

YILMAZ SOZER
Professor
Electrical & Computer Engineering
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FIELD OF INTERESTS

The analysis, design and control of power electronics, rotating machinery, and energy systems.

EDUCATION

Middle East Technical University	Ankara, Turkey	Electrical and Electronics Engineering	BS	1993
Rensselaer Polytechnic Institute	Troy, NY	Electric Power Engineering	MS	1995
Rensselaer Polytechnic Institute	Troy, NY	Electric Power Engineering	PhD	2000

EMPLOYMENT

- August 2017 - **Professor**
Electrical & Computer Engineering, University of Akron, Akron, OH
- May 2014 - August 2017 **Associate Professor**
Electrical & Computer Engineering, University of Akron, Akron, OH
- August 2009- May 2014 **Assistant Professor**
Electrical & Computer Engineering, University of Akron, Akron, OH
- September 2007- May 2009 **Adjunct Professor**
Graduate School of Union College, Schenectady, NY
- January 2000- July 2009 **Senior Research Engineer**
Advanced Energy Conversion LLC, Schenectady, NY
- May 1995, December 1999 **Research Assistant**
Rensselaer Polytechnic Institute, Troy NY
- May 1992, September 1992 **Summer Intern**
National Telecom Inc. Izmir, Turkey

TEACHING EXPERIENCE

The University of Akron

- Undergraduate level
 - ❖ Energy Conversion, Electric Motor Drives, Electric Hybrid Vehicles, and Modern Power Systems courses, Energy Conversion Laboratory, Digital Logic Design Laboratory,
- Graduate level
 - ❖ Modeling and Control of Renewable Energy Systems course, Control of Electric Machines, Design of Electric Hybrid Vehicles, and Dynamics of Electric Machines courses

Graduate College of Union University

- Developing curriculum for energy conversion concentration
- Developing and teaching digital control systems course

PROJECTS INVOLVED

- **Rensselaer Polytechnic Institute, 1994 - 1999**

Adaptive Control of Permanent Magnet Motors (Lockheed Martin)

Two types of permanent magnet (PM) motors are studied: the permanent magnet brushless dc motor (PMBDCM) and the permanent magnet synchronous (PMSM) motor. Three types of adaptive controller are applied including direct and indirect techniques. Direct model reference adaptive controller is compared against indirect adaptive techniques and a non-adaptive PI controller. The new control strategies to reduce torque ripple in PMSM and PMBDCM are presented. The developed control algorithms are successfully implemented on the SABER and Matlab simulators. Experimental verification is performed on a DSP-based 30 hp commercial PMSM drive system.

- **Advanced Energy Conversion, 2000 -2009**

Belt Driven Starter Alternator Systems (Dana Corporation)

Two starter/alternator systems (SA) have been developed. The first system was intended to serve as an integrated starter/alternator for a hybrid vehicle. During starting the integrated SA could provide 300 Nm of torque up to a speed of 250 rpm. Second starter/alternator system was designed to be a belt-driven re-starter/alternator unit that would only provide sufficient torque for starting the engine when warm. Following topics were investigated throughout the development of starter/alternator systems.

High Performance Motor Drives (Bechtel Marine Propulsion)

Development and implementation of the predictive space vector current regulation algorithm is achieved for high performance Permanent magnet synchronous motor drives using FPGA based controller. High power multilevel inverter has been designed for Brushless DC Motor Drive. Closed loop voltage balancing technique for diode clamp multilevel inverter with fast space vector PWM algorithms have been developed.

Power Conditioning System for interfacing DC Energy Storage to Electric Utility System (American Electric Power - U.S. Department of Energy)

The objective of the work was to develop a robust and inexpensive power conditioning system that will interface a large sodium sulfur battery bank to the utility. The system processes power in both directions to support battery charging and delivering battery energy to the utility system. The development activity has been directed at multi-level converters at the 100 kW power level, with the expectation that the technology can be scaled up to significantly higher power levels.

Inverter/Charger System for Residential and Commercial Back up Power (New York State Energy Research and Development Authority (NYSERDA))

5 kW inverter/charger system capable of supporting power flow in either delivering power to the ac loads (including the utility), or drawing power from an ac source to charge batteries has been developed during the project. Energy storage system is capable of supporting peak load management, critical loads, and renewable energy sources. Inverter efficiency is optimized through using interface transformers.

2.5 kW Inverter for Solar Photovoltaic ((NYSERDA) and U.S. Department of Energy)

Solar PV inverter have been developed which has the ability to operate both in grid connected and stand alone operation. This ability allows this inverter to continue feeding critical loads even during utility outages. Maximum Power Point Tracking Algorithm, Anti-Islanding Control

Algorithm, meeting UL 1741 standards, zero voltage switched high frequency inverter operation, and embedded control have been explored in detail during this research and development project.

Electric Hydrostatic Steering Assist Module (EHSAM) (Dana Corporation)

Switched reluctance and brushless dc motor drives developed as a part of electric hydrostatic steering assist module. Overall system has been characterized and servo controller has been developed to achieve smooth EHSAM operation.

High Power Density Motor/Propulsor (NAVY-SBIR)

Design tool have been developed using Matlab software. Double sided Brushless DC and Switched Reluctance Motors (SRM) and associated inverter drives have been designed for comparison.

Adaptive Control of Interior Permanent Magnet Motor Based Electric Assist Drive System (General Motors)

Interior Permanent Magnet Motor (IPM) has been characterized for Electric Assist Drive System (EADS). Predictive space vector current regulation algorithm for IPM control have been developed and implemented for EADS operation.

Brushless DC Based Military Tactic Starter/Generator Drive (Dewey Electronics)

2.5 kW starter/generator drive system has been developed to charge 42 V batteries. EMI characterization of the system has been developed and filters have been designed to meet Military EMC Standards.

Mutually Coupled Switched Reluctance (MCSR) Based 50 Hp wind turbine Generator (New York State Energy Research and Development Authority (NYSERDA))

Mutually coupled switched reluctance based wind turbine generator has been developed. The MCSRG is capable of operating through standard six switched H-bridge inverter. The system is interface to the utility through back to back inverter. The research has been extended to operate the generator at the extended speed operation.

Utility Interactive Wind Simulator (Rensselaer Polytechnic Institute and New York State Energy Research and Development Authority (NYSERDA))

Model of the 10 kW commercial wind turbine has been developed and emulated through Permanent Magnet Synchronous Motor Drive (PMSM). PMSM is coupled to PM generator and utility interactive inverter to implement Maximum power point operation.

Fly Wheel Energy Storage for Cooling System (Wright-Patterson Air Force Base)

800 W starter/alternator system has been developed using brushless dc machine. Outer rotor designed enables us to implement fly wheel based energy storage.

Bi-directional DC-DC Converter for Hybrid Electric Vehicles (Espey Electronics)

20 kW Bi-directional, isolated, high frequency, three phase interleaved DC-DC converter has been developed for large to input to output voltage ratios. Zero voltage switching operation is achieved for high efficiency operation.

Brushless DC Motor Drive for Valve Actuator (Flo-Tork)

Brushless Dc based servo drive has been developed for valve actuator.

