

OLEKSANDR DOBZHANSKYI

EDUCATION

Ph.D. in Electrical Engineering, 2012
Louisiana State University, Baton Rouge, USA
Study on a Permanent Magnet Transverse-Flux Machine

M.S. in Electrical Engineering, 2010
Louisiana State University, Baton Rouge, USA
Modeling AC PM Machines with Two Degrees of Mechanical Freedom

B.S. in Electrical Engineering, 2006
Kiev National University of Construction & Architecture, Kiev, Ukraine

TEACHING EXPERIENCE

Assistant Professor 2021-present
Point Park University, Pittsburgh, USA
Power Distribution, Electrical Circuits, Power System Analysis.

Assistant Professor 2018 - 2020
Oregon Institute of Technology, Klamath Falls, USA
Electromechanical Energy Conversion, Electric Power, Circuits II, Circuits III, Measurements and Instr., Capstone, Wave Energy Conversion Systems

Assistant Professor 2017 - 2018
American University of Iraq, Sulaimania, Iraq
Electrical Circuits, Measurement and Instrumentation, Capstone

Visiting Professor 2014-2015
Universidad de Ingeniería y Tecnología, Lima, Peru
Electric Systems for Wave Energy Conversion

Teaching Assistant 2010-2012
Louisiana State University, Baton Rouge, USA
Circuits II, Electro-Magnetic Fields, Electric Machines

RESEARCH EXPERIENCE

Research Associate 2019-present
Oregon Renewable Energy Center (OREC), Klamath Falls, USA
Investigated and developed novel permanent magnet machines for wind and wave energy applications

Postdoctoral Fellow 2013-2016
North-West University, Potchefstroom, South Africa
*Designed and developed PM transverse-flux wind generator with double coil
Investigated and optimized high power density switched-flux machines for HEV applications*

Research Assistant 2009-2012

Louisiana State University, Baton Rouge, USA

Studied and developed DC and AC motors for gearless electromechanical systems

INDUSTRIAL EXPERIENCE**Engineering Intern** winter 2011

United Technologies Center (UTC)

Performed 3D FEM analysis of the 2.3 MW wind generator with concentrated windings

Engineering Intern summer 2011

Elliott Turbo Group, Plaquemine, USA

Worked with rotating machinery; supported the analysis of technical questions or problems regarding: Installation, operation, maintenance, and product improvement

Electrical Engineer 2006 – 2008

Elekom Ltd, Kiev, Ukraine

Designed external and internal power supply networks; prepared reports and managed technical documentation

GRANTS:

\$40 000 – Development of energy efficient, cost-effective linear generator for wave energy conversion systems. Oregon Institute of Technology.

PUBLICATIONS*Journals:*

O. Dobzhanskyi, Eklas Hossain, Ebrahim Amiri, R. Gouws, V. Grebenikov, L. Mazurenko, M. Pryjmak, R. Gamaliia, "Axial-Flux PM Disk Generator With Magnetic Gear for Oceanic Wave Energy Harvesting," *IEEE Access*, Vol. 7, March 29, 2019.

S. Botha, N. Zabihi, **O. Dobzhanskyi**, R. Gouws, "Intelligent fuzzy logic controller for improved power extraction of micro wind turbines," *International Journal of Engineering and Technology*, Vol. 7, Issue 4, 2018.

O. Dobzhanskyi, R. Gouws, E. Amiri, "Analysis of PM transverse flux outer rotor machines with different configuration," *IEEE Trans. on Industry Applications*, Vol. 53, Issue 5, pp. 4260 – 4268, Sep. – Oct. 2017.

O. Dobzhanskyi and R. Gouws, "3-D Finite element method analysis of twin-armature permanent magnet motor with two degrees of mechanical freedom," *Springer Electrical Engineering*, 99(3), 997-1004 Aug. 17th, 2017.

O. Dobzhanskyi, R. Gouws, E. Amiri "On the role of magnetic shunts on increasing performance of transverse-flux machines," *IEEE Trans. on Magnetics*, Vol: 53, Issue: 2, pp.: 1-9, October 25th, 2016.

O. Dobzhanskyi and R. Gouws, "Performance analysis of a permanent magnet transverse-flux generator with double coil," *IEEE Trans. on Magnetics*, Vol. 52, Issue 1, pp: 1-11, Jan. 1 2016.

N. Zabihi, R. Gouws, and **O. Dobzhanskyi**, "Using dynamic model of PEM-Fuel cell supplying the load by the Z-source inverter with a new control strategy," *International Journal of Research in Engineering and Science*, Vol. 2, Issue 2, India, July 2014.

O. Dobzhanskyi, P. Gottipati, E. Karaman, Xiaozhong Luo, E. Mendrela, A. M. Trzynadlowsky, "Multilayer-winding versus switched-flux permanent-magnet AC Machines for gearless applications in clean-energy systems," *IEEE Trans. on Industry Applications*, Vol. 48, Issue: 6, pp: 2296-2302, Nov. 2011.

O. Dobzhanskyi, E. Mendrela, "Twin-armature rotary-linear PM motor," *Journal of Electrical Systems (JES)*, Vol. 6, pp. 480-486, 6-4 Dec. 2010.

Conferences:

O. Dobzhanskyi, "Comparison analysis of cylindrical and rectangular linear permanent magnet transverse-flux machines for wave energy applications," *12th International Symposium on Linear Drives for Industry Applications (LDIA)*, Neuchatel, Switzerland, July 1-3, 2019.

