

University Academic Curriculum Vitae

Personal information Name: Emanuele Fornasiero

Education since leaving school

- 2006, Electrical engineer, system prior to the Ministerial Decree 509/99), University of Padova
- 2010, PhD in industrial engineering, University of Padova

Present appointment

- Freelancer and Adjunct professor
- start of appointment: freelancer since 2015, adjunct professor since academic year 2017/2018
- employer at University of Trento and Free university of Bolzano
- brief description of responsibilities: I am freelancer in the field of industrial processes programming (PLCs, HMIs, robots) and electrical machines and electromagnetic devices designer.

Professional experience Chronological list of all previous employments (each with job title, starting and finishing dates, level, employer, responsibilities)

From / to	Job title	Name of academic Institution	Academic level	responsibilities
2010/2014	Research assistant	University of Padova	Researcher	Research and teaching
2017	Adjunct professor	University of Trento	Adjunct professor	Teaching
2019	Adjunct professor	University of Bolzano	Adjunct professor	Teaching
From 2015	Freelancer			

Participation in exhibitions (where applicable)

List of major exhibitions, Title, date, location.

- IAS 2008, 2008 IEEE Industry Applications Society Annual Meeting, Edmonton, Alberta, CA, 5–8 october 2008
- IEMDC 2009, IEEE International Electric Machines and Drives Conference, Miami, Florida, USA, 3–6 may 2009
- UPEC 2009, Universities Power Engineering Conference, Padova, Italy, 1–4 september 2008
- SLED 2010, First IEEE Symposium on SensorLess control for Electrical Drives, Padova, Italy, 9–10 july 2010
- ICEM 2010, International Conference on Electrical Machines, Roma, Italy, 6–8 september 2010
- IEMDC 2011, IEEE International Electric Machines and Drives Conference, Niagara Falls, Ontario, CA, 15–18 may 2011
- SDEMPED 2011, IEEE International Symposium on Diagnostic for Electrical Machines, Power Electronics and Drives, Bologna, Italy, 5–8 september 2011
- ICEM 2012, International Conference on Electrical Machines, Marseille, France, 2–5 september 2012

- ENERGYCON 2012, International Conference on Electrical Machines, Firenze, Italia, 9–12 september 2012
- ECCE 2014, Energy Conversion Congress & Exposition, Pittsburgh, Pennsylvania, USA, 13–18 september 2014

Experience in academic teaching

- 1- Electrical systems engineering, University of Trento, ING-IND/33, adjunct professor, during academic years 2018/2019, 2019/2020 and 2020/2021 English course.
- 2- Electrotechnics and electrical machines, University of Bolzano, ING-IND/32, adjunct professor, starting from academic year 2019/2020 up to current academic year. Italian course
- 3- Industrial electrical applications, University of Bolzano, ING-IND/32, adjunct professor, starting from academic year 2020/2021 up to current academic year. English course
- 4- Electrotechnics, University of Trento, ING-IND/31, adjunct professor, starting from academic year 2022/2023 up to current academic year. Italian course

Publications

Publications over the last 15 years:

E. Fornasiero, L. Alberti, N. Bianchi and S. Bolognani, "Considerations on Selecting Fractional-Slot Nonoverlapped Coil Windings," in IEEE Transactions on Industry Applications, vol. 49, no. 3, pp. 1316-1324, May-June 2013, doi: 10.1109/TIA.2013.2251853.

N. Bianchi, E. Fornasiero and S. Bolognani, "Effect of Stator and Rotor Saturation on Sensorless Rotor Position Detection," in IEEE Transactions on Industry Applications, vol. 49, no. 3, pp. 1333-1342, May-June 2013, doi: 10.1109/TIA.2013.2253437.

N. Bianchi, E. Fornasiero and S. Bolognani, "Thermal Analysis of a Five-Phase Motor Under Faulty Operations," in IEEE Transactions on Industry Applications, vol. 49, no. 4, pp. 1531-1538, July-Aug. 2013, doi: 10.1109/TIA.2013.2258452.

