# Curriculum Vitae **Stefano RUZZA**


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Citizenship: Italian

Date of Birth: June 4, 1980

**ACTUAL POSITION:** Sr. Staff Concept Development and System Engineer at Infineon Technologies, Industrial Power Control BU

**WORK EXPERIENCE:**

- **Dec '19 – Now** → Sr. Staff Concept Development and System Engineer at Infineon Technologies, Industrial Power Control BU
- **Jan '16 – Dec '19** → Sr. Staff System Development and Application Engineer at International Rectifier, Motion IC group Europe, , Energy Saving Product BU
- **Jan '11 – Dec '15**→ Sr. Application Engineer at International Rectifier, Energy Saving Product BU
- **Nov '08 - Dec '10**→ IC designer at International Rectifier, Automotive BU
- **Sept '04 – Nov '08** → Ph.D. Candidate at University of Pavia, with internship at International Rectifier

***EDUCATION:***

- ***October 2008 → Ph.D. in Electronic and Electrical Engineering****,* University of Pavia, Italy.

  Thesis title "Design and characterization of mixed-signal ICs for motor drive applications", tutor Prof. E. Dallago. Research activity sponsored by International Rectifier, in collaboration with the Power Electronics Lab, University of Pavia.

- ***July 2005 → M.S. Degree in Electronic Engineering*** (specializing in Microelectronics)

  Final mark: 110/110, University of Pavia (Italy).
  Thesis title "Design, layout and test of current sensing ICs for servodrive systems".
  Tutor Prof. E. Dallago. The work was carried out at the design center of IR in Pavia (from September 2004 to June 2005).

- ***July 1999 → Diploma of Technical High School*** (computer science specialization)

  Final mark 100/100, I.T.I.S. "A. Volta", Alessandria (Italy).

***EXPERIENCE***

- Definition of integrated circuit for power applications as automotive, white goods and industrial drives.
- Development of new smart products consisting in multi-die ICs in a single package, for appliance and consumer market (washers, air conditioners, pumps, fan).
- Deep knowledge of high-voltage integrated technologies (Junction-isolated and SOI) for gate-driver IC.
- Level-shifter techniques for IC in inverter applications.
- Basic knowledge of BCD and vertical Smart integrated technologies for power IC.
- Applicative tests as thermal evaluation, EMI measurements, etc
- Exploring new market and integration trend for Silicon Carbide (SiC) and Gallium nitride (GaN) technologies.
- Realization and implementation of digital control algorithm for motor control (three-phase and single-phase motor).
- Study and realization of current sensor IC for front-end read-out channel and over-current protection in motor drive system.

***SPECIFIC TOOLS, SOFTWARE AND OTHER SKILLS:***

- Large knowledge of lab instrumentation:
  - Oscilloscope
  - HV supply
  - EMI equipment
  - Power analyzer
  - Instrumentation for thermal analysis
- Altium Design for PCB, board design and prototyping
- Cadence environment (Spectre,Virtuoso/Diva) good knowledge as user (no skill programming)
- Xilinx ISE (from 10 to 13.2 release) for digital algorithm simulation and FPGA development
- Pspice, Kicad

***FOREIGN LANGUAGES:***

Fluent spoken and written **English**.

→ Understanding/written: level 35 → Speaking: level 30

Both levels are certified by the Shenker Institute of English where I attended 25 individual lessons and additional group conversation.

***LECTURES AND SEMINARS as a presenter:***

- "Miniaturizzazione del controllo motore in alta tensione" Fortronic Power Forum 2018, Modena
- "High Voltage IC in Motor Drive applications", Topics on Microelectronics, IEEE event at University of Pavia
- "Challenges in power management for motor drive applications", Industrial Topics on Microelectronics 2016, IEEE CAS event at University of Pavia
- "High Voltage Drives Focus on IPM" Fortronic 2015, Bologna
- "How to design a brushless PM motor application with IR µIPM" Arrow Power Efficiency Forum 2014 – Bologna

I also hold many seminars at University of Pavia, Parma, Milano Bicocca.

During the course of Power Electronics at UniPV (Prof. E. Dallago), I hold lectures (typically 4-8 hrs) regarding:

- "Using IGBTs and power MOSFETs in motor drive application".
- "High Voltage Gate drivers for motor drive applications".

