

MICHELA DIANA

PhD

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Summary

Postdoc in the Electric Power Engineering research group of the Electrical Engineering Departement of Chalmers University of Technology.

PhD in Electrical Electronic and Communication engineering. The main research interests include modeling, design and control of electrical machines with special focus on tooth coil wound multiphase machine, synchronous reluctance machines and HV direct driven generator.

Work Experience

Chalmers University of Technology - (04/2019 - Until now)

Electrical Engineering department - Electric Power Engineering division
Postdoctoral fellow

- Design and modelling of a 20MW High-Voltage Direct-Driven Generator for wind turbines

Politecnico di Torino - (11/2017 - Until now)

Energy Department Galileo Ferraris- Torino
Postdoctoral fellow

- Design of an innovative cooling system for integrated electric drives.
- SyR machine modeling
- Project management of Assured project related to ultra fast wireless power transfer

University of California Santa Cruz - (06/2017 - 10/2017)

Jack Baskin School Of Engineering- Santa Cruz, California
Visiting research fellow

- Investigation of the control strategy to reduce the DC-link stress in 5-phase drives.

Politecnico di Torino - (11/2014 - 11/2017)

Energy department Galileo Ferraris - Torino, Italy
Doctoral fellow in electrical electronic and communications engineering
PhD thesis title: Tooth coil wound multiphase synchronous machines

- Development of a generalized algorithm for the design of tooth coil wound multiphase synchronous machines
- Torque and torque ripple modeling in tooth coil wound multiphase SMPM machines
- Design of a nine phase tooth coil wound PM-inset machine with a high torque density and low torque ripple
- Development of an embedded control for a nine phase drive NI LabVIEW FPGA based
- Development of an embedded control for an interleaved DC/DC converter, NI LabVIEW FPGA based, for wireless power transfer application
- Investigation of an additional degree of freedom to reduce the DC-link stress for a triple-3-phase motor drive

- Development of a generalized model for the evaluation of torque and torque ripple in fractional slots multiphase SyR motors

Politecnico di Torino - (05/2014 - 10/2014)
Energy Department Galileo Ferraris- Torino, Italy
Research fellow

- Design realization and testing of the high level control for a wireless charging infrastructure for electric vehicle (eCo-FEV).

Education

Doctor of Philosophy (Ph.D.) in Electrical, Electronic and Communications engineering (11/2014 - 09/2018)

Politecnico di Torino

PhD thesis title: Tooth coil wound multiphase synchronous machines

Graduated with honors

Master's Degree in Electrical engineering (03/2011 - 03/2014)

Politecnico di Torino

Master's thesis title: Design realization and testing of the control drive for an electric kart based on CAN network.

Score: 110/110

Bachelor's Degree in Electrical engineering (09/2006 - 02/2011)

Università degli studi di Cagliari

Score: 110/100 with honors

Patents

Patent: Cooling device for electric machines-Cooling Topologies for integrated electric drives

WO Patent application Number: WO2017187296A1

Priority Number: 10201600004368

<https://www.knowledge-share.eu/en/patent/coolied-cooling-topologies-for-integrated-electric-drives/>

Publications

- An innovative slot cooling for integrated electric drives - Proceeding of international Conference of the IEEE Industrial Electronics Society (WEMDCD) 2019 (04/2019)
M.Diana, J.Colussi, A. La Ganga, P. Guglielmi
- Sensorless control of the charging process of a dynamic inductive power transfer system with interleaved nine-phase boost converter - Article in IEEE Transaction on Industrial Electronics 2018 (05/2018)
R.Ruffo, V.Cirimele, M.Diana, M. Khalilian, A. L. Ganga and P. Guglielmi
- PWM Carrier Displacement in Multi-N-PhaseDrives: An Additional Degree of Freedom to Reduce the DC-Link Stress - Article in Energies MDPI (02/2018)
M.Diana, R.Ruffo, P.Guglielmi
- Inductive power transfer for automotive applications: state-of-the-art and future trends - IEEE Industry application magazine 2018 (09/2018)
V. Cirimele, M. Diana, F.Freschi, And M.Mitolo
- Very Low Torque Ripple Multi-3-Phase Machines - Proceeding of international Conference of the IEEE Industrial Electronics Society (IECON) 2016 (09/2016)
M.Diana, P.Guglielmi, A.Vagati

- A Novel Multi-n-Phase Machine Model - Proceeding of IEEE International Conference on Electrical Machines (ICEM) 2016 (09/2016)
M.Diana, P.Guglielmi, A.Vagati
- Multi-N-Phase SMPM drive - Proceeding of IEEE International Electric Machine and Drive Conference (IEMDC) 2015 (12/2015)
M. Diana, P.Guglielmi, G.Piccoli, S.G. Rosu
- Realizzazione del controllo dell'elettronica di potenza di un sistema di ricarica wireless basato su tecnologia CAN - Article in Solution and application book NI-Impact Awards 2015-Italy (11/2015)
M. Diana, V. Cirimele, F. Freschi, P. Guglielmi and G. Piccoli
- Multi-n-phase electric drive for traction application - Proceeding of IEEE International Electric Vehicle Conference (IEVC) 2014 (12/2014)
P. Guglielmi, M. Diana, G. Piccoli, V. Cirimele
- An innovative next generation E-mobility infrastructure:the eCo-FEV project - Proceeding of IEEE International Electric Vehicle Conference (IEVC) 2014 (11/2014)
V. Cirimele, M. Diana, N. El Sayed, F. Freschi, P. Guglielmi and G. Piccoli

Projects

- **Assured: fASt and Smart charging solutions for full size URban hEavy Duty applications** - (10/2017 - Until now)
<https://assured-project.eu>
Project management of the research group involved in the design, realization and testing of a 100kW wireless charging infrastructure for EV.
- **PoC Cool-tied: Cooling topologies for integrated electric drives** - (09/2017 - Until now)
<http://eic.polito.it/2017/714/progetti-vincitori-poc-2017-1-call-politecnico-torino/>
Design and testing of a cooling device for an integrated, more compact, and electromagnetic compatible drive solution.
- **Fabric: Feasibility analysis and development of on-road charging solutions for future electric vehicles** - (10/2014 - 06/2018)
<http://www.fabric-project.eu>
Development of the embedded control for an interleaved 20kW DC/DC converter for wireless charging of EV. Development of the high level control of the wireless charging infrastructure.
- **ECo-FEV: efficient Cooperative infrastructure for Fully Electric Vehicles** - (05/2014 - 05/2015)
<https://www.eco-fev.eu>
Software engineer for the ICT platform of the Electric vehicle supply equipment. The software has been realized on a reconfigurable board produced by National Instruments called Single Board RIO (sbRIO) and was written in LabVIEW environment .
- **PICOFARAD Reacing Team** - (07/2011 - 03/2014)
Team component and Team leader in the students group Picofarad. Thesis title: Design realization and testing of the control drive for an electric kart based on CAN network.