• UNIVERSITY OF AKRON, 2009-

RESEARCH GRANTS FUNDED

1. **Project Title:** SiC Based Power Electronic Driver for Electric Vehicle Traction.
Personnel: Yilmaz Sozer
Funding Agency: Department of Energy/Power America
Total Amount of Award: \$225,236 (2019-2021)
2. **Project Title:** Design, procure, build, and test a prototype Integrated Starter Generator (ISG) Switched Reluctance Motor for research and development use which uses no rare earth materials.
Personnel: Yilmaz Sozer
Funding Agency: US Army Tank-Automotive Research, Development, & Engineering Command (TARDEC).
Total Amount of Award: \$654,749 (2015-2019)
3. **Project Title:** SiC Based Power Electronic Driver of Gen-II Front End Motor Generator.
Personnel: Yilmaz Sozer
Funding Agency: Bendix CVS
Total Amount of Award: \$274,276 (2019-2021)
4. **Project Title:** Design and Performance Validation of the Switched Reluctance Machines for High-Performance Operations.
Personnel: Yilmaz Sozer
Funding Agency: Turntide Technologies
Total Amount of Award: \$115, 835 (2021-2023)
5. **Project Title:** Smart Sensors and Sensor System Design, Development, and Commercialization.
(Project 1: Smart Sensor Platform for the Electric Utility Industry Infrastructure, Project 2: Air Stream Mechatronics Unit for Energy Efficient HVAC Systems)
Personnel: Alexis De Abreu Garcia, Yilmaz Sozer, Nathan Ida,
Funding Agency: Ohio State Development Department
Total Amount of Award: \$1,744,192 - (Sozer's share is \$479,652) (2015-2019)
6. **Project Title:** SiC Based Power Electronic Motor Driver for Class-8 Mild Hybrid Truck
Personnel: Yilmaz Sozer
Funding Agency: Department of Energy / Power America
Total Amount of Award: \$243,097 (2017-2019)
7. **Project Title:** Switched Reluctance Controller Development and Validation
Personnel: Yilmaz Sozer
Funding Agency: Future Motors
Total Amount of Award: \$138,650 (2018-2022)
8. **Project Title:** Analysis and Design Solutions for Next Generation technologies used in automotive traction drive systems
Personnel: Yilmaz Sozer
Funding Agency: Nexteer Automotive
Total Amount of Award: \$69,333 (2021)

9. **Project Title:** Collaborative Research: Direct-Drive Modular Transverse Flux Electric Machine without Using Rare-Earth Permanent Magnet Material.
Personnel: Yilmaz Sozer
Funding Agency: National Science Foundation
Total Amount of Award: \$203,473 (2013-2017)
10. **Project Title:** Detecting and Mitigating Low-Level DC Leakage and Fault Currents in Transit Systems
Personnel: Yilmaz Sozer
Funding Agency: National Academy of Sciences Transit Cooperative Research Program
Total Amount of Award: \$250,000 (2016-2019)
11. **Project Title:** Analysis and Design Solutions for Noise Vibration and Harshness in 12-slot/10-pole PMSM used in Electric Power Steering System
Personnel: Yilmaz Sozer
Funding Agency: Nexteer Automotive
Total Amount of Award: \$131,431 (2017-2020)
12. **Project Title:** Development of the High Torque Density Transverse Flux Motor (TFM)
Personnel: Yilmaz Sozer
Funding Agency: Aisin AW /Toyota (Japan)
Total Amount of Award: \$81,078 (2019)
13. **Project Title:** Roadway Kinetic Energy Capture and Conversion
Personnel: Yilmaz Sozer, Ala Abbas
Funding Agency: Ohio department of Transportation/ Ohio University
Total Amount of Award: \$15,058 (2018-2019)
14. **Project/ Proposal Title:** Conductor, Cable and Associated Hardware Condition Assessment
Personnel: Yilmaz Sozer, Alex De Abreu
Funding Agency: Exacter Inc.
Total Amount of Award: \$118,184 (2015-2017)
15. **Project Title:** Advanced grid infrastructure sensors development
Personnel: Yilmaz Sozer, Alex De Abreu
Funding Agency: Exacter Inc.
Total Amount of Award: \$120,000 (2018-2020)
16. **Project Title:** Electric Machine Design for Electrically Driven Compressor
Personnel: Yilmaz Sozer
Funding Agency: Bendix Commercial Vehicle Systems.
Total Amount of Award: \$35,813 (2015-2016)
17. **Project/ Proposal Title:** Power Line Carrier Communications and its Alternatives for Commercial Vehicle Applications
Personnel: Yilmaz Sozer
Funding Agency: Bendix Commercial Vehicle Systems.
Total Amount of Award: \$75,986 (2014-2017)
18. **Project Title:** Hardware in the Loop Simulator to Assist the Development of the PM Brushless DC Motor Drives.
Personnel: Yilmaz Sozer

- Funding Agency:** Bendix Commercial Vehicle Systems.
Total Amount of Award: \$74,317 (2012-2014)
19. **Project Title:** Advanced Brake System for Commercial Vehicles
Personnel: Yilmaz Sozer
Funding Agency: Bendix Commercial Vehicle Systems.
Total Amount of Award: \$77,573 (2013-2014)
20. **Project/ Proposal Title:** Analysis, Simulation and Measurement of Losses in Electrical Steel.
Personnel: Yilmaz Sozer, Igor Tsukerman
Funding Agency: ABB
Total Amount of Award: \$78,000 (2013-2015)
21. **Project/ Proposal Title:** Hybrid/Turbo Electric Propulsion Systems
Personnel: Joan E. Carletta, Yilmaz Sozer
Funding Agency: Wright State Applied Research Corporation
Total Amount of Award: 261,000 (2016-2019)
22. **Project/ Proposal Title:** Control Architecture for Intelligent Aviation Electric Power Systems
Personnel: Joan E. Carletta, Yilmaz Sozer
Funding Agency: Wright State Applied Research Corporation
Total Amount of Award: 100,000 (2016-2019)
23. **Project/ Proposal Title:** Clean Technology Sensors Support for Ohio Companies to Add Value to their Products and Help Move them to the Market Place at an Accelerated Pace (Development of a switched reluctance motor drive for off-road vehicles)
Personnel: Alexis De Abreu Garcia, Yilmaz Sozer, Tom Hartley, Bob Veillette, Joan Carletta
Funding Agency: State of Ohio (Third Frontier Project)
Total Amount of Award: 1,670,000 (Sozer's share is \$557,000) (2011-2015)
24. **Project/ Proposal Title:** Research and Development of Clean Vehicle Technology (150 kW Dynamometer Installation, Design and Development of a Series Hybrid Truck, Microgrid Development at the University of Akron)
Personnel: Iqbal Husain, Dane Quinn, Tom Hartley, Yilmaz Sozer
Funding Agency: US Department of Energy
Total Amount of Award: 1,000,000 (Sozer's share is \$250,000) (2010-2012)
25. **Project/ Proposal Title:** Single Phase Induction Motors: Tools for Improving Efficiency.
Personnel: Yilmaz Sozer, Igor Tsukerman
Funding Agency: ABB
Total Amount of Award: \$39,000 (2013-2014)
26. **Project/ Proposal Title:** Scalable, Low-Cost, High-Performance Non-Rare Earth PM Motor for Hybrid Vehicles.
Personnel: Yilmaz Sozer, Malik Elbuluk.
Funding Agency: GE Global Research subcontract US Department of Energy
Total Amount of Award: \$112,000 (2012-2014)
27. **Project/ Proposal Title:** Smart sensor network for health monitoring of power lines
Personnel: Yilmaz Sozer
Funding Agency: University of Akron Proof of Concept Center
Total Amount of Award: \$30,000 + \$30K Match from Exacter Inc. (2015)