* N. Bianchi, D. Durello and E. Fornasiero, "Multi-objective optimization of a PM Assisted Synchronous Reluctance Machine, including torque and sensorless detection capability," 6th IET International Conference on Power Electronics, Machines and Drives (PEMD 2012), Bristol, 2012, pp. 1-6, doi: 10.1049/cp.2012.0258.

* N. Bianchi, S. Bolognani, A. Faggion, E. Fornasiero and A. Sartorello, "Zero-speed sensorless drive capability of fractional-slot inset PM machine," 6th IET International Conference on Power Electronics, Machines and Drives (PEMD 2012), Bristol, 2012, pp. 1-6, doi: 10.1049/cp.2012.0269.

N. Bianchi, S. Bolognani, E. Carraro, M. Castiello and E. Fornasiero, "Electric Vehicle Traction Based on Synchronous Reluctance Motors," in IEEE Transactions on Industry Applications, vol. 52, no. 6, pp. 4762-4769, Nov.-Dec. 2016, doi: 10.1109/TIA.2016.2599850.

E. Fornasiero, N. Bianchi and S. Bolognani, "Slot Harmonic Impact on Rotor Losses in Fractional-Slot Permanent-Magnet Machines," in IEEE Transactions on Industrial Electronics, vol. 59, no. 6, pp. 2557-2564, June 2012, doi: 10.1109/TIE.2011.2168794.

N. Bianchi, M. Degano and E. Fornasiero, "Sensitivity Analysis of Torque Ripple Reduction of Synchronous Reluctance and Interior PM Motors," in IEEE Transactions on Industry Applications, vol. 51, no. 1, pp. 187-195, Jan.-Feb. 2015, doi: 10.1109/TIA.2014.2327143.

- N. Bianchi, S. Bolognani and E. Fornasiero, "An Overview of Rotor Losses Determination in Three-Phase Fractional-Slot PM Machines," in IEEE Transactions on Industry Applications, vol. 46, no. 6, pp. 2338-2345, Nov.-Dec. 2010, doi: 10.1109/TIA.2010.2070472.
- * M. Ferrari, N. Bianchi, A. Doria and E. Fornasiero, "Design of Synchronous Reluctance Motor for Hybrid Electric Vehicles," in IEEE Transactions on Industry Applications, vol. 51, no. 4, pp. 3030-3040, July-Aug. 2015, doi: 10.1109/TIA.2015.2410262.
- N. Bianchi, E. Fornasiero, M. Ferrari and M. Castiello, "Experimental Comparison of PM-Assisted Synchronous Reluctance Motors," in IEEE Transactions on Industry Applications, vol. 52, no. 1, pp. 163-171, Jan.-Feb. 2016, doi: 10.1109/TIA.2015.2466623.
- N. Bianchi, E. Fornasiero and W. Soong, "Selection of PM Flux Linkage for Maximum Low-Speed Torque Rating in a PM-Assisted Synchronous Reluctance Machine," in IEEE Transactions on Industry Applications, vol. 51, no. 5, pp. 3600-3608, Sept.-Oct. 2015, doi: 10.1109/TIA.2015.2416236.
- * M. Ferrari, N. Bianchi and E. Fornasiero, "Analysis of Rotor Saturation in Synchronous Reluctance and PM-Assisted Reluctance Motors," in IEEE Transactions on Industry Applications, vol. 51, no. 1, pp. 169-177, Jan.-Feb. 2015, doi: 10.1109/TIA.2014.2326056.
- F. Immovilli, C. Bianchini, E. Lorenzani, A. Bellini and E. Fornasiero, "Evaluation of Combined Reference Frame Transformation for Interturn Fault Detection in Permanent-Magnet Multiphase Machines," in IEEE Transactions on Industrial Electronics, vol. 62, no. 3, pp. 1912-1920, March 2015, doi: 10.1109/TIE.2014.2348945.
- L. Alberti, E. Fornasiero, N. Bianchi and S. Bolognani, "Rotor Losses Measurements in an Axial Flux Permanent Magnet Machine," in IEEE Transactions on Energy Conversion, vol. 26, no. 2, pp. 639-645, June 2011, doi: 10.1109/TEC.2010.2096818.
- L. Alberti, E. Fornasiero and N. Bianchi, "Impact of the Rotor Yoke Geometry on Rotor Losses in Permanent-Magnet Machines," in IEEE Transactions on Industry Applications, vol. 48, no. 1, pp. 98-105, Jan.-Feb. 2012, doi: 10.1109/TIA.2011.2175680.
- E. Fornasiero, N. Bianchi and S. Bolognani, "Rotor losses in fractional-slot three-phase and five-phase PM machines," The XIX International Conference on Electrical Machines - ICEM 2010, Rome, Italy, 2010, pp. 1-5, doi: 10.1109/ICELMACH.2010.5607888.
- A. Faggion, E. Fornasiero, N. Bianchi and S. Bolognani, "Sensorless Capability of Fractional-Slot Surface-Mounted PM Motors," in IEEE Transactions on Industry Applications, vol. 49, no. 3, pp. 1325-1332, May-June 2013, doi: 10.1109/TIA.2013.2253436.
- N. Bianchi, D. Durello and E. Fornasiero, "Multi-objective optimization of an Interior PM motor for a high-performance drive," 2012 XXth International Conference on Electrical Machines, Marseille, France, 2012, pp. 378-384, doi: 10.1109/ICEIMach.2012.6349894.
- N. Bianchi, S. Bolognani, A. Faggion and E. Fornasiero, "Analysis and Experimental Tests of the Sensorless Capability of a Fractional-Slot Inset PM Motor," in IEEE Transactions on Industry Applications, vol. 51, no. 1, pp. 224-231, Jan.-Feb. 2015, doi: 10.1109/TIA.2014.2332634.

