

CURRICULUM VITAE

Zoran Miletic

Affiliation: PhD Student
University of Innsbruck,
Institute of Mechatronics,
Innsbruck Power Electronics Lab (*i-PEL*)

Address: Technikerstrasse 13
City : 6020, Innsbruck, Austria
Phone : +43 664 889 64919
e-mail: zoran.miletic@student.uibk.ac.at

2nd Aff.: Senior Research Engineer,
Austrian Institute of Technology,
Center for Energy,
Electrical Energy Systems.



PERSONAL DATA

Date of birth: 16, March, 1970

Place of birth: Zajecar, Republic of Serbia, Socialist Federal Republic of Yugoslavia

Nationality: Serbia and Canada

EDUCATION

- PhD Student (Sep 2019 - ongoing)
 - **PhD Topic: "Multi-Level & Multi-Cell Power Converter for Power Quality LV applications"**, Innsbruck Power Electronics Lab (*i-PEL*), Institute of Mechatronics, University of Innsbruck, Austria.
- Professional Certificate in Power Electronics (2 years program, June 2008)
 - Non-degree program, Colorado University at Boulder, CoPEC, Department for Electronics and Computer Engineering, U.S.A.
- M.Sc. Electrical Engineering (Dipl.-Ing.) (5 years program, Feb 1996)
 - **Diploma thesis: "Digital control of the Synchronous Machine Excitation system"** School of Electrical Engineering, University of Belgrade, Serbia.

EMPLOYMENT & PROFESIONAL ACTIVITES

May 2014 - Present

Senior Research Engineer
Austrian Institute of Technology GmbH, Vienna, Austria

Sep 2002 - Sep 2013

Innovation and Design Project Lead, Senior Power Electronics Design Engineer
Schneider Electric Solar Business (Formerly Xantrex Technology Inc) Burnaby, Canada

Jan 2001- Sep 2002

R & D Engineer
AccelRate Power Systems Inc, Burnaby, Canada

March 1996 - Dec 1999

R & D Engineer
Institute "Michael Pupin" Automation & Control Systems, Belgrade, Serbia

ON-GOING R&D PROJECTS

- [PR 1] Vindobona general purpose power converter controller
- DSP based embedded power electronics controller for rapid controls development and deployment of power conversion systems

COMPLETED R&D PROJECTS

Industrial/Academia Research Projects:

- [PR 2] Smart Grid Converter
- 4-Phase 3-Level T-type liquid cooled 35KVA power converter, Synchronous decoupled positive negative and zero sequence current reference frame control, 3D Phase Disposition Space Vector modulation, DSOGI-FLL grid synchronization, power stacking and sharing.

Industrial Research Projects:

- [PR 3] Hercules High Power 3-Phase Grid-Tie Power Converter Platform for utility scale Solar and Storage app
- 3-Phase 3-Level T-type liquid cooled IGBT power stack rated from 250KVA to 750KVA, IGBT modules gate drive with dynamic active clamping and short circuit protection, thermal modeling
- [PR 4] SE-1 3-Phase High Power Grid-Tie Solar Inverter Platform
- 3-Phase 3-Level ANPC liquid cooled IGBT power stack rated to 375KVA/500KVA/625KVA and 750KVA; Dual rotating current reference frame control, Phase Disposition Space Vector modulation, Active and Reactive Power control, MPPT tracker, Grid support and compliance functions
- [PR 5] Solar Ghetto Single Phase Transformer-Less Grid-Tie Solar Inverter Platform
- 1-Phase 2 Level Voltage Source Grid-tie Inverter rated to 5kW. Demo of various control methods suitable for residential grid-tie inverter applications as follows: Current regulators (Single-Phase Stationary Frame, Proportional and Resonant (P+R) and unbalanced rotating (dq) Current Reference Frame Regulator), Active and Reactive Power control, Night time VARs production, and Shade-tolerant Maximum Power Point Tracking algorithm. Novel Single-Phase Phase Lock Loop (PLL) tolerant to grid harmonics distortion, grid voltage dips, and line frequency fluctuations.
- [PR 6] GT250/500/630E 3-Phase Grid-Tie Solar Inverter Family
- 2-Level B6 forced air cooled IGBT 3-phase bridge, Stationary Current Reference Frame Control, Discontinuous PWM1 Modulator. Grid support functions: Reactive Power Control, Low Voltage Ride-through, Active Power Scheduling, Anti-Islanding

Grid compliance: BDEW Germany, RD Spain, A70 Italy, Golden Sun China, UL1741...