28. **Project/ Proposal Title:** Glucose sensor development
Personnel: Kye-Shin Lee, Yilmaz Sozer
Funding Agency: I2V Inc
Total Amount of Award: \$30,000 (2014-2016)
29. **Project/ Proposal Title:** System Design and Feasibility Testing of Mobile Charging System for Electric Vehicles.
Personnel: Yilmaz Sozer, P. Yi.
Funding Agency: Ohio Transportation Center
Total Amount of Award: \$119,650 (2012)
30. **Project/ Proposal Title:** Switched Reluctance Machine and Controller Development for Electric Power Steering
Personnel: Iqbal Husain, Yilmaz Sozer
Funding Agency: Nexteer.
Total Amount of Award: \$37,619 (2010-2011)
31. **Project/ Proposal Title:** SRM drive model simulation, controller development, inverter design.
Personnel: Iqbal Husain, Yilmaz Sozer
Funding Agency: Continental Electrical Motor Services Edmonton, AB, Canada
Total Amount of Award: \$33,500 (2010-2011)

PUBLICATIONS

81 Journals, 209 peer reviewed conference papers

JOURNAL PUBLICATIONS

1. S. Chowdhury, M. N. B. Shaheed, Y. Sozer, "State-of-Charge Balancing Control for Modular Battery System with Output DC Bus Regulation," *IEEE Trans. on Transportation Electrification*, vol. 7, no. 4, pp. 2181-2193, December, 2021.
2. M. A. Gormez, E. Haque, and Y. Sozer, "Cost Optimization of an Opportunity Charging Bus Network," *IEEE Trans. Industry Applications* vol. 57, no. 3, pp. 2850-2858, May-June, 2021.
3. S. Das, O. Gundogmus, Y. Sozer, J. Kutz, J. Tylenda, R. Wright, "Wide Speed Range Noise and Vibration Mitigation in Switched Reluctance Machines With Stator Pole Bridges," *IEEE Trans. on Power Electronics*, vol. 36, no. 8, pp. 9300-9311, August, 2021 .
4. S. Harasis, H. Abdelgaber, Y. Sozer, M. Kisacikoglu, "A center of mass determination for optimum placement of renewable energy sources in microgrids," *IEEE Trans. Industry Applications* vol. 57, no.5, pp. 5274-5284, September-October, 2021..
5. S. Harasis, Y. Sozer, and M. Elbuluk, "Reliable Islanded Microgrid Operation Using Dynamic Optimal Power Management" *IEEE Trans. Industry Applications* vol. 57, no.2, pp. 1755-1766, March-April, 2021.
6. J. Furqani, C. A. Wiguna, A. Chiba, O. Gundogmus, Y. Sozer, A. Purwadi, "Experimental Verification of Acoustic Noise and Radial Force Sum Variation in Switched Reluctance Motor," *IEEE Trans. Industry Applications* vol. 57, no.3, pp. 2481-2493, May-June, 2021..

7. O. Gundogmus, S. Das, Y. Yasa, M. Elamin, Y. Sozer, J. Kutz, J. Tylanda, and R. Wright, "Acoustic Noise Mitigation in High Pole Count Switched Reluctance Machines through Skewing Method on Stator and Rotor Poles" *IEEE Trans. Industrial Electronics*, IEEE Early Access Article. DOI: 10.1109/TIE.2021.3095808.
8. E. Ucer, R. Buckreus, Md E. Haque, M. Kisacikoglu, Y. Sozer, S. Harasis, M. Guven, "Analysis, Design, and Comparison of V2V Chargers for Flexible Grid Integration," *IEEE Trans. Industry Applications* vol. 57, no.4, pp. 4143-4154, July-August, 2021.
9. M. O. Badawy, S. M. Bose, Y. Sozer, "A Novel Differential Power Processing Architecture for a Partially Shaded PV String Using Distributed Control," *IEEE Trans. Industry Applications* vol. 57, no.2, pp. 1725-1735, March-April, 2021.
10. L. Vadamodala, S. Das, Y. Sozer, A. Chowdhury, E. Haque, F. Venegas, D. Colavincenzo, J. Geither, "Comparison of Electric Machine Types for Electrically Driven Engine Accessories using Multiphysics Simulation Tools," Accepted for publication in *IEEE Trans. Industry Applications* vol. 57, no.2, pp. 1399-1410, March-April, 2021.
11. E. Haque, A. Chowdhury, S. Chowdhury, S. Harasis, S. Das, Y. Sozer, O. Gundogmus, F. Venegas, D. Colavincenzo, "DC-Link Current Ripple Reduction in Switched Reluctance Machine Drives" *IEEE Trans. Industry Applications* vol. 57, no.2, pp. 1429-1439, March-April, 2021.
12. F. Ahmadi, Y. Sozer, M. J. Donahue, I. Tsukerman, "Low-loss and lightweight magnetic material for electrical machinery" *IET Electric Power Applications*, vol. 14, no. 2, pp. 282-290, 2020.
13. E. Pazouki, Y. Sozer, and A. De Abreu-Garcia, "A Novel Fault Tolerant Control Method for Interleaved DC-DC Converters under Switch Fault Condition," *IEEE Transactions on Industry Applications*, vol. 56, no.1, pp. 519-526, Jan.-Feb, 2020.
14. O. Gundogmus, M. Elamin, Y. Yasa, T. Husain, Y. Sozer, J. Kutz, J. Tylanda, R. L. Wright, "Acoustic Noise Mitigation of Switched Reluctance Machines with Windows on Stator and Rotor Poles," *IEEE Transactions on Industry Applications* vol. 56, no.1, pp. 3719-3728, July-August, 2020.
15. O. Boler, A. Ibrahim, A. A. Ali, M. G. Granger, H. Abdelgabir, Y. Sozer, J. A. De Abreu-Garcia, "A Novel High Frequency Impedance Analysis Method to Protect DC Electrical Railway Systems," *IEEE Transactions on Industry Applications*, vol. 56, no.1, pp. 669-677, 2020.
16. T. Husain, I. Hasan, Y. Sozer, I. Husain, and E. Muljadi, "A Comprehensive Review of Permanent Magnet Transverse Flux Machines for Direct Drive Applications," *IEEE Transactions on Industry Applications Magazine*- vol. 26, no.6, pp. 87-98, Nov.-Dec., 2020.
17. S. Chowdhury, M. Badawy, Y. Sozer, A. De Abreu-Garcia, "Adaptive Droop Control Scheme for a Series Connected Battery Management System," *IEEE Transactions on Industry Applications*, vol. 55, no.5, pp. 5708-5088, Sept-Oct, 2019.
18. I. Hasan, T. Husain, Y. Sozer, I. Husain, and E. Muljadi, "Mechanical and Thermal Performance of Transverse Flux Machines," *IEEE Transactions on Industry Applications*, vol. 55, no.4, pp. 3716-3724, July-Aug, 2019.

