

Assoc. Prof. Tayfun Gündoğdu

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Biography

T. Gundogdu received a B.Sc. degree in Electrical Education from Gazi University, Ankara, Turkey, in 2009, an M.Sc. degree in Electrical Engineering from Istanbul Technical University (ITU), Istanbul, Turkey, in 2012, and a Ph.D. degree in Electronic and Electrical Engineering, University of Sheffield, Sheffield, the U.K. in 2018. The topic of his Ph.D. thesis was advanced non-overlapping winding induction machine designs for electrical vehicle applications in collaboration with Valeo Powertrain Systems.

From 2010 to 2014, he was a Research Assistant at the ITU, Electrical Engineering Department. From 2017 to 2018, he worked as a researcher for the University of Sheffield EMD Group in collaboration with IMRA Europe SAS. From Sept. 2018 to Oct. 2022, he was an Assistant Prof. at Hakkari University Department of Electrical and Electronics Engineering. Since Nov. 2022, he has been working as R&D Design Manager at GAMAK Electric Motors R&D Department and since Feb. 2023, he is Asst. Prof. at ITU, Energy Institution.

His current major research interests include the design, analysis, and control of novel electrical machines and magnetic sensors including induction, synchronous, permanent magnet brushless, reluctance, line-start, hybrid-excited, vernier permanent magnet, and resolvers for applications from electric vehicles through industrial to renewable energy.

Education Information

Doctorate, University of Sheffield, Electronic and Electrical Engineering, England 2014 - 2018

Postgraduate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Turkey 2010 - 2012

Foreign Languages

English, C2 Mastery

Research Areas

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Design and Analysis of Limited-Angle Wound Rotor Resolvers**
Gundogdu T, Ozdincer B.
IEEE Sensors Journal, vol.22, no.10, pp.9351-9360, 2022 (SCI-Expanded)
- II. **Optimization and Improvement of Advanced Nonoverlapping Induction Machines for EVs/HEVs**
Gundogdu T., Zhu Z., Mipo J.
IEEE Access, vol.10, pp.13329-13353, 2022 (SCI-Expanded)
- III. **Design and analysis of advanced nonoverlapping winding induction machines for ev/hev applications**
Gundogdu T., Zhu Z., Mipo J.
Energies, vol.14, no.20, 2021 (SCI-Expanded)
- IV. **A systematic design optimization approach for interior permanent magnet machines equipped with novel semi-overlapping windings**
Gundogdu T., Kömürgöz Kırış G.
STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION, vol.63, no.3, pp.1491-1512, 2021 (SCI-Expanded)
- V. **Analysis of coil pitch in induction machines for electric vehicle applications**
Gundogdu T., Zhu Z., Mipo J.
IET Electric Power Applications, vol.14, no.12, pp.2525-2536, 2020 (SCI-Expanded)
- VI. **Influence of design parameters on flux-weakening performance of interior permanent magnet machines with novel semi-overlapping windings**
Gundogdu T., Kömürgöz Kırış G.
IET ELECTRIC POWER APPLICATIONS, vol.14, no.13, pp.2547-2563, 2020 (SCI-Expanded)
- VII. **Design and analysis of interior permanent magnet machines equipped with novel semi-overlapping windings**
Gundogdu T., Kömürgöz Kırış G.
IET ELECTRIC POWER APPLICATIONS, vol.14, no.8, pp.1446-1457, 2020 (SCI-Expanded)
- VIII. **Comparative study on performance characteristics of PM and reluctance machines equipped with overlapping, semi-overlapping, and non-overlapping windings**
Gundogdu T., Kömürgöz Kırış G.
IET ELECTRIC POWER APPLICATIONS, vol.14, no.6, pp.991-1001, 2020 (SCI-Expanded)
- IX. **Investigation of winding MMF harmonic reduction methods in IPM machines equipped with FSCWs**
GÜNDOĞDU T., KÖMÜRGÖZ KIRIŞ G.
International Transactions on Electrical Energy Systems, pp.1-27, 2018 (SCI-Expanded)

Articles Published in Other Journals

- I. **Design of Limited-Angle Wound Rotor Resolvers for High Accuracy and Easy Manufacturability**
Gundogdu T.
IEEE Transactions on Transportation Electrification, vol.9, no.2, pp.2544-2556, 2023 (Scopus)
- II. **Torque Capability Comparison of Induction and Interior Permanent Magnet Machines for Traction Applications**
Gündoğdu T.
GAZI UNIVERSITY JOURNAL OF SCIENCE, vol.36, no.2, pp.675-691, 2023 (Scopus)
- III. **Numerical Investigations on Operation Modes and Transients of IPM Machines with Dual Windings**
Gundogdu T.

