

CURRICULUM

SILVIO VASCHETTO

Silvio Vaschetto received the M.Sc. and Ph.D. degrees in electrical engineering from the Politecnico di Torino in 2007 and 2011, respectively. From September 2011 to January 2012 he was a Post-Doctorate intern at the Power Electronics Department of ABB Inc. – US Corporate Research Center, Raleigh (NC), USA. In February 2012 he joined ABB S.p.A. – Discrete Automation and Motion Division in Vittuone (MI), Italy, as R&D Engineer for IEC low voltage motors. In this full-time permanent position, his main activities and responsibilities were related to the development and design of high efficiency synchronous reluctance machines (SyRMs) assisted with permanent magnets for Original Equipment Manufacturers (OEMs). In September 2012 Dr. Vaschetto joined MAGNA Electronics Italy S.r.l., Campiglione Fenile (TO), Italy as R&D Engineer and Motor Electromagnetic Designer, where he was engaged on the development and design of high performance synchronous electric machines with permanent magnets for automotive smart actuators.

In 2014 Silvio Vaschetto joined the Department of Energy, Politecnico di Torino, as Post-Doctorate Research Fellow. From December 2015 up to May 2017 he was Assistant Professor with time contract according to art.24 paragraph 3 letter a) of Italian Law 240/2010, while from May 2017 up to May 2020 he was Assistant Professor with time contract according to art.24 paragraph 3 letter b) of Italian Law 240/2010. In August-September 2017 Silvio Vaschetto was a visiting researcher at the Laboratory of Innovative Technologies – Power Group, at University of Picardie “Jules Verne”, Amiens, France (position won on the basis of an open competition call). In August-September 2019 he was a visiting researcher at the Johannes Kepler University Linz and Linz Center of Mechatronics (LCM), Linz, Austria.

Since May 2020 Silvio Vaschetto is **Associate Professor** at the Department of Energy, Politecnico di Torino, in the disciplinary science sector: ING-IND/32, Power electronic converters, electrical machines and drives.

The theoretical and experimental research interests of prof. Vaschetto include **three-phase and multi-phase non-conventional rotating electrical machines and drives for transportations and high-performance applications**. In detail, the main addressed research topics can be grouped in:

- design, modeling, prototyping and testing of synchronous and asynchronous electrical machines;
- thermal modeling of rotating electric machines;
- energetic behavior of electric machines and drives;
- advanced finite element simulations of electromagnetic devices.

Teaching activity

Silvio Vaschetto is the lecturer for the courses “Macchine elettriche” (5 CFU) and “Hybrid Propulsion Systems” (6 CFU), respectively for the Bachelor and Master Science courses in Mechanical Engineering at the Politecnico di Torino. He also collaborates in the courses of “Trazione Elettrica”, “Sistemi di propulsione elettrica per i trasporti”, “Progettazione meccanica e trazione elettrica di veicoli su rotaia” held at the Politecnico di Torino.

He supervised more than 50 theses of M.Sc. and B.Sc. students and he is currently the tutor/co-tutor of the following 3 Ph.D. students:

- Graffeo Federica (280588), cycle 36th (main tutor)
- Santos Perdigao Peixoto Ines (304082), cycle 37th, D.M. 1061 scholarship (main tutor)
- Jimenez Molina Matias Sebastian (317011), cycle 38th (co-tutor)

Publication activity and bibliometric indexes

The results and findings of the research activity conducted by Silvio Vaschetto have been published in 105 peer-reviewed scientific papers (in detail, 79 in proceedings of international conferences and 26 in international journals/transactions). The impact on the research community of the overall scientific production of prof. Vaschetto are evidenced by the following bibliometric indexes (updated on March 20th, 2023):

- **Scopus (114 documents): h-index: 23, citations: 1866**
- **Web Of Science (104 documents): h-index: 18, citations: 1306**

In 2014 Silvio Vaschetto received the third prize for the Best Paper Award from the IEEE Industrial Electronics Society, Power Electronics Committee, for the paper: R. Bojoi, E. Armando, S.G. Rosu, S. Vaschetto, P. Soccio, “Virtual Load with Common Mode Active Filtering for Power Hardware-In-the-Loop Testing of Power Electronic Converters”, IEEE-IECON 2014, Dallas, pp. 1875-1881.

In 2017 he received the National award of 3000 Euros prize for Assistant Professors and Associate Professors with distinguished publication activities.

Silvio Vaschetto is **Senior Member** of the “Institute of Electrical and Electronics Engineers” (IEEE) and its Industry Application Society (IAS), Industrial Electronics Society (IES) and Power and Energy Society (PES). He is an **Associate Editor** of the *IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS* and *IET Electric Power Applications*. He regularly serves the scientific community as a Reviewer for several transactions, journals and international conferences.