19. A. Mathis, D. D. Quinn, M. El-Amin, Y. Sozer, "Mechanical Analysis of Vibrations in a Switched Reluctance Motor Using Experimental, Numerical, and Analytical," *ASME Journal of Vibration and Acoustics*, vol. 141, no.3, 031007-8, June 2019.
20. T. Husain, A. Elrayyah, Y. Sozer, and I. Husain, "Unified control of switched reluctance motors for wide speed operations," *IEEE Transactions on Industrial Electronics*- vol. 66, no.5, pp. 3401-3411, May, 2019.
21. B. Tekgun, Y. Sozer, and I. Tsukerman, P. Upadhyay, and S. Englebretson "Core Loss Estimation in Electric Machines with Flux Controlled Core Loss Tester," *IEEE Transactions on Industry Applications*, vol. 55, no.2, pp. 1299-1308, March-April 2019.
22. S. Mahmudicherati, M. Elbuluk, and Y. Sozer, "Reducing Ripple in Wind Power Systems: A Hybrid Method Formed Using Two Power Controllers," *IEEE Transactions on Industry Applications Magazine*- vol. 25, no.2, pp. 23-35, March-April, 2019.
23. T. Husain, I. Hasan, Y. Sozer, I. Husain, and E. Muljadi, "Cogging Torque Minimization in Transverse Flux Machines," *IEEE Transactions on Industry Applications*- vol. 55, no.1, pp. 385-397, January-February, 2019.
24. T. Husain, W. Uddin, and Y. Sozer, "Performance comparison of short pitched and fully pitched switched reluctance machines over wide speed operations," *IEEE Transactions on Industry Applications*- vol. 54, no.5, pp. 4278-4287, September-October, 2018.
25. M. Abd Elmutalab, A. Elrayyah, T. Husain, and Y. Sozer, "Extending the speed range of a switched reluctance motor using a fast demagnetizing technique," *IEEE Transactions on Industry Applications*- vol. 54, no.4, pp. 3294-3304, July-August, 2018.
26. T. Husain, I. Hasan, Y. Sozer, I. Husain, and E. Muljadi, "Design Considerations of a Transverse Flux Machine for Direct-Drive Wind Turbine Applications," *IEEE Transactions on Industry Applications*- vol. 54, no.4, pp. 3604-3615, July-August, 2018.
27. T. Husain, I. Hasan, Y. Sozer, I. Husain, and E. Muljadi, "Design of a Modular E-Core Flux Concentrating Transverse Flux Machine," *IEEE Transactions on Industry Applications*- vol. 54, no.3, pp. 2115-2128, May-June, 2018.
28. E. Pazouki, Y. Sozer, and A. De Abreu-Garcia, "Fault diagnosis and fault tolerant operation of non-isolated dc-dc converter," *IEEE Transactions on Industry Applications*- vol. 54, no.1, pp. 310-320, January/February, 2018.
29. M. Unal, F. Cingoz, C. Bagcioglu, Y. Sozer, O. Akkus, "Interrelationships between electrical, mechanical and hydration properties of cortical bone," *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 77, pp. 12-23, January, 2018.
30. Y. Yasa, Y. Sozer, and M. Garip, "Loss analysis of high speed switched reluctance machine with integrated simulation methods," *International Journal of Applied Electromagnetics and Mechanics*, vol. 56, no. 3, pp. 479-497, 2018
31. Y. Yasa, Y. Sozer, and M. Garip, "High-speed switched reluctance machine: natural frequency calculation and acoustic noise prediction," *Turkish journal of Electrical Engineering and computer sciences(Tubitak)*, vol. 26, pp. 999-1010, January 2018

32. M. O. Badawy, T. Husain, Y. Sozer, A. De Abreu-Garcia, "Integrated Control of an IPM Motor Drive and a Novel Hybrid Energy Storage System for Electric Vehicles," *IEEE Transactions on Industry Applications* vol. 53, no.6, pp. 5810-5819, November/December, 2017.
33. D. Tekgun, W. Uddin, K. S. Lee, and Y. Sozer, "Real Time High Frequency Impedance Monitoring of Human Skin through Magnetic Coupling," *IEEE Sensors Journal*- vol. 17, no.19, pp. 6167-6174, October, 2017.
34. W. Uddin, and Y. Sozer, "Analytical Modeling of Mutually Coupled Switched Reluctance Machines under Saturation Based on Design Geometry," *IEEE Transactions on Industry Applications*, vol. 53, no.5, pp. 4431-4440, September/October, 2017.
35. A. Elrayyah, F. Cingoz, and Y. Sozer, "Smart Loads Management Using Droop-Based Control in Integrated Microgrid Systems" *IEEE Journal of Emerging and Selected Topics in Power Electronics*, vol. 5, no.3 , pp. 1142-1153, September, 2017.
36. T. Husain, Y. Sozer, and I. Husain, "DC Assisted Bipolar Switched Reluctance Machine," *IEEE Transactions on Industry Applications*, vol. 53, no.3, pp. 2098-2109, May/June, 2017.
37. F. Cingoz, A. Elrayyah, and Y. Sozer, "Optimized Settings of Droop Parameters Using Stochastic Load Modeling for Effective DC Microgrids Operation" *IEEE Transactions on Industry Applications*- vol. 53, no.1, pp. 1358-1371, March/April, 2017.
38. M. O. Badawy, Y. Sozer, "Power Flow Management of a Grid Tied PV-Battery System for Charging of Electric Vehicles," *IEEE Transactions on Industry Applications*- vol. 53, no.2, pp. 1347-1357, March/April, 2017.
39. A. Ibrahim, A. Elrayyah, Y. Sozer, and A. De Abreu Garcia, "DC railway system emulator for stray current and touch voltage prediction," *IEEE Transactions on Industry Applications*- vol. 53, no.1, pp. 439-446, January/February, 2017.
40. B. Tekgun, Y. Sozer, and I. Tsukerman "Measurement of Core Losses in Electrical Steel in the Saturation Region under DC Bias Conditions," *IEEE Transactions on Industry Applications*, vol. 53, no.1, pp. 88-96, January/February, 2017.
41. F. Cingoz, A. Elrayyah, and Y. Sozer, "Plug-and-Play Nonlinear Droop Construction Scheme to Optimize Islanded Microgrid Operations" *IEEE Transactions on Power Electronics*, vol. 32, no. 4, pp. 2743-2756, April, 2017.
42. A. Ahmed, Y. Sozer, and M. Hamdan, "Maximum Torque per Ampere Control for Buried Magnet PMSM based on DC Link Power Measurement," *IEEE Transactions on Power Electronics*, vol. 32, no.2, pp. 1299-1311, February, 2017.
43. M. O. Badawy, Y. Sozer, and A. De Abreu Garcia, "A Simultaneous Dual Switch Control Structure for a Cascaded Buck Boost PFC Converter Operating in Discontinuous Capacitor Voltage Mode," *IEEE Transactions on Industrial Electronics*, vol. 63, no. 7, pp. 4198-4210, July, 2016.
44. W. Uddin, T. Husain, Y. Sozer, and I. Husain, "Design of a switched reluctance machine for off-road vehicle applications based on torque-speed curve optimization," *IEEE Transactions on Industry Applications*, vol. 52, no. 3, pp. 2138-2147, May-June, 2016.

