

Asst. Prof. BURAK TEKGÜN

Personal Information

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International Researcher IDs

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Biography

Dr. Tekgun received the B.S. and M.Sc. degrees in electrical – electronics engineering from Cumhuriyet University, Sivas, Turkey, in 2008 and 2012, and the Ph.D. degree in electrical engineering from Alternative Energy and Advanced Electric Machines (AEAEA) Laboratory, The University of Akron, OH, USA in 2016. His doctoral studies focused on high-frequency power electronics, core loss estimation of electric machines, and electric machine design and controls.

He is currently an Assistant Professor in the Electrical – Electronics Engineering Department, Abdullah Gul University, Kayseri, Turkey. Prior to joining Abdullah Gul University, he was working as a Senior Research Engineer at AC Propulsion Inc., San Dimas, CA, USA. In AC Propulsion, he was responsible for developing advanced controls for induction and interior permanent magnet (IPM) machines for traction applications.

His research interests include the areas of electric machines design and control, high-power, high-frequency power converters, wide bandgap devices, core loss measurements, and modeling. Dr. Tekgun has authored several papers in respective journals and international conference proceedings and has been serving as a reviewer for distinguished journals like IEEE Transactions on Power Electronics, IEEE Transactions on Industry Applications, IEEE Transactions on Transportation Electrification.

Education Information

Doctorate, University of Akron, School of Engineering, Electrical and Computer Engineering, United States Of America
2012 - 2016

Postgraduate, Sivas Cumhuriyet University, Fen Bilimleri Enstitüsü, Electrical and Electronics Engineering, Turkey 2009 -
2012

Undergraduate, Cumhuriyet Üniversitesi, Mühendislik Fakültesi, Elektrik Elektronik Mühendisliği, Turkey 2004 - 2008

Foreign Languages

English, C1 Advanced

Dissertations

Doctorate, Analysis, Measurement, and Estimation of Core Losses in Electric Machines, University of Akron, Graduate

School, Electrical Engineering, 2016

Research Areas

Electrical and Electronics Engineering, Power Electronics, Electrical Machine Theory and Design, Electric Motor Drivers, Power Converters, Engineering and Technology

Academic Titles / Tasks

Assistant Professor, Abdullah Gul University, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği, 2017 - Continues

Research Assistant, The University of Akron, School of Engineering, Electrical Engineering, 2012 - 2016

Research Assistant, Cumhuriyet Üniversitesi, Fen Bilimleri Enstitüsü, Elektrik Elektronik Mühendisliği, 2010 - 2012

Courses

Dynamics and Control of AC Drives, Postgraduate, 2020 - 2021, 2018 - 2019

Introduction to Electric Drive Systems, Postgraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019

Computer Applications in Electrical Engineering, Postgraduate, 2021 - 2022, 2020 - 2021

Power Electronics and Motor Drives System Design Capsule, Undergraduate, 2021 - 2022

Electromechanical Energy Conversion Capsule, Undergraduate, 2020 - 2021

Power Electronics and Motor Drives System Design Capsule, Undergraduate, 2021 - 2022

Power Electronics, Postgraduate, 2020 - 2021

High Voltage Technique, Undergraduate, 2017 - 2018

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **FEA based fast topology optimization method for switched reluctance machines**
Tekgun D., TEKGÜN B., ALAN İ.
ELECTRICAL ENGINEERING, vol.104, no.4, pp.1985-1995, 2022 (SCI-Expanded)
- II. **Core Loss Estimation in Electric Machines With Flux-Controlled Core Loss Tester**
Tekgun B., Sozer Y., Tsukerman I., Upadhyay P., Englebretson S.
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS, vol.55, no.2, pp.1299-1308, 2019 (SCI-Expanded)
- III. **Measurement of Core Losses in Electrical Steel in the Saturation Region under DC Bias Conditions**
Tekgun B., Sozer Y., Tsukerman I.
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS, vol.53, no.1, pp.88-96, 2017 (SCI-Expanded)
- IV. **Modeling and Parameter Estimation of Split-Phase Induction Motors**
Tekgun B., Sozer Y., Tsukerman I.
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS, vol.52, no.2, pp.1431-1440, 2016 (SCI-Expanded)

