electrical Engineering*, vol. 16, no. 5, pp. 343-352, Oct. 2009.
  45. T. Y. Chou, T. H. Liu, and T. T. Cheng, “Design and implementation of an adaptive inverse controller for a micro-permanent magnet synchronous motor control system,” *IET Proc.-Electr. Power Appl.*, vol. 3, no. 5, Sep. 2009, pp. 471-481 (SCI).
  46. K. Lin, T. H. Liu, and C. H. Lo, “Sensorless interior permanent magnet synchronous motor drive system with a wide adjustable speed range,” *IET Proc.-Electr. Power Appl.*, vol. 3, no. 2, pp. 133-146, Mar. 2009. (SCI).
  47. Y. H. Chang and T. H. Liu, “Design and implementation of an H-infinite controller for a micropermanent-magnet synchronous motor position control system,” *IEE Proc.-Electr. Power Appl.*, vol. 2, no. 1, pp. 8-18, Jan. 2008 (SCI).
  48. K. Lin, T. H. Liu, and S. H. Yang, “Nonlinear position controller design with input-output linearisation technique for an IPMSM control system,” *IET Proc.-Power Electronics*, vol. 1, no. 1, pp. 14-26, Mar. 2008 (SCI).
  49. T. H. Liu, M. T. Lin, and C. L. Chang, “Adaptive controller design for a synchronous reluctance drive considering saturation,” *Journal of the Chinese Institute of Engineers*, vol. 30, no. 7, pp. 1169-1178, Nov. 2007. (SCI).
  50. T. H. Liu and H. H. Hsu, “Adaptive controller design for a synchronous reluctance motor drive system with direct torque control,” *IEE Proc.-Electr. Power Appl.*, vol. 1, no. 5, pp. 815-824, Sep. 2007. (SCI).



51. J. L. Shi and T. H. Liu, "Nonlinear controller design for an interior permanent magnet synchronous motor including field weakening operation," IEE Proc.-Electr. Power Appl., vol. 1, no. 1, pp. 119-126, Jan. 2007 (SCI).
52. J. L. Shi, T. H. Liu, and Y. C. Chang, "Position control of an interior permanent magnet synchronous motor without using a shaft position sensor," IEEE Trans. Ind. Electron., vol. 54, no. 4, Aug. 2007 (SCI).
53. Y. H. Chang, T. H. Liu, and C. C. Wu, "Novel adjustable micropermanent-magnet synchronous- motor control system without using a rotor-position/speed sensor," IEE Proc.-Electr. Power Appl., vol. 153, no. 3, pp. 429-438, May 2006. (SCI).
54. J. L. Shi, T. H. Liu, and Y. C. Chang, "Adaptive controller design for a sensorless IPMSM drive system with a maximum torque control," IEE Proc.-Electr. Power Appl., vol. 153, no. 6, Nov. 2006, pp. 823-833 (SCI).
55. T. H. Liu, M. T. Lin, and Y.C. Yang "Nonlinear control of a synchronous reluctance drive system with reduced switching frequency," IEE Proc.-Electr. Power Appl., vol. 153, no. 1, Jan. 2006, pp. 47-56 (SCI).
56. T. H. Liu, D. F. Chen, and C. K. Hung, "Nonlinear controller design and implementation for a matrix-converter-based PMSM drive system," IEE Proc.-Electr. Power Appl. , vol. 152, no. 5, Sep. 2005, pp. 1037-1048. (SCI).
57. T. H. Liu, D. F. Chen, and C. K. Hung, "A matrix converter-fed sensorless PMSM drive system," Electric Power Components and Systems, vol. 33, no. 8, Aug. 2005, pp. 877-893 (SCI).
58. T. H. Liu, Y. C. Lee, and Y. H. Chang, "Adaptive controller design for a linear motor control system," IEEE Trans. Aero. And Electron. Syst., vol. 40, no. 2, Apr. 2004, pp. 601-616. (SCI)
59. G. Chen, T. H. Liu, M. T. Lin, and C. A. Tai, "Position control of a sensorless synchronous reluctance motor," IEEE Trans. Ind. Electron., vol. 51, no. 1, Feb. 2004, pp. 15-25. (SCI)
60. D. F. Chen and T. H. Liu, "Optimal controller design for a matrix converter based surface mounted PMSM drive system," IEEE Trans. Power Electron., vol. 18, no. 4, July 2003, pp. 1034-1046. (SCI)
61. C. G. Chen and T. H. Liu, "Nonlinear controller design for switched reluctance drive systems," IEEE Trans. Aero. and Electron. Syst., vol. 39, no. 4, Oct. 2003. (SCI)
62. T. H. Liu, K. L. Wang, and C. G. Chen, "A novel two-degree-of-freedom controller design for a permanent magnet linear synchronous motor control system," International Journal of Electronics, vol. 90, no. 1, pp. 27-42, 2003. (SCI)
63. G. Chen and T. H. Liu, "A sensorless switched reluctance drive system using self-inductance estimating technique," International Journal of Electronics, vol. 90, no. 4, pp. 285-302, 2003. (SCI).