In 2014 Silvio Vaschetto was the Special Session co-organizer and co-chair of “Unconventional electrical machines for electric vehicles” for the 2014 IEEE International Electric Vehicle Conference (IEVC) – Building the Electrical Vehicles ecosystem to gain critical mass, 17-19 December 2014, Florence, Italy. Conference sponsored by IEEE and ANAE. Special session co-organizer and co-chair: prof. Fabrizio Marignetti, University of Cassino and Southern Lazio.

From 2021, Silvio Vaschetto is Guest Editor, together with prof. João Filipe Pereira Fernandes of the University of Lisbon, of the Special Issue "Advanced Manufacturing and Materials for Next Generation Electrical Machines" of *Energies* (Open Access Journal by MDPI).

Silvio Vaschetto regularly serves as Topic Chair, Track Chair and Session Chair for the international Annual IEEE Energy Conversion Congress & Exposition (ECCE), International Conference on Electrical Machines (ICEM) and International Electric Machines and Drives Conference (IEMDC).

In 2017 and 2019 he was the Publication Chair for the international conference of Electrical and Electronics Technologies for Automotive (AUTOMOTIVE) and in 2019 the Publication Chair for the AEIT International Annual Conference.

He was the Publication Chair for the international IEEE Energy Conversion Congress & Expo (ECCE) 2022 that will be held in Detroit, Michigan, USA on October 9-13, 2022.

Silvio Vaschetto is Member of the Italian Association CMAEL (Power Converters, Electric Machines and Drives) and Member of the Italian Inter-University Consortium on Energy and Power Systems (EnSiEL).

Main research projects

- Linz Center of Mechatronics GmbH, LCM (2018-2026) – COMET-K2 Center for Symbiotic Mechatronics. Research activity on electro-magnetic/thermal models alternatively based on thermal lumped circuits and artificial networks considering the dynamic behavior of the drive and actuator, and new models for modeling iron losses in rotating electric machines. Role: Scientific co-responsible.

- REGIONE PIEMONTE (2018-2020): TEST-eDRIVE, “New infrastructure for testing e-Drives for automotive and aerospace applications”; original title: “Nuova infrastruttura di test di e-DRIVE per applicazioni automobilistiche e aerospaziali”. Role: Participant.
- MIUR – National Technological Cluster - Aerospace (2014-2017): TIVANO, “Innovative Technologies for General Aviation of New Generation”; original title: “Tecnologie Innovative per Velivoli di Aviazione Generale di Nuova GeneraziOne”. Role: Participant.
- Ministry of Economic Development – ENEA – RSE (2014-2015). “V2G: energetic aspects of the power interface and impact on the storage system”. Role: Collaborator.
- REGIONE PIEMONTE (2009-2011): GREAT2020, “Green Engine for Air Traffic 2020”. Role: Participant.
- REGIONE PIEMONTE (2008-2009): “Development of electrically propelled micro/mini unmanned aerial vehicle with micro-fuel cells generation systems”; original title: “Sviluppo innovativo di micro e mini e velivoli a propulsione elettrica con sistemi di generazione dell’energia a bordo a micro celle combustibile”. Role: Collaborator.
- REGIONE PIEMONTE (2007-2008): FC_AUTO, “Promotions of the Piedmontese industry development in the sector of fuel cell components”; original title: “Promozione dello sviluppo dell’industria piemontese nel settore della componentistica per i sistemi a celle a combustibile”. Role: Collaborator.

Technology transfer activity

- BREMBO (2021-2022): “Measurements and thermal analyses on surface mounted permanent magnet machines for the development of lumped parameters thermal networks”. Role: Responsible of the contract.
- EUROCONTROL S.p.A (2021): “Analysis and reverse engineering of surface mounted permanent magnet synchronous machine. Role: Responsible of the contract.
- EUROCONTROL S.p.A (2020): “Design of a PMSM electric machine for marine applications”. Role: Responsible of the contract.
- Fiat Chrysler Automobiles S.p.A. – Centro Ricerche Fiat, FCA-CRF (2020-2021): “e-Motor and Inverter simplified energetic modeling for ePT system virtual validation. Role: Scientific responsible.

- Fiat Chrysler Automobiles S.p.A. – Centro Ricerche Fiat, FCA-CRF (2019-2020): “e-Drive components modeling for ePT system virtual validation”. Role: Scientific responsible.
- BREMBO (2019-2020): “Development and calibration of a simplified lumped parameters thermal model for surface mounted permanent magnets synchronous machines”. Role: Responsible of the contract.
- ASE S.p.A (2018): “Modeling of a multiphase three-stage generator for aeronautical applications”. Role: Responsible of the contract.
- BREMBO (2017-2018): “Permanent Magnet Synchronous Machine Design Tool”. Role: Responsible of the contract.
- ASE S.p.A (2016): “Design and electromagnetic simulation of the excitation stage of a three-stage brushless generator for aeronautical applications”. Role: Responsible of the contract.