N. Bianchi, E. Fornasiero and W. Soong, "Optimal selection of PM flux linkage in a PM assisted synchronous reluctance machine," 2014 International Conference on Electrical Machines (ICEM), Berlin, Germany, 2014, pp. 1341-1347, doi: 10.1109/ICELMACH.2014.6960356.

C. Bianchini, E. Fornasiero, T. N. Matzen, N. Bianchi and A. Bellini, "Stator fault detection for multi-phase machines with multiple reference frames transformation," 2009 35th Annual Conference of IEEE Industrial Electronics, Porto, Portugal, 2009, pp. 3467-3470, doi: 10.1109/IECON.2009.5415180.

D. Mingardi, E. Fornasiero, N. Bianchi, S. Bolognani and A. Faggion, "Ring Losses Evaluation in Ringed-Pole PM Motors," in IEEE Transactions on Industry Applications, vol. 51, no. 5, pp. 3686-3695, Sept.-Oct. 2015, doi: 10.1109/TIA.2015.2424198.

M. Morandin, E. Fornasiero, S. Bolognani and N. Bianchi, "Torque and Power Rating of a Wind-Power PM Generator Drive for Maximum Profit-to-Cost Ratio," in IEEE Transactions on Industry Applications, vol. 49, no. 2, pp. 866-872, March-April 2013, doi: 10.1109/TIA.2013.2244191.

N. Bianchi and E. Fornasiero, "Impact of MMF Space Harmonic on Rotor Losses in Fractional-Slot Permanent-Magnet Machines," in IEEE Transactions on Energy Conversion, vol. 24, no. 2, pp. 323-328, June 2009, doi: 10.1109/TEC.2008.2006557.

E. Fornasiero, L. Alberti, N. Bianchi and S. Bolognani, "Considerations on selecting fractional—slot windings," 2010 IEEE Energy Conversion Congress and Exposition, Atlanta, GA, USA, 2010, pp. 1376-1383, doi: 10.1109/ECCE.2010.5618269.

M. Ferrari, N. Bianchi, A. Doria and E. Fornasiero, "Design of synchronous reluctance motor for hybrid electric vehicles," 2013 International Electric Machines & Drives Conference, Chicago, IL, USA, 2013, pp. 1058-1065, doi: 10.1109/IEMDC.2013.6556227.