45. B. Tekgun, Y. Sozer, and I. Tsukerman, "Modeling and parameter estimation of split-single phase induction motors," *IEEE Transactions on Industry Applications*, vol. 52, no. 2, pp. 1431-1440, March-April, 2016.
46. F. Cingoz, A. Elrayyah, and Y. Sozer, "Optimized Resource Management for PV-Fuel Cell Based Microgrids using Load Characterizations," *IEEE Transactions on Industry Applications*, vol. 52, no. 2, pp. 1723-1735, March-April, 2016.
47. M. Badawy, N. Arafat, A. Ahmed, S. Anwar, Y. Sozer, P. Yi, and A. De Abreu Garcia, "Design and Implementation of a 75 KW Mobile Charging System for Electric Vehicles," *IEEE Transactions on Industry Applications*, vol. 52, no. 2, pp. 369-377, March-April, 2016.
48. T. Husain, A. Elrayyah, Y. Sozer, and I. Husain, "Flux Weakening Control of Switched Reluctance Motors in Rotating Reference Frame," *IEEE Transactions on Industry Applications*, vol. 52, no. 1, pp. 267-277, Jan-Feb, 2016.
49. Y. Sozer, I. Husain, and D. A. Torrey, "Guidance in Selecting Advanced Control Techniques for Switched Reluctance Machine Drives in Emerging Applications," *IEEE Transactions on Industry Applications*, vol. 51, no. 6, pp. 4505 - 4514, Nov-Dec, 2015.
50. E. Ofori, T. Husain, Y. Sozer, and I. Husain, "A pulse injection based sensorless position estimation method for a switched reluctance machine over a wide speed range," *IEEE Transactions on Industry Applications* vol. 51, no. 5, pp. 3867-3876, Sept-Oct, 2015.
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179. A. Elrayyah, A. Safayet, Y. Sozer, I. Husain, and M. Elbuluk, "Novel Harmonic and Phase Estimator for Grid-Connected Renewable Energy Systems," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Raleigh, NC, pp. 4683-4689, September, 2012.
180. A. Elrayyah, K. Namburi, Y. Sozer, and I. Husain, "A Novel Dithering Algorithm to Reduce the Electro- Magnetic Interference (EMI) in Single Phase DC/AC Inverters," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Raleigh, NC, pp. 4683-4689, September, 2012.
181. C. Sikder, I. Husain, and Y. Sozer, "Switched Reluctance Generator Control for Optimal Power Generation With Current Regulation," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Raleigh, NC, pp. 4322-4329, September, 2012.
182. A. Pasdar, Y. Sozer, and I. Husain, "Non-Intrusive Active Power Clamp Filter on PLC Channels for Smart Grid Applications," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Raleigh, NC, pp. 227-234, September, 2012.
183. R. Mikail, I. Husain, Y. Sozer, M. Islam, and T. Sebastian, "Four-Quadrant Torque Ripple Minimization of Switched Reluctance Machine through Current Profiling with Mitigation of Rotor Eccentricity Problem and Sensor Errors," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Raleigh, NC, pp. 838-842, September, 2012.
184. R. Mikail, I. Husain, Y. Sozer, M. Islam, and T. Sebastian, "A Fixed Switching Frequency Predictive Current Control Method for Switched Reluctance Machines," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Raleigh, NC, pp. 843-847, September, 2012.
185. M. Khan, Y. Sozer, and I. Husain "Integrated Electric Motor Drive and Power Electronics for Bidirectional Power Flow between Electric Vehicle and DC or AC grid," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Raleigh, NC, pp. 3403-3410, September, 2012.

IEEE EnergyTech 2012

186. A. Elrayyah, Y. Sozer, and M. Elbuluk, "Simplified Modeling Procedure for Inverter-based Islanded Microgrid," in Proc. of *IEEE EnergyTech2012*, Cleveland, OH, pp. 1-6, May, 2012.
IEEE IEVC 2012
187. A. Yilmaz, M. Badawi, Y. Sozer, and I. Husain, "A Fast Battery Charger Topology for Charging of Electric Vehicle," in Proc. of *IEEE International Electric Vehicle Conference*, Greenville, SC, pp. 1-5, March, 2012.
188. M. Khan, Y. Sozer, and I. Husain, "A Bi-directional DC-DC Converter with Overlapping Input and Output Voltage Ranges and Vehicle to Grid Energy Transfer Capability," in Proc. of *IEEE International Electric Vehicle Conference*, Greenville, SC, pp. 1-7, March, 2012.
IEEE APEC 2012
189. A. Elrayyah, Y. Sozer, I. Husain, and M. Elbuluk, "Power Flow in a microinverter based microgrid," in Proc. of the *IEEE Applied Power Electronics Conference & Expo*, Orlando, FL, pp. 1933-1939, 2012.
IEEE SGT 2012
190. S. Ghebremariam, S. Beygi, H. Reza Bahrami, Y. Sozer, and H. Mohsenian-Rad, "Energy Production Cost and PAR Minimization in Multi-Source Power Networks to the Submission Site," in Proc. of the *IEEE PES Innovative Smart Grid Technologies Conference (ISGT'2012)*, Washington, DC, pp. 1-5, January 2012.
IEEE ICDRET 2012
191. N. Arafat, S. Palle, Y. Sozer, I. Husain, "Predictive current control for utility interactive renewable energy systems in the face of weak utility grids," *International Conference on Developments in Renewable Energy Technology (ICDRET)*, pp. 1-6, January, 2012.
IEEE IAS 2011
192. Y. Zou, M. Elbuluk, and Y. Sozer, "Stability Analysis of Maximum Power Points Tracking (MPPT) Method in Wind Power Systems," in Proc. of the *IEEE IAS Annual Meeting*, Orlando, FL, pp. 1-8, October, 2011.
IEEE ECCE 2011
193. S. Narla, Y. Sozer, and I. Husain, "Switched Reluctance Generator Controls for Optimal Power Generation and Battery Charging," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Phoenix, AZ, pp. 3575-3581, September, 2011.
194. R. Mikail, Y. Sozer, I. Husain, M. Islam, and T. Sebastian, "Torque Ripple Minimization of Switched Reluctance Machines through Current Profiling," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Phoenix, AZ, pp. 3568-3574, September, 2011.
195. P. Mantravadi, I. Husain, and Y. Sozer, "Modeling, Implementation and Analysis of a Li-ion Battery Powered Electric Truck," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Phoenix, AZ, pp. 1428-1435, September, 2011.
196. N. Arafat, S. Palle, I. Husain, and Y. Sozer, "Transition Control Strategy between Standalone and Grid Connected Operation of the Voltage Source Inverters," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Phoenix, AZ, pp. 1994-2000, September, 2011.
197. N. Mahmud, Y. Sozer, and I. Husain, "Energy capture improvement of a solar pv system with a multilevel inverter," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Phoenix, AZ, pp. 3933-3940, September, 2011.
IEEE IAS 2010
198. Y. Zou, M. Elbuluk, and Y. Sozer, "A Complete Modeling and Simulation of Induction Generator Wind Power Systems," in Proc. of the *IEEE IAS Annual Meeting*, pp. 1-8, Houston, TX, October, 2010.
IEEE ECCE 2010
199. Y. Sozer, D. A. Torrey, "Meeting MIL-STD-461 for 2kW Military Tactic Generator Drive System," in Proc. of the *IEEE Energy Conversion Congress & Expo*, pp. 942-946 Atlanta, GA, September, 2010.
200. Y. Sozer, D.A. Torrey, and E. Mese, "An Adaptive Predictive Current Control Technique for Permanent Magnet Synchronous Motors," in Proc. of the *IEEE Energy Conversion Congress & Expo*, Atlanta, GA, pp. 2819-2826, September, 2010.