Articles Published in Other Journals

- I. **A modular buck-boost drive system for torque ripple minimization of switched reluctance machines**
Tekgün B.
Niğde Üniversitesi Mühendislik Bilimleri Dergisi, vol.10, no.1, pp.63-70, 2021 (Peer-Reviewed Journal)

Books & Book Chapters

I. Core Loss in Electric Machines

Tekgün B.

in: Compendium on Electromagnetic Analysis: Fundamentals and Applications for Physicists and Engineers, Volume 2: The New Generation of Electric Machines, Igor Tsukerman, Yilmaz Sozer, Editor, World Scientific Publishing, New York, pp.175-210, 2020

Refereed Congress / Symposium Publications in Proceedings

- I. **Sensorless Position and Speed Control of IPMSM with Sliding Mode Observer and Voltage Signal Injection**
Ateş E., Tekgün B., Ablay G.
3rd Global Power, Energy and Communication Conference- GPECOM2021, Antalya, Turkey, 5 - 08 October 2021
- II. **Effect of the Stator Slot Indents on Fluid Damping Loss in Submersible Pump Applications**
Tekgun D., Cosdu M. M., TEKGÜN B., ALAN İ.
4th IEEE Global Power, Energy and Communication Conference (IEEE GPECOM), Cappadocia, Turkey, 14 - 17 June 2022, pp.184-189
- III. **Investigation of the Effects of Multi-Layer Winding Structures in Two Pole Synchronous Reluctance Machines**
Tekgün D., Coşdu M. M., Tekgün B., Alan İ.
2021 3rd Global Power, Energy and Communication Conference (GPECOM), Antalya, Turkey, 5 - 08 October 2021, pp.1-5
- IV. **Anahtarlamalı Relüktans Motorun Akustik Performansının Yapısal Değişiklikler Yoluyla İyileştirilmesi**
Öcan E. C., Oktav A., Tekgün B.
Ulusal Makina Teorisi Sempozyumu, Diyarbakır, Turkey, 15 - 17 September 2021, pp.1-8
- V. **Improvement of the Acoustical Performance of Permanent Magnet Synchronous Motors**
Öcan E. C., Oktav A., Tekgün B.
International Asian Congress on Contemporary Sciences-V, Nakhchivan, Azerbaijan, 1 - 02 July 2021, pp.1-5
- VI. **Sliding Mode Control of a Switched Reluctance Motor Drive with Four-Switch Bi-Directional DC-DC Converter for Torque Ripple Minimization**
ATEŞ E., TEKGÜN B., ABLAY G.
2020 International Conference on Smart Energy Systems and Technologies (SEST), Istanbul, Turkey, Turkey, 7 - 09 September 2020
- VII. **A Modular Three-Phase Buck-Boost Motor Drive Topology**
Tekgun D., TEKGÜN B., ALAN İ.
6th International Conference on Electric Power and Energy Conversion Systems (EPECS), ELECTR NETWORK, 5 - 06 October 2020, pp.130-135
- VIII. **Design and Control of a Single Phase DC/Rectified AC/AC Inverter for low THD Applications**
TEKGÜN B., Tekgun D., ALAN İ., Badawy M.
7th International Conference on Renewable Energy Research and Applications (ICRERA), Paris, France, 14 - 17 October 2018, pp.424-430
- IX. **Design of a Novel Interior Permanent Magnet Axial Flux Machine**
Tekgun B., Husain T., Das S., Sozer Y., HAMDAN M.
2017 9th Annual IEEE Energy Conversion Congress & Exposition (ECCE), Ohio, United States Of America, 1 - 05 October 2017, pp.314-320
- X. **Comparison of axial flux machine performance with different rotor and stator configurations**
HUSAIN T., Tekgun B., SOZER Y., HAMDAN M.
2017 IEEE International Electric Machines and Drives Conference, IEMDC 2017, Florida, United States Of America, 21 - 24 May 2017
- XI. **Core loss estimation in electric machines with flux controlled core loss tester**
Tekgun B., SOZER Y., TSUKERMAN I., UPADHYAY P., ENGLEBRETSON S.

2016 IEEE Energy Conversion Congress and Exposition, ECCE 2016, Wisconsin, United States Of America, 18 - 22 September 2016

XII. Design and Implementation of a Sinusoidal Flux Controller for Core Loss Measurements

Tekgun B., Boynuegri A. R., Chowdhury M. A. M., Sozer Y.