* M. Ferrari, N. Bianchi and E. Fornasiero, "Rotor saturation impact in synchronous reluctance and PM assisted reluctance motors," 2013 IEEE Energy Conversion Congress and Exposition, Denver, CO, USA, 2013, pp. 1235-1242, doi: 10.1109/ECCE.2013.6646846.

N. Bianchi, M. Degano and E. Fornasiero, "Sensitivity analysis of torque ripple reduction of synchronous reluctance and interior PM motors," 2013 IEEE Energy Conversion Congress and Exposition, Denver, CO, USA, 2013, pp. 1842-1849, doi: 10.1109/ECCE.2013.6646932.

N. Bianchi, E. Fornasiero and S. Bolognani, "Effect of stator and rotor saturation on sensorless rotor position detection," 2011 IEEE Energy Conversion Congress and Exposition, Phoenix, AZ, USA, 2011, pp. 1528-1535, doi: 10.1109/ECCE.2011.6063963.

N. Bianchi, E. Fornasiero, E. Carraro, S. Bolognani and M. Castiello, "Electric vehicle traction based on a PM assisted synchronous reluctance motor," 2014 IEEE International Electric Vehicle Conference (IEVC), Florence, Italy, 2014, pp. 1-6, doi: 10.1109/IEVC.2014.7056146.

A. Faggion, E. Fornasiero, N. Bianchi and S. Bolognani, "Sensorless capability of fractional-slot surface-mounted PM motors," 2011 IEEE International Electric Machines & Drives Conference (IEMDC), Niagara Falls, ON, Canada, 2011, pp. 593-598, doi: 10.1109/IEMDC.2011.5994876.

- M. Barcaro, E. Fornasiero, N. Bianchi and S. Bolognani, "Design procedure of IPM motor drive for railway traction," 2011 IEEE International Electric Machines & Drives Conference (IEMDC), Niagara Falls, ON, Canada, 2011, pp. 983-988, doi: 10.1109/IEMDC.2011.5994950.
- M. Morandin, E. Fornasiero, N. Bianchi and S. Bolognani, "A robust integrated starter/alternator drive adopting a synchronous reluctance machine for automotive applications," 2014 IEEE Transportation Electrification Conference and Expo (ITEC), Dearborn, MI, USA, 2014, pp. 1-6, doi: 10.1109/ITEC.2014.6861792.
- N. Bianchi, E. Fornasiero, M. Ferrari and M. Castiello, "Experimental comparison of PM assisted synchronous reluctance motors," 2014 IEEE Energy Conversion Congress and Exposition (ECCE), Pittsburgh, PA, USA, 2014, pp. 4499-4506, doi: 10.1109/ECCE.2014.6954017.
- S. Bolognani, A. Faggion, E. Fornasiero and L. Sgarbossa, "Full speed range sensorless IPM motor drives," 2012 XXth International Conference on Electrical Machines, Marseille, France, 2012, pp. 2209-2215, doi: 10.1109/ICEIMach.2012.6350189
- L. Alberti, E. Fornasiero and N. Bianchi, "Impact of the rotor yoke geometry on rotor losses in permanent magnet machines," 2010 IEEE Energy Conversion Congress and Exposition, Atlanta, GA, USA, 2010, pp. 3486-3492, doi: 10.1109/ECCE.2010.5618299.
- M. Barcaro, N. Bianchi, E. Fornasiero and F. Magnussen, "Experimental comparison between two fault-tolerant fractional-slot multiphase PM motor drives," 2010 IEEE International Symposium on Industrial Electronics, Bari, Italy, 2010, pp. 2160-2165, doi: 10.1109/ISIE.2010.5637790.
- M. Morandin, E. Fornasiero, S. Bolognani and N. Bianchi, "Torque/power rating design of an IPM machine for maximum profit-to-cost ratio in wind power generation," 2011 IEEE International Electric Machines & Drives Conference (IEMDC), Niagara Falls, ON, Canada, 2011, pp. 1113-1118, doi: 10.1109/IEMDC.2011.5994757.
- M. Ferrari et al., "Development of a hybrid human-electric propulsion system for a velomobile," 2013 Eighth International Conference and Exhibition on Ecological Vehicles and Renewable Energies (EVER), Monte Carlo, Monaco, 2013, pp. 1-8, doi: 10.1109/EVER.2013.6521591.
- L. Alberti, N. Bianchi, S. Bolognani and E. Fornasiero, "IM rotor parameters analysis with an intentionally created saliency," 2010 First Symposium on Sensorless Control for Electrical Drives, Padua, Italy, 2010, pp. 120-126, doi: 10.1109/SLED.2010.5542794.
- D. Mingardi, E. Fornasiero, N. Bianchi, S. Bolognani and A. Faggion, "Ring losses evaluation in ringed pole PM motors," 2013 IEEE International Symposium on Sensorless Control for Electrical Drives and Predictive Control of Electrical Drives and Power Electronics (SLED/PRECEDE), Munich, Germany, 2013, pp. 1-8, doi: 10.1109/SLED-PRECEDE.2013.6684514.
- N. Bianchi, S. Bolognani, A. Faggion and E. Fornasiero, "Analysis and experimental tests of the sensorless capability of a fractional-slot inset PM motor," 3rd IEEE International Symposium on Sensorless Control for Electrical Drives (SLED 2012), Milwaukee, WI, USA, 2012, pp. 1-6, doi: 10.1109/SLED.2012.6422801.