201. Y. Sozer, and D. A. Torrey, "Closed Loop Control of Excitation Parameters for High Speed Switched-Reluctance Generators," in Proc. of the *IEEE APEC*, vol. 1. pp. 75-82 Miami Beach, FL, February, 2003.
202. Y. Sozer, D. A. Torrey, and E. Mese, "Automatic Control of Excitation Parameters in Switched Reluctance Motor Drives," in Proc. of the *IEEE APEC*, vol. 1. pp. 48-56 Dallas, TX, March 2002.
203. D. A. Torrey, J. Kokernak, E. Mese, and Y. Sozer, "Integrated Bus Conductors Improve System Performance in Modular Drives," in Proc. *Power Conversion and Intelligent Motion Conference*, Boston, October, 2000.
204. E. Mese, Y. Sozer, J. Kokernak, D. A. Torrey, "Advanced Torque Ripple and Acoustic Noise Correlation in Switched Reluctance Machines," in Proc. *International Conf. on Electric Machines*, pp. 1767-1771, Helsinki, Finland, August, 2000.
205. E. Mese, Y. Sozer, J. Kokernak, and D. A. Torrey, "Optimal Excitation of a High Speed Switched Reluctance Generator," in Proc. of the *IEEE Applied Power Electronics Conference & Expo*, New Orleans, LA, March, 2000.
206. Y. Sozer, D. A. Torrey, and S. Reva "New Inverter Output Filter Topology for PWM Motor Drives" in Proc. of the *IEEE Applied Power Electronics Conference & Expo*, New Orleans, LA, March, 2000.
207. Y. Sozer, and D. A. Torrey, "Adaptive Flux Weakening Control of Permanent Magnet Synchronous Motors," in Proc. of the *IEEE IAS Annual Meeting*, vol. 1. pp. 574-583, October, 1999.
208. Y. Sozer, and D. A. Torrey, "Adaptive Torque Ripple Control of Permanent Magnet Brushless DC Motors," in Proc. of the *IEEE Applied Power Electronics Conference & Expo*, vol. 1. pp. 86-92 Anaheim, CA, February, 1998.
209. Y. Sozer, H. Kaufman, and D. A. Torrey, "Direct Model Reference Adaptive Control of Permanent Magnet Brushless DC Motors," in Proc. of the *IEEE Int. Con. on Control App.*, vol. 1, pp. 633-638, Hartford, October 1997.

PATENTS

12 awarded, 8 pending, 2 provisional patents.

ISSUED:

1. Y. Sozer, T. Husain, A. Elrayyah "D-Q Control System and Method for Controlling a Switched Reluctance Motor," The University of Akron, Patent No. United States Patent 9608554 March 28, 2017.
2. R. Mikail, M. S. Islam, Y. Sozer, I. Husain, "System for reducing torque ripple in an electric motor," The University of Akron, Steering Solutions IP Holding Corporation, Patent No. United States Patent 9236820 January 12, 2016.
3. Y. Sozer et all, "System And Method for Condition Monitoring of Electricity Transmission Structures," University of Akron, Akron, OH, United States Patent No. #10,209,291, February 19, 2019.
4. A. Pasdar, Y. Sozer, "Smart Sensor Network for Power Grid Health Monitoring," University of Akron, Akron, OH, United States Patent No. #10,261,119 B2, April 16, 2019.
5. D. A. Torrey, Y. Sozer, "Closed Loop Control of Excitation Parameters for Switched-Reluctance Motors" Advanced Energy Conversion LLC. Cohoes NY. Patent No. United States Patent 6,864,658 March 8, 2005.
6. M. Kaplan, J. M. Kokernak, E. Mese, Y. Sozer, D. A. Torrey, "Method for Operating a Switched Reluctance Electrical Generator Using Data Mapping" Dana Corporation, Toledo, Patent No: United States Patent 6,819,008 November 16, 2004.
7. Y. Sozer, D. A. Torrey, E. Mese, "Control Method for Switched Reluctance Motor" Dana Corporation, Toledo, OH. Patent No. United States Patent 6,788,021B2 September 7, 2004. Patent No: German Patent (Deutsches patent-und Markenamt) DE 10313927 March 27, 2003. Patent No: Japanese Patent JP 2003299383 October 17, 2003.
8. M. Kaplan, J. M. Kokernak, E. Mese, Y. Sozer, D. A. Torrey "Method for Operating a Switched Reluctance Electrical Generator" Dana Corporation, Toledo,

Patent No: World Intellectual Property Organization WO 01/59922 A3 March 7, 2002.

Patent No: Canadian Intellectual Property Office CA 2399699 A1 August 16, 2001.

Patent No: European Patent Office EP 1 256 164 A2 August 16, 2001.

9. D. A. Torrey, Y. Sozer "Closed Loop Control of Excitation Parameters for High Speed Switched-Reluctance Generators," Dana Corporation, Toledo, OH. Patent No. United States Patent 7,071,659 July 4, 2006.
10. Y. Sozer et all, "Integrated Motor Compressor for Vapor Compression Refrigeration System," University of Akron, Akron, OH, United States Publication #20170350405, December 7, 2017.
11. Y. Sozer, "Dc Input Current Ripple Reduction in SRM Drive for High Volumetric Power Density Applications," University of Akron, Akron, OH, Patent No. United States Patent 11,128,248 B2 September 21, 2021.
12. K. Webber, D. Streng, I. Hassan, Y. Sozer, A. J. P. Ortega, K. Klass, M. R. Islam, "Permanent magnet machine," University of Akron, Akron, OH, Nexteer Automotive Saginaw, MI, Patent No. United States Patent 11,146,125 B2 October 12, 2021.