Journal of Materials and Mechatronics:A (Online), vol.3, no.2, pp.257-274, 2022 (Peer-Reviewed Journal)

- IV. **Improving the Flux-Weakening Capability of Interior Permanent Magnet Machines by Number of Turns Changing Methodology**
Gündoğdu T.
Turkish Journal of Science & Technology, vol.17, no.2, pp.375-394, 2022 (Peer-Reviewed Journal)
- V. **Comparative Study of Permanent Magnet, Conventional, and Advanced Induction Machines for Traction Applications**
Gundogdu T., Zhu Z., Chan C. C.
World Electric Vehicle Journal, vol.13, no.8, 2022 (Scopus)
- VI. **Influence of stator and rotor geometric parameters on rotor bar current waveform and performance of IMs**
Gündoğdu T.
JOURNAL OF ENGINEERING-JOE, vol.2019, no.2019, pp.3649-3654, 2019 (ESCI)
- VII. **Influence of winding configuration on the performance of surface-mounted PM machines**
GUNDOGDU T., Komurgoz G.
International Journal of Mechanical Engineering and Robotics Research, vol.6, no.1, pp.46-49, 2017 (Scopus)
- VIII. **Implementation of Fractional Slot Concentrated Winding Technique in Large Salient-Pole Synchronous Generators**
Gundogdu T., Komurgoz G.
2012 IEEE Power Electronics and Machines in Wind Applications (Pemwa), vol.1, no.1, pp.1-6, 2012 (Conference Book)

Refereed Congress / Symposium Publications in Proceedings

- I. **Design and Analysis of Double Fed Interior Permanent Magnet Machines for Traction Applications**
Gundogdu T.
1st IEEE IAS Global Conference on Emerging Technologies, GlobConET 2022, Virtual, Arad, Romania, 20 - 22 May 2022, pp.1036-1042
- II. **Performance Improvement for Interior Permanent Magnet Machines by Winding Reconfiguration**
Gundogdu T.
2022 IEEE Global Energy Conference, GEC 2022, Batman, Turkey, 26 - 29 October 2022, pp.185-190
- III. **Influence of Cage Structure on Rotor Bar Current Waveform and Performance in Induction Machines**
Gundogdu T., Komurgoz G., Gundogdu B.
1st IEEE Global Power, Energy and Communication Conference, GPECOM 2019, Nevşehir, Turkey, 12 - 15 June 2019, pp.188-193
- IV. **Design of Interior Permanent-Magnet Machines with Novel Semi-Overlapping Windings**
Gundogdu T., Komurgoz G.
1st IEEE Global Power, Energy and Communication Conference, GPECOM 2019, Nevşehir, Turkey, 12 - 15 June 2019, pp.180-187
- V. **Influence of Rotor Skew on Rotor Bar Current Waveform and Performance in Induction Machines**
Gundogdu T., Zhu Z., Mipo J., Personnaz S.
21st International Conference on Electrical Machines and Systems, ICEMS 2018, Jeju, South Korea, 7 - 10 October 2018, pp.525-530
- VI. **Influence of rotor slot number on rotor bar current waveform and performance in induction machines**
Gundogdu T., Zhu Z., Mipo J.
20th International Conference on Electrical Machines and Systems, ICEMS 2017, Sydney, Australia, 11 - 14 August 2017
- VII. **Influence of stator slot and pole number combination on rotor bar current waveform and performance of induction machines**

Gundogdu T., Zhu Z., Mipo J.

20th International Conference on Electrical Machines and Systems, ICEMS 2017, Sydney, Australia, 11 - 14 August 2017

VIII. Influence of air-gap length on rotor bar current waveform of squirrel-cage induction motor

Gundogdu T., Zhu Z., Mipo J., Farah P.

19th International Conference on Electrical Machines and Systems, ICEMS 2016, Chiba, Japan, 13 - 16 November 2016

IX. Influence of magnetic saturation on rotor bar current waveform and performance in induction machines

Gundogdu T., Zhu Z., Mipo J., Farah P.

22nd International Conference on Electrical Machines, ICEM 2016, Lausanne, Switzerland, 4 - 07 September 2016, pp.391-397

X. Investigation of non-sinusoidal rotor bar current phenomenon in induction machines - Influence of slip and electric loading

Gundogdu T., Zhu Z., Mipo J., Farah P.

22nd International Conference on Electrical Machines, ICEM 2016, Lausanne, Switzerland, 4 - 07 September 2016, pp.419-425

XI. The design and comparison of salient pole and permanent magnet synchronous machines

Gündoğdu T.

ELECO 2011 - 7th International Conference on Electrical and Electronics Engineering, Bursa, Turkey, 1 - 03 November 2011, pp.1-6