64. T. H. Liu, S. H. Chen, and D. F. Chen, "Design and implementation of a matrix converter PMSM drive without a shaft sensor," *IEEE Trans. Aero. and Electron. Syst.*, vol. 39, no. 1, Jan. 2003, pp. 228-243. (SCI)
65. S. Sirisukprasert, J. S. Lai, and T. H. Liu, "Optimum harmonic reduction with a wide range of modulation indexes for multilevel converters," *IEEE Trans. Ind. Electron.*, vol. 49, no. 4, Aug. 2002, pp. 875-881. (SCI)
66. D. F. Chen and T. H. Liu, "Design and Implementation of a novel matrix converter PMSM drive system," *IEEE Trans. Aero. and Electron. System*, vol. 37, no. 3, July 2001, pp. 863-875. (SCI)
67. M. T. Lin and T. H. Liu, "Design and Implementation of a robust controller for a synchronous reluctance drive," *IEEE Trans. Aero. and Electron. System*, vol. 37, no. 4, Oct. 2001, pp. 1344-1385. (SCI).
68. M. T. Lin and T. H. Liu, "Sensorless synchronous reluctance drive with standstill starting," *IEEE Trans. Aero. and Electron. System*, vol. 36, no. 4, Oct. 2000, pp. 1232-1241. (SCI)
69. T. H. Liu, D. F. Chen, and C. C. Fang, "Design and implementation of a battery charger with a state-of-charge estimator," *Int. J. Electron.*, vol. 87, no. 2, pp. 211-226, 2000. (SCI)
70. Y. Ma, T. H. Liu, C. G. Chen, and Y. H. Chang, "Design and implementation of a switched reluctance motor drive with a novel converter," *Electric Power Systems Research*, pp. 111-119, vol. 56, 2000 (SCI)
71. D. F. Chen, T. H. Liu, and C. J. Chen, "Design and implementation of a novel permanent magnet synchronous drive with a new PWM strategy," *International Journal of Electronics*, vol. 86, no.8, pp. 1013-1029, 1999. (SCI)
72. M. T. Lin and T. H. Liu, "Design and implementation for a digital synchronous reluctance drive," *IEEE Trans. Aero. and Electron. System.*, vol. 34, no. 4, pp. 1149-1164, Oct. 1998.(SCI)
73. B. Y. Ma, T. H. Liu, C. G. Chen, and W. S. Feng, "Design and implementation of a sensorless switched reluctance drive system," *IEEE Trans. Aero. and Electron. System.*, vol. 34, no. 4, pp. 1193-1207, Oct. 1998.(SCI)
74. T. H. Liu, M. T. Lin, and H. C. Wu, "A single phase induction motor drive with improved performance," *Electric Power System Research*, vol. 47, no. 1, pp. 29-38, Oct. 1998.(SCI)
75. T. H. Liu and M. T. Lin, "Research on a synchronous reluctance drive," *Proceedings of the National Science Council, Part A: Physical Science and Engineering*, vol. 21, no. 2, pp. 143-152, Mar. 1997. (EI)
76. T. H. Liu and H. P. Chen, "Design and analysis of a resonant dc-link inverter driving an ac motor and efficiency study," *Electric Machines and Power Systems*,