E. Fornasiero, M. Morandin, E. Carraro, N. Bianchi and S. Bolognani, "Outer rotor IPM generator with wide constant power region for automotive applications," 2014 IEEE Transportation Electrification Conference and Expo (ITEC), Dearborn, MI, USA, 2014, pp. 1-6, doi: 10.1109/ITEC.2014.6861828.

N. Bianchi, E. Fornasiero and S. Bolognani, "Thermal analysis of a five-phase motor under faulty operations," 8th IEEE Symposium on Diagnostics for Electrical Machines, Power Electronics & Drives, Bologna, Italy, 2011, pp. 431-436, doi: 10.1109/DEMPED.2011.6063659.

D. Mingardi, N. Bianchi, E. Fornasiero and L. Alberti, "Induction motor with an intentionally created saliency for sensorless applications," IECON 2013 - 39th Annual Conference of the IEEE Industrial Electronics Society, Vienna, Austria, 2013, pp. 2929-2934, doi: 10.1109/IECON.2013.6699596.

E. Fornasiero, N. Bianchi and W. L. Soong, "Analysis of torque versus current capability of reluctance and interior PM machines under limited current and flux-linkage operation," 2014 IEEE Energy Conversion Congress and Exposition (ECCE), Pittsburgh, PA, USA, 2014, pp. 4162-4169, doi: 10.1109/ECCE.2014.6953968.

N. Bianchi, S. Bolognani, E. Fornasiero, M. Morandin and G. Pavesi, "Optimal drive and machine sizing for a self starting, vertical axis, low power wind generator," 2012 IEEE International Energy Conference and Exhibition (ENERGYCON), Florence, Italy, 2012, pp. 178-183, doi: 10.1109/EnergyCon.2012.6347747.

N. Bianchi and E. Fornasiero, "Space vector harmonic analysis of a five-phase PM motor including asymmetries," 2009 IEEE International Electric Machines and Drives Conference, Miami, FL, USA, 2009, pp. 1352-1359, doi: 10.1109/IEMDC.2009.5075379.

Statement of interest My expected contribution for the advertised position is the possibility of transferring to students, in addition to basic theoretical notions fundamental for understanding the subject, also practical examples and real problems that I have encountered and developed during my professional activity as a consultant and designer.

Language competence

Italian:
mother tongue

English:
Listening: B2
Reading: B2
Spoken interaction: B2
Spoken production: B2
Writing: B2

Date 28/10/2024