[PR 7] XW-MPPT600-80 – High Voltage MPPT Solar Charge Controller

- High PV voltage, 600V, 4.8KW/80A isolated Phase Shifted Zero Voltage switching bridge converter. Optimal solar energy harvest with a Shade Tolerant Maximum Power Point tracking algorithm. PV panels isolation and patented ground fault detection

[PR 8] XW-MPPT150-60 –MPPT Solar Charge Controller

- 3.5KW/150V/60A non-Isolated digitally controlled Buck Converter, patented Maximum Power Point tracking algorithm and built in ground fault detection

Development Projects:

[PR 9] Universal Power Supply Module

- High-voltage multistage universal power supply module 4KW, programmable up to 2400V, 1.6A, Active PFC front end, Isolated Phase Shifted Interleaved Bridge Converter, Cascaded 3-Level Inverter, Mixed Analog and Digital Control, Active Current Sharing for up to 32KW, Web Enabled

RESEARCH INTEREST

- Novel Power Converter Topologies: Multi-Level Multi Cell power converter topologies, MV/LV DC/DC conversion, Resonant and ZV/ZC switching, Interleaving
- Power quality issues and mitigation
- Control of power converters: Stationary and Rotating Frame Current Control of Symmetrical components; Carrier and Space Vector based continuous and discontinuous PWM modulation, advanced Grid Support –and Grid Forming strategies for grid connected and grid-forming applications, under unbalanced grid and load, weak grid and low inertia grid conditions
- Power conversion for off-grid & micro-grid, low-inertia grid applications
- Power quality conditioners: Active Harmonic Filters, STATCOMs, grid balancers, Hybrid transformers and D-FACTSs
- Grid connected power converters for Solar and Battery Energy Storage system applications
- Thermal management of power conversion systems

Rewards and Publications

Recognitions:

2012 Edison Group Expert

Power Electronics and Conversion;
Schneider Electric,
ITB, Solar Business

International Conferences:

- [C 1] Z. Miletic, W. Tremmel, R. Bründlinger, J. Stöckl and B. Bletterie, "Optimal control of three-phase PV inverter under Grid voltage unbalance," 2019 21st European Conference on Power Electronics and Applications (EPE '19 ECCE Europe), Genova, Italy, 2019, pp. P.1-P.11, doi: 10.23919/EPE.2019.8915444..
- [C 2] S. Kitzler, J. Stöckl, F. Kupzog and Z. Miletic, "Tracking of Aging Processes in Power Electronic Converters Using the Rainflow Method," IECON 2018 - 44th Annual Conference of the IEEE Industrial Electronics Society, Washington, DC, 2018, pp. 3687-3692, doi: 10.1109/IECON.2018.8592815. Xxx
- [C 3] J. Stöckl et al., "Pre-Evaluation of Grid Code Compliance for Power Electronics Inverter Systems in Low-Voltage Smart Grids," 2018 20th European Conference on Power Electronics and Applications (EPE'18 ECCE Europe), Riga, 2018, pp. P.1-P.9.
- [C 4] P. Jonke et al., "Integrated rapid prototyping of distributed energy resources in a real-time validation environment," 2016 IEEE 25th International Symposium on Industrial Electronics (ISIE), Santa Clara, CA, 2016, pp. 714-719, doi: 10.1109/ISIE.2016.7744977.
- [C 5] A. Radic, Z. Miletic and D. Garabandic, "Suitability of silicon carbide diodes in buck converters with high input voltages and high voltage conversion ratios," 2008 34th Annual Conference of IEEE Industrial Electronics, Orlando, FL, 2008, pp. 989-991, doi: 10.1109/IECON.2008.4758088.
- [C 6] A. Radic, Z. Miletic and D. Garabandic, "Steady-state model including conduction and switching losses of isolated full-bridge center-tapped current-fed buck converter," 2008 Canadian Conference on Electrical and Computer Engineering, Niagara Falls, ON, 2008, pp. 000399-000404, doi: 10.1109/CCECE.2008.4564565.

Patents and Patent Applications

Patents:

- [P 1] Unified power flow controller utilizing energy saving devices at a point of power consumption - Inventors: Christopher John Recio, **Zoran Miletic**, Michael Gerard Tobin; Patent Number: 10326272
- [P 2] Meter/voltage regulator with volt-ampere reactive control positioned at customer site - Inventors: Christopher John Recio, Christopher Lynn Caswell, Michael Gerard Tobin, Zoran Miletic, Sergio Pieiga, III; Patent Number: 10128768
- [P 3] Method and Apparatus for Exporting Power in a Renewable Energy System Employing Battery Charger - Inventors: Sau Ngosi , Trevor Monk and **Zoran Miletic**, United States Patent Application No. 12/222,296.
- [P 4] Perturb Voltage as a Decreasing Non-Linear Function of Converter Power Inventors: Jeff Fieldhouse and **Zoran Miletic** United State Patent Application No. 12/320,064
- [P 5] A Method for Automatic Detection of Ground- Fault Fuse Continuity in a Grounded Photovoltaic Array System Inventors: **Zoran Miletic** and Ralph McDiarmid, International Patent Application No. PCT/IB2012/000305

LANGUAGES

Serbian-Native, German- A2, English-Fluent

PROFESSIONAL LICENCES & ASOCIATIONS

- **Since 2013 Senior Member IEEE, Power Electronics Society, Industrial Electronics Society, Region 8, Austria Section, Member Number: 41574610**