31st Annual IEEE Applied Power Electronics Conference and Exposition (APEC), California, United States Of America, 20 - 24 March 2016, pp.207-214

XIII. High Power Wide Bandwidth Inverter Output Filter Design for Various Operating Frequencies and Diverse Waveforms

Chowdhury M. A. M., Tekgun B., Sozer Y.

IEEE Energy Conversion Congress and Exposition, Montreal, Canada, 20 - 24 September 2015, pp.2461-2468

XIV. Bridged-T Voltage Control of a High Bandwidth SiC Inverter for Various Output Waveforms with/without DC Offset at Wide Range of Frequencies

Tekgun B., Chowdhury M. A. M., Sozer Y.

IEEE Energy Conversion Congress and Exposition, Montreal, Canada, 20 - 24 September 2015, pp.1715-1722

XV. Measurement of core losses in electrical steel in the saturation region under DC bias conditions

TEKGÜN B., Sozer Y., Tsukerman I.

2015 IEEE Applied Power Electronics Conference and Exposition (APEC), Charlotte, NC, USA, United States Of America, 15 - 19 March 2015

XVI. Modeling and Parameter Estimation of Split - Single Phase Induction Motors

Tekgun B., Sozer Y., Tsukerman I.

IEEE Energy Conversion Congress and Exposition (ECCE), Pennsylvania, United States Of America, 14 - 18 September 2014, pp.1317-1324

XVII. Design of a stable Takagi-Sugeno fuzzy control system via LMIs with disturbance rejection

Namazov M., Tekgun B., Celikkale I. E.

International Symposium on INnovations in Intelligent SysTems and Applications, INISTA 2012, Trabzon, Turkey, 2 - 04 July 2012

Supported Projects

Tekgün B., Alan İ., TUBITAK Project, Dalgıç Pompa Uygulamaları İçin Doğrudan Yol Vermeli Senkron Relüktans Motorunun Tasarım Optimizasyonu ve Gerçeklemesi, 2021 - 2023

Tekgün B., Alan İ., Boynuegri A. R., Yaşa Y., TUBITAK Project, Alçaltıcı/Yükseltici Dc/Dc/Ac Eviricilerle Yüksek Performanslı Anahtarlamalı Relüktans Motoru Sürücü Sistemi Tasarımı Ve Gerçeklemesi, 2018 - 2021

TEKGÜN B., Other Supported Projects, Eksenel Akıllı Motor Tasarımı Ve Kontrolü, 2015 - 2016

TEKGÜN B., Other Supported Projects, Elektrik Makinalarındaki Demir Kayıplarının Analizi, Ölçülmesi Ve Tahmin Edilmesi, 2013 - 2015

TEKGÜN B., Other Supported Projects, Tek Fazlı Motorların Performans İyileştirmesi Analizi, 2013 - 2014

Memberships / Tasks in Scientific Organizations

IEEE, Senior Member, Member, 2013 - Continues, United States Of America

Metrics

Publication: 23

Citation (WoS): 21

Citation (Scopus): 26

H-Index (WoS): 3

H-Index (Scopus): 3

Congress and Symposium Activities

2017 IEEE Energy Conversion Congress and Exposition, Attendee, Ohio, United States Of America, 2017
2017 IEEE International Electric Machines and Drives Conference (IEMDC), Attendee, Florida, United States Of America, 2017
2016 IEEE Energy Conversion Congress and Exposition, Attendee, Wisconsin, United States Of America, 2016
2016 IEEE Applied Power Electronics Conference and Exposition (APEC), Attendee, California, United States Of America, 2016
2015 IEEE Energy Conversion Congress and Exposition, Attendee, Quebec, Canada, 2015
2015 IEEE Applied Power Electronics Conference and Exposition (APEC), Attendee, North-Carolina, United States Of America, 2015
2014 IEEE Energy Conversion Congress and Exposition, Attendee, Pennsylvania, United States Of America, 2014
2012 International Symposium on Innovations in Intelligent Systems and Applications, Attendee, Trimble, Turkey, 2012

Non Academic Experience

Business Organization (private), Ac Propulsion Inc.