PENDING:

13. Y. Sozer, T. Husain, "Single Stack Multiphase Transverse Flux Machines," University of Akron, Akron, OH, US/International Application No. #62/608,274, July 19, 2019.
14. Y. Sozer, I. Tsukerman, "Microwire Magnetic Cores for Electric Machinery," University of Akron, Akron, OH, USPTO: #62/757,389, November 8, 2018.
15. K. Webber, D. Streng, I. Hassan, Y. Sozer, A. J. P. Ortega, K. Klass, M. R. Islam, "Permanent magnet machine," University of Akron, Akron, OH, US/International Application No. 16/211,699, December 6, 2018.
16. Y. Sozer, Y. Yasa, "Acoustic Noise Mitigation in Electric Machines Through Leaf Springs Between the Stator Back Iron and Machine Housing," University of Akron, Akron, OH, USPTO: # 62/744,333, October 11, 2018
17. Y. Sozer, "Double Layer V-Shaped Interior Permanent Magnet Axial Flux Machine," University of Akron, Akron, OH, USPTO: #62/739,911, October 2, 2018.
18. Y. Sozer, et all "Transverse Flux Machines" University of Akron, Akron, OH, US Application No. 16/781,084, February, 4, 2020.
19. Y. Sozer, et all "Minimizing Dc-Link Current Ripple And Acoustic Noise, And Reducing Dc-Link Capacitor Requirement, For Electric Motors," University of Akron, Akron, OH, US Application No. 63/089,615, October, 9, 2020.
20. Y. Sozer, et all "Monitoring Power Systems Utilizing Phase Locked Loop And Rf Emissions, And High Frequency Envelope Detector For Same," University of Akron, Akron, OH, USPTO: #: 63,057,674, May 28, 2020.

PROVISIONAL:

21. Y. Sozer, A. Chowdhury, A. W. Bandarkar, "Slotless Transverse Flux Submerged Winding Permanent Magnet Machine with Unified Drive Topology," University of Akron, Akron, OH, USPTO:# 63/028,114, May, 21, 2020.
22. Y. Sozer, "Three-Phase Wireless Charging System Based on Overlapping Windings" University of Akron, Akron, OH, USPTO: 63/089,836, October, 9, 2020.

SEMINARS / WORKSHOPS

1. Professional Educational Seminar "Design, Modeling and Control of Electric Machines for Automotive Applications" IEEE Applied Power Electronics Conference & Expo, Long Beach, CA, March, 2013.
2. Educational Seminar "Fundamentals of Electric and Hybrid Electric Vehicles" SAE, June, 2013, 2014, 2015, 2016.

3. Tutorial "Switched Reluctance Machines - Design and Control," IEEE Energy Conversion Congress & Expo, Denver, CO, September, 2013.
4. Keynote Speaker "Impacts of Smart LED Lighting on Energy Systems: Problems, Opportunities" *International Workshop on Solid State Lighting Technologies and Research 2013: LEDs and OLEDs*, Istanbul, Turkey August, 2013.
5. Keynote Speaker "Energy Conversion Systems for Transportation and Renewable Applications," 2020 International Conference on Smart Energy Grid Engineering (SEGE), Oshawa, Canada.

DISSERTATION/ THESIS

20 PhD and 22 MS students graduated, currently supervising 8 PhD and 2 MS students

1. Yu Zou	Modeling and control of doubly-fed induction generator wind power system and maximum power point tracking (Co-Adv.)	PhD	Aug., 2012 (Assoc. Prof. Saginaw Valley Univ.)
2. Ali Elrayyah	Modeling and control of microgrid connected PV sources	PhD	Dec., 2013 (Qatar Res. Found.)
3. Nayeem Arafat	Modeling and control of distributed energy systems during transition operation between grid connected and standalone modes	PhD	May, 2014 (AC Propulsion)
4. Amir M. Pasdar	Real-time health monitoring of power networks based on their high frequency behavior	PhD	Dec. 2014 (Co-Ax Tech.)
5. Sam Mahmodicherati	Direct Power Control of Doubly Fed Induction Generators (Co-Adv.)	PhD	Aug., 2016 (Rockwell)
6. Wasi Uddin	Modeling and Control of Fully Pitched Mutually Coupled Switched Reluctance Machines	PhD	Aug., 2016 (Schaeffler Group)
7. Mohamed Badawy	Grid Tied PV/Battery System Architecture and Power Management for Fast Electric Vehicles Charging	PhD	Aug., 2016 (Assist. Prof. San Jose State Univ.)
8. Fatih Cingoz	Effective Power Management For Autonomous operations of Microgrids	PhD	Aug., 2016 (Doosan-USA)
9. Burak Tekgun	Analysis, simulation and measurement of losses in electrical steel used in electric machines	PhD	Dec., 2016 (Assist. Prof. A. Gul Univ.)
10. Tausif Husain	Modeling, design and control of a modular E-Core flux concentrating axial flux machine	PhD	Aug, 2017 Borg Warner
11. Aparna Saha	Control Of Multilevel Converters For Voltage Balancing And Fault-Tolerant Operations	PhD	Dec. 2017 Nexteer Automotive

12. Iftekhar Hasan	Modeling and Analysis of High Torque Density Transverse Flux Machines for Direct-Drive Applications	PhD	Dec. 2017 Rivian
13. Elham Pazouki	Fault Detection, Identification And Protection Method For Single Stage And Interleaved Boost Converters (Co-Adv.)	PhD	Aug, 2018 (Rockwell)
14. Farzad Ahmadi	A Novel Low Loss And Lightweight Magnetic Cores for Electrical Machinery (Co-Adv.)	PhD	Dec, 2018 (Assist. Prof. Youngstown State Univ.)
15. Sifat M. Chowdhury	Power Management for Battery Connected Energy Systems	PhD	May, 2020
16. Salman Harisis	Reliability for Energy Management for Renewable Power Systems	PhD	May, 2020 (Assist. Prof. Tafila Tech. Univ.)
17. Omer Gundogmus	Design and Control of electric machines for noise and vibration mitigation	PhD	Dec, 2019 GE Global Research
18. Lavanya Vadamodala	High Performance electric machine design for heavy duty vehicles	PhD	May, 2021, Altair Inc
19. Shuvajit Das	Design optimization of TFM, acoustic noise and mechanical vibration mitigation	PhD	Dec., 2021 Nexteer Automotive
20. Mohammad N. Shaheed	Reliability for battery management systems	PhD	Dec., 2021 Cummins
21. Md Tawhid Bin Tarek	Double Layer V-Shaped Interior Permanent Magnet Axial Flux Machine	PhD	Expected, Dec. 2021
22. Ehsanul Haque	Power converters with Wide bandgap devices for motor drives	PhD	Expected May, 2022
23. Anik Chowdhury	Design optimization of TFM, AFM	PhD	Expected May, 2022
24. Okan Boler	Health monitoring sensors for Power Systems	PhD	Expected May, 2022
25. AbdulWahab Bandarkar	Electric machine design (SRM/AFM) for integrated compressor	PhD	Expected May, 2022
26. Md. Arifur Rahman	EMI Modeling and Mitigation for Energy Systems (Co-Adv.)	PhD	Expected May, 2022
27. Muntasir Islam	Power Management for Aerospace Energy Systems	PhD	Expected Dec, 2024
28. Md. Khalid Mahmud Bin Azam	High Power Density Machine Drive for Aviation Applications	PhD	Expected May, 2025
29. Ashraf Siddiquee	Wide Band Gap Power Devices for Power Conversion Systems	PhD	Expected May, 2025
28. Sandeep Narla	Modeling and control of switched reluctance machine with four	MS	Dec. 2010 (Solar City)