- Reviewer for IEEE international conferences (ICECS, ISCAS, IECON, PESC)

***OTHER TRAINING I attended:***

- ***June '11*** → "Master course in Verilog language", Cadence training center, Bracknell, London, UK
- ***January '08, September '07 and May '07*** → "Topics on Microelectronics" SSCS, University of Pavia (www.microelectronicsevents.com).
- ***August '07*** → "Advanced CMOS Analog Design" – MEAD Education – EPFL, Lausanne, Switzerland (http://www.mead.ch/).
- ***May '07*** → Workshop TSMC, at International Rectifier (El Segundo, CA, USA).
- ***September '06*** → "Integrated technologies and transistor modeling" - International Rectifier internal course (7 lectures).
- Participation to SPS IPC Drive, Electronica, IEEE PESC'06/'07, to ISCAS'08, to ICECS'08.

***PUBLICATIONS:***

1. E. Mandelli, A. Mariconti, S. Ruzza, A. Baschirotto, "Active Dual Level Gate Driver for Dead Time and Switching Losses Reduction in Drive Systems" *accepted for IEEE ISPSD'20, Vienna, Austria.*
2. E. Mandelli, A. Mariconti, S. Ruzza, A. Baschirotto, "Active Dual Level Gate Driver for Switching Losses Reduction in IGBTs", *Proceedings of IEEE ICECS'19, Genova, Italy*
3. S. Ruzza, M. Palma, "Analysing Thermal Performance of Intelligent Power Modules for Better PCB Design", *cover story for Bodo's Power Systems, October 2014*
4. S. Ruzza, M. Palma, "Analysis of thermal performances of a power module in PQFN package vs. PCB characteristics", *Proceedings of the PCIM 2014,* Nuremberg, Germany
5. S. Ruzza, E. Dallago, G. Venchi, S. Morini, "Integrated low voltage floating power supply in high voltage technology for high dV/dt applications", *IEEE Transactions on Power Electronics, Vol.26, NO. 5, May 2011, pag.1305-1309*.
6. S. Ruzza, D. Respigo, M. Giandalia, S. Morini, "Ground Fault Detector IC for Complete Short Circuit Protection in Motor Drive Applications", *Proceedings of the PCIM 2009,* Nuremberg, Germany

7. S. Ruzza, E. Dallago, G. Venchi, S. Morini, “An offset compensation technique for bandgap voltage reference in CMOS technology”, *Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS’08)*, Seattle, Washington, USA.
8. S. Ruzza, E. Dallago, G. Venchi, M. Giandalia, S. Morini, D. Respigo, ”An Integrated Fault Detector in High Voltage Technology for Motor Drive Applications” *Proceedings of the IEEE International Conference on Electronics, Circuits and Systems (ICECS’08)*, September 2008, Malta.
9. S. Ruzza, D. Respigo, E. Dallago, M. Giandalia, S. Morini, G. Venchi, “Fast-responding over current detector circuit in high voltage technology for motor drive applications”, *Proceedings of the IEEE Industrial Electronics Conference (IECON’08)*, November 2008, Orlando, Florida, USA.
10. A. Baschirotto, E. Dallago et all, “A CMOS 2D Micro-Fluxgate Earth Magnetic Field Sensor with Digital Output”, *Proceedings of the IEEE International Solid-State Circuits Conference (ISSCC’07)*, San Francisco, CA, USA.
11. E. Dallago, S. Ruzza, G. Venchi, S. Morini, “Low voltage floating supply in monolithic high voltage technology for high dV/dt applications”, *Proceedings of the IEEE Power Electronics Specialists Conference (PESC’07)*, Orlando, FL, USA.
12. E. Dallago, S. Ruzza, G. Venchi, M. Grasso, S. Morini, “A fully integrated floating power supply for high voltage technologies including n-epi biasing”, *Proceedings of the IEEE PESC’06*, Jeju, Korea.

***PATENTS:***

- M. Giandalia, M. Grasso, S. Morini, D. Respigo, S. Ruzza, “Ground fault detection circuit for use in high voltage motor drive applications”, United States US 8,013,612 B2, Sep. 6, 2011.