- vol. 25, no. 1, pp. 41-56, Jan. 1997. (SCI)
77. T. H. Liu and M. T. Lin, "A fuzzy sliding-mode controller design for a synchronous reluctance motor drive," *IEEE Trans. Aero. and Electron. Sys.*, vol. 32, no. 3, pp. 1065-1076, July 1996. (SCI)
  78. T. H. Liu, "Design and analysis of a resonant dc-link inverter feeding a permanent magnet synchronous motor," *Int. J. Electronics*, vol. 80, no. 3, pp. 479-497, May 1996. (SCI)
  79. T. H. Liu, C. Y. Lin, J. S. Yang, and W. Y. Chang, "Modeling and performance of a static frequency converter starting a 300 MVA synchronous machine," *Electric Power Systems Research*, vol. 37, no. 1, pp. 45-53, Apr. 1996. (SCI)
  80. T. H. Liu, "A new control method and reliability improvement for a switched reluctance motor drive," *Electric Power Systems Research*, vol. 37, no. 1, pp. 7-18, Apr. 1996. (SCI)
  81. T. H. Liu, and M. T. Lin, "Controller design for a switched reluctance motor drive system," *Journal of Control Systems and Technology*, vol.3, no. 2, pp. 115-122, June 1995. (EI)
  82. T. H. Liu, and Y. J. Chen, "The reliability improvement of a switched reluctance motor drive system," *Journal of Control Systems and Technology*, vol. 3, no. 2, pp. 137-144, June 1995. (EI)
  83. T. H. Liu, and M. T. Lin, "Sliding mode with fuzzy controller design for a sensorless synchronous reluctance motor drive," *Journal of Control Systems and Technology*, vol. 3, no. 2, pp. 129-136, June 1995. (EI)
  84. T. H. Liu, "A maximum torque control with a controlled capacitor for a single-phase induction motor," *IEEE Trans. Ind. Electron.*, vol. 42, no. 1, pp. 17-24, Feb. 1995. (SCI)
  85. T.H. Liu and C.P. Chen, "Adaptive control for a sensorless permanent-magnet synchronous motor drive," *IEEE Trans. Aerospace and Electronic Systems*, vol. 30, no. 3, pp.900-909, July 1994. (SCI)
  86. T.H. Liu and C.P. Cheng, "Controllers design for a sensorless permanent magnet synchronous drive system," *IEE Proceedings-B, Electronic Power Appl.*, vol. 140, no. 6, pp. 369-378, Nov. 1993. (SCI)
  87. T.H. Liu, J.R. Fu, and T. A. Lipo, "A strategy for improving reliability of field oriented controlled induction motor drives," *IEEE Trans. Ind. Appl.* vol. 29, no. 5, pp. 910-918, Sep. /Oct., 1993. (SCI)
  88. E. Muljadi, Y. Zhao, T.H. Liu, and T. A. Lipo, "Adjustable ac capacitor for a single-phase induction motor," *IEEE Trans. Ind. Appl.* vol. 29, no. 3, pp. 479-485, May/ June, 1993. (SCI)
  89. T.H. Liu, J. L. Shi, and C. H. Liu, 1991, Robust controllers design and efficiency

- analysis for a brushless servo system, *Journal of the Chinese Institute of Engineers*, vol.14, no.5, pp.495-506, Sep. 1991.(EI)
90. T.H. Liu and C.H. Liu, 1990, "A multiprocessor-based fully digital control architecture for permanent magnet synchronous motor drives," *IEEE Trans. Power Electron.* vol.5, no.4, pp.413-423, Oct. 1990.(SCI)
  91. T.H. Liu and C.H. Liu, 1990, "Implementation of AC servo controllers employing frequency-domain optimization techniques," *IEEE Trans. Ind. Electron.* vol.37, no.4, pp.275-282, Aug. 1990.(SCI)
  92. T. H. Liu, C. M. Young, and C. H. Liu, "Microprocessor-based controller design and simulation for a permanent magnet synchronous motor drive," *IEEE Trans. on Ind. Electron.*, vol. 35, no. 4, pp. 516-523, Nov. 1988.(SCI)

## **B. Local Journal Papers**

1. T. H. Liu and Y. W. Wang, "A fault-tolerant AC/DC converter for PMSM drive systems," *Insight Machinery Magazine*, 2021 (to appear)
2. T. H. Liu and C. Y. Tsai, "Implementation of an IPMSM sensorless drive system using ZVS current-slope and back-EMF hybrid methods," *Insight Machinery Magazine*, vol. 41, pp. 46-56, Apr. 2020.
3. T. H. Liu and Y. C. Du, "Implementation of a predictive controller for a fault-tolerant permanent magnet synchronous motor drive system," *Power Electronics*, vol. 16, no. 2, pp. 3-12, Mar. 2018.
4. T. H. Liu and C. Y. Chen, "Implementation of a predictive speed controller and rotor position/speed estimator for a synchronous reluctance motor," *Power Electronics*, vol. 16, no.5, Sep. 2018.
5. S. Y. Lin, T. H. Liu, S. K. Tseng, J. L. Chen, and C. S. Liang, "Implementation of torque sensing circuit and drive circuit for an electric hand-tool," *Electricity Monthly*, no. 289, Jan. 2015, pp. 56-71.
6. C. C. Tseng, T. H. Liu, J. L. Chen, C. F. Tsai, and C. S. Wu, "Implementation of a high-performance dual drive system," *Power Electronics*, vol. 12, no. 2, pp. 42-50, Mar. 2014.
7. T. H. Liu, S. K. Tseng, and J. L. Chen, "Sensorless variable frequency drive system for an air conditioner," *Electricity Monthly*, no. 284, pp. 153-167, 2014.
8. M. Y. Wei and T. H. Liu, "Adaptive controller for a position control of a synchronous reluctance drive," *Power Electronics*, vol. 11, no. 1, pp. 72-83, 2013.
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#### **D. Books**

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#### **E. Patents**

4 US patents, 15 Domestic Patents.

#### **F. Projects**

33 university-industry projects.