	quadrant operations		
29. Nayeem Mahmud	Energy capture improvement of a solar system with a multilevel inverter	MS	Aug. 2011 (ZF)
30. Brad Mularcik	Virtual Moving Air Gap For the Speed Range Improvement	MS	Aug. 2012 (Diebold)
31. Sreeshailam Palle	Voltage harmonic control of weak utility grid through distributed energy systems	MS	Aug. 2012 (Chrysler)
32. Krishna Namburi	A novel dithering algorithm to reduce EMI in voltage source inverters	MS	Aug. 2012 (Nexteer Automotive)
33. Adeen Ahmed	Maximum torque per Ampere control for PM Synchronous motor drive system	MS	Aug. 2013 (Ford)
34. Ernest Ofori	A pulse injection based sensorless position estimation method for switched reluctance machines	MS	Aug. 2014 (Franklin Electric)
35. Saeed Anwar	Active power compensation of microgrid connected systems	MS	Aug, 2014 (Ten. Tech)
36. Hari Prasad	Range extender development for electric vehicle using engine generator set	MS	Dec., 2014 (Chrysler)
37. Rakesh Mitra	Torque ripple minimization of switched reluctance motors using speed signal based current profiling	MS	May, 2015 (Nexteer)
38. Asif M. Chowdhury	Synthesizing diverse waveforms through high power wide bandwidth SiC based inverter	MS	Aug. 2016 (Hala Mch)
39. Mohamad AbdElmutalab	Extending The Speed Range Of A Switched Reluctance Motor Using A Fast Demagnetizing Technique	MS	Aug, 2016 (Byton)
40. Aida Gorgina	Quasi Z- Source based multilevel inverter for single phase photo voltaic applications (Co-Adv.)	MS	Aug., 2016 (Beckett)
41. Amr Ibrahim	Detecting and Mitigating Low-Level DC Leakage and Fault Currents in Transit Systems	MS	Dec, 2016 (Delphi Automotive)
42. Didem Tekgun	Acoustic Noise And Vibration Reduction On Switched Reluctance Machines	MS	May, 2017 Ab. Gul Univ.
43. Awab Ali	A Hybrid Flyback Led Driver With Utility Grid And Solar Pv Interface	MS	Dec. 2017 Hala Mech.
44. Mohammed Elamin	Acoustic noise mitigation of switched reluctance machines through skewing methods	MS	Dec. 2017 Altair
45. Hassan Abdelgaber	Stability Analysis of Nonlinear Droop-Controlled Islanded Microgrids & Optimum Placement Of Renewable Energy Sources	MS	May 2018 Go2power

46. Mehmet A. Gormez	Driving Cycle Optimization Of An Electric City Bus Network	MS	Aug, 2018 CWR Univ.
47. Oguzhan Kilic	Split Winding Switched Reluctance Machine Drives For Wide Speed Range Operations	MS	Aug, 2018 TurkPetroleum
48. Rachana Shukthija Dasari	Health monitoring of power systems through EMI emission	MS	Dec, 2018 Ford
49. Ali Topcu	Fault detection and reliability analysis for motor drives with multilevel converters	PhD	Dec, 2020 ZF
50. Samir Chowdhury	MPPT control for wireless charging systems	MS	May, 2021
51. Fubing Han	Evaluation of Wind Resources Generated from Vehicle Wake	MS	May, 2021
52. Senol Sancar	Control of SRMs using Bi-filar Windings	MS	Expected Dec, 2021

PROFESSIONAL ACTIVITIES

- Technical Program Chair, IEEE Energy Conversion Congress & Expo (ECCE) (2019)
- Technical Program Chair, IEEE International Electric Machines and Drives Conference (2019)
- ECCE Steering Committee Member 2016-2020
- Associate Editor, IEEE Journal of Emerging and Selected Topics in Power Electronics 2018-
- Associate Editor, IEEE Transaction on Industry Applications Electrical Machine Committee 2010-2018
- Associate Editor, IEEE Transaction on Power Electronics 2012-2018
- Technical Paper Review Chair, IEEE Transactions on Industry Applications, Sustainable and Renewable Energy Systems Committee 2016-2019
- Associate Editor for the IEEE Transaction on Transportation Electrification 2015-2020
- Secretary, IEEE IAS Sustainable and Renewable Energy Systems Committee 2012-2014
- Vice Chair, IEEE IAS Sustainable and Renewable Energy Systems Committee 2014-2016
- Chair, IEEE IAS Sustainable and Renewable Energy Systems Committee 2016-2020
- Vice Program Chair, IEEE Energy Conversion Congress & Expo (2011, 2014, 2015, 2016, 2018)
- Publication Chair, IEEE Energy Conversion Congress & Expo (2018)
- IEEE Senior Member 2014-
- Session Chair, IEEE ECCE (2011, 2012,2013,2014,2015,2016, 2017,2018, 2020,2021)
- Topic Chair, IEEE ECCE (2012-2013)
- Topic Chair, IEEE International Electric Machines and Drives Conf. (2015-2017)
- Session Chair, IEEE IEVC 2012 Conference (2012)
- Associate Editor for IEEE-American Control Conference (2013-2014)
- Member of Selection Committee for IEEE IAS-EMC Committee Paper Award (2011)
- Chair of Selection Committee for IEEE IAS-RES Committee Best Paper Award (2016, 2017, 2018, 2019, 2021)
- Member of International Advisory Board: International Hydrogen Energy Cong. & Exhib. (2007)
- Track Chair for International Workshop on Solid State Lighting Technologies and Research 2013

- Reviewer for
- IEEE ECCE, IEEE APEC, IEEE PESC, IEEE Int. Conf. on SET, IEEE IEMDC, IEEE Transactions on IAS, IEEE Transactions on PEL, IEEE Transactions on Smart grid , IEEE Transactions on PEL Letters, IET Power Electronics, IET Transportations, IEEE Transactions Industrial Electronics, IEEE Transactions on Magnetics, IEEE Energy Conversion

SERVICE

- RTP Committee Chair 2017-
- RTP Committee Member 2014-
- Graduate Program Curricular Committee Member 2014-2018
- Search Committee Member for Tenure Track Faculty hiring 2012
- Search Committee Member for NTT faculty hiring 2016
- Senior Design Committee Member 2014-2108
- Area coordinator for Power and Energy 2012-

AWARDS

- Outstanding Researcher Award, by the College of Engineering, University of Akron **-2018**
- The Drive for Distinction Award for Technology and Innovation Team, Bendix CVS (External Collaborator for the team) **-2018**
- Best research award, by the University of Clean Energy Alliance of Ohio **-2011**
- Scholarship from Ministry of Turkish Education for Graduate Studies in US, as being the top student among nationwide examination. **1993-1995**
- Scholarship to study at Izmir Science High (Boarding) School selected with nationwide examination. **1985-1988**