O. Dobzhanskyi and R. Gouws, "Magnetic circuit analysis of the low-cost in-wheel switching flux motor for HEV applications," *IEEE International Electric Machines & Drives Conference (IEMDC)*, San Diego, CA, USA, May 2019, pp.: 623-628.

O. Dobzhanskyi, "PM BLDC actuator with helical motion of the rotor for Industrial applications," *IEEE Texas Power and Energy Conference (TPEC)*, College Station, TX, Feb. 7, 2019, pp.: 1-6.

O. Dobzhanskyi, R. Gouws, E. Amiri, "Design considerations of the PM transverse flux linear motor for an urban-type electromagnetic train", *2018 IEEE Transportation Electrification Conference and Expo (ITEC)*, 13-15 June 2018.

A. Koochaki, M. Divandari, E. Amiri and **O. Dobzhanskyi**, "Optimal design of solar-wind hybrid system using teaching-learning based optimization applied in charging station for electric vehicles", *2018 IEEE Transportation Electrification Conference and Expo (ITEC)*, 13-15 June 2018.

O. Dobzhanskyi, R. Gouws, E. Amiri, "Optimal switching-flux motor design and its cogging effect reduction," *IEEE 58th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON)*, 12-13 October, 2017.

O. Dobzhanskyi, R. Gouws, E. Amiri, "Comparison analysis of AC PM transverse-flux machines of different designs in terms of power density and cost," *IEEE 58th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON)*, 12-13 October, 2017.

O. Dobzhanskyi, R. Gouws, "Comparison analysis of electric motors with two degrees of mechanical freedom: PM synchronous motor vs. induction motor," *International Young Scientist Forum on Applied Physics and Engineering (YSF-2016)*, Kharkiv, Ukraine, 10-14 of October, 2016. (Second prize Award).

W. A. Bisschoff, **O. Dobzhanskyi**, R. Gouws, "Integration of battery and super-capacitor banks into a single-power system for a hybrid electric vehicle," *International Young Scientist Forum on Applied Physics and Engineering (YSF-2016)*, Kharkiv, Ukraine, 10-14 of October, 2016.

O. Dobzhanskyi, R. Gouws, E. Amiri, "Comparison analysis of PM transverse flux outer rotor machines with and without magnetic shunts," *IEEE ECCE Conf.*, Milwaukee, WI, Sep. 18-22, 2016.

E. Bateman, **O. Dobzhanskyi** and R. Gouws, "Designing a gas sniffer monitoring system for a quad-copter," *SAUPEC Conf.*, Vereeniging, South Africa, 2016, pp.: 259-264.

D. Diedericks, **O. Dobzhanskyi** and R. Gouws, "Designing and integrating a solar grid-tie and off-grid system into one system," *SAUPEC Conf.*, Vereeniging, South Africa, 2016, ISBN: 978-1-77012-386, pp: 425-430.

O. Dobzhanskyi and R. Gouws "Study on energy losses in industrial sector caused by low actual efficiency of induction motors," *Conf. on Industrial and Commercial Use of Energy (ICUE)*, Cape Town, South Africa, Aug. 19-20, 2014, pp.: 1-5.

O. Dobzhanskyi and R. Gouws "Solar power pumping system for domestic appliances," *Conf. on Domestic Use of Energy (DUE)*, Cape Town, South Africa, Apr. 1-3, 2014, pp.: 1-6.

R. Gouws and **O. Dobzhanskyi**, "Efficiency analysis of a three-phase power transformer for industry applications operated under different load conditions," *Conf. on Industrial and Commercial Use of Energy (ICUE)*, Cape Town, South Africa, Aug. 19-21, 2013, pp.: 107-111.

O. Dobzhanskyi and R. Gouws, "Study on energy savings applying highly efficient permanent magnet motor with two degrees of mechanical freedom in concrete industry," *Conf. on Industrial and Commercial Use of Energy (ICUE)*, Cape Town, South Africa, Aug. 20-21, 2013, pp.: 1-5.

E. Amiri, M. Jagiela, **O. Dobzhanskyi**, and Ernest Mendrela, "Modeling dynamic end effects in rotary armature of twin-armature rotary-linear induction motor," *IEEE International Electric Machines and Drives Conf. (IEMDC 2013)*, Chicago, IL, USA, May 2013, pp.: 1088-1091.

O. Dobzhanskyi, E. Mendrela, A. Trzynadlowski, "Performance of a 3-phase permanent magnet transverse flux wind power generator with internal stator," *IEEE Green Technology Conf. (IEEE-Green)*, Baton Rouge, USA, April 14th, 2011, pp.: 1-5.

O. Dobzhanskyi, E. Mendrela, A. Trzynadlowski, "Analysis of leakage flux losses in the transverse flux permanent magnet generator," *IEEE Green Technology Conf. (IEEE-Green)*, Baton Rouge, April 14th, 2011, pp.: 1-6. (Best paper Award).

P. Gottipati, **O. Dobzhanskyi**, E. Mendrela, "In-wheel brushless DC motor for a wheelchair drive," *IEEE Joint International Conf. on Power Electronics, Drives and Energy Systems (PEDES) & 2010 Power India*, Dec. 20-23, 2010, pp.: 1-4.

O. Dobzhanskyi, E. Mendrela, "PM AC motor with two degrees of mechanical freedom," *Tenth Annual Sigma Xi Student Research Conf.*, Poster presentation, Raleigh, North Carolina, Nov. 13, 2010. (Recognition Certificate).