

# Misael Francisco Martinez Montejano, PhD

## CONTACT INFO

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## OBJECTIVE

A highly motivated and innovative Research and Development engineer with management experience. My objective is to create and contribute with the advance of new technologies always driving innovation and delivering quality.

As an Engineer I have over 10 years experienced in Research and Development, Power Electronics, Power Generation, Control Design, Mathematical modeling, Electronic Design, Advanced Simulation Software and Programming. As a manager I have experience in leading innovative teams for execution of Multidisciplinary Projects, Application of norms and product qualification standards (ISO9000, IEEE 1547, IEC 61727), Communicating Scientific Data, strong experience in hands-on testing and in system analysis including troubleshooting, planning, execution and coordination of test for prototypes (from lab prototypes to complete Power Plants), Operations Management (setting new organizations, processes, projects, costing).

Strong problem solver, hard working with high commitment, excellent team player, and fast learner.

## EDUCATION

**Postdoctoral Research (Sep 2011 - Sep 2012)** - Dept. of Technics and Management of Industrial System (DTG) – University of Padua and TDE Macno, Italy.

Research topic: "Analysis, optimization and development of converters for applications in photovoltaic, eolic and hydroelectric systems". Project in collaboration with the company TDE Macno in Italy

**Ph.D. Research Scholar (Sep 2004 -- Jun 2009)** - University of Sevilla, Sevilla, Spain. Institute of Scientific Research and Technology of San Luis Potosi (IPICYT), San Luis Potosi, S.L.P., Mexico.

- Dissertation topic: "On modeling and control of Multilevel Converters and PLL algorithms". Graduated with honors.
- Stay of research in CNRS LSS-SUPELEC, France, 2008.
- Research in University of Sevilla in Power Electronics and Renewable Energies, Sevilla, Spain, 2006-2007.

**M.S., Control and Dynamic Systems (Sep 2002 - Sep 2004)** - Institute of Scientific Research and Technology of San Luis Potosi (IPICYT), San Luis Potosi, S.L.P., Mexico.

**B.A., Electronic Engineer (Sep 1998 - Sep 2002)** - Sciences Faculty, Universidad Autonoma de San Luis Potosi, Mexico.

**PROFESSIONAL  
EXPERIENCE**

UT-Battelle, LLC at the Oak Ridge National Laboratory (ORNL)

**R&D Staff Member – Power Electronics Integration (PESI)**

Oct 2021 - Present

Power electronics research full-time staff position to conduct research on power grid related power electronics, and support the advanced modeling of power electronics interfaces for distribution and transmission scale grid, performing modeling of power electronics systems and develop algorithms for grid integration with focus on (DERs) integration.

Major Duties / Responsibilities

- Conduct R&D projects and help the expansion of R&D to take advantage of our multidisciplinary capabilities, multimodal strengths, and unique tools and capabilities.
- Power electronics systems model development
- Apply standards and compliance corresponding harmonics in power electronics systems such as IEEE 519-2014.
- Contribute to system level hardware design and optimization of high power grid-tied inverter systems, solar-string inverters.
- Network and develop collaborative R&D with other groups and divisions internally and with DOE, the industry, and the utilities.
- Prepare new proposals to the internal and external funding agencies.
- Prepare and present research results to sponsors, peer reviewers, industry partners and others and at technical meetings such as IEEE sponsored conferences.

**Switching jobs**

Mar 2021 - Sep 2021

February was the last month that I worked for GE Power Conversion, I was interviewed by ORNL in March and I received the offer from ORNL in May. From June to August I had to travel to Mexico due visa change, and because I arrived closed to September, I started officially on October 2021 in ORNL.

GE Power Conversion USA Inc,

**Lead Engineer – Systems Engineer**

Aug 2019 – Feb 2021

**Main responsibilities:** providing specialized knowledge and technical expertise in specifying, designing, and developing power electronic systems as well as power control hardware and software for AC and DC drives for unique automation control systems. In addition, perform systems modeling and simulation for power systems and controls, and tutoring young engineers.

Main achievements:

- Lead Engineer for the project Harvey Gulf BESS, coordinating multidisciplinary teams from Rugby, UK and Texas, USA, including design reviews, software design reviews and Bessel design.

- Driver update/upgrade design study for new switchboards for marine applications.
- Study and design for Non-Windows system with HMI for marine applications.
- Power studies like harmonic content, filter design, load changes in ITF marine project, focusing in studies with DDG1000 and MV7000 systems.

GE Power Conversion USA Inc, 100 E. Kensing Dr., Suite 500, Cranberry Township, PA, 16066

## GE Healthcare

### ROC R&D Engineer LCS/MVS

Jan. 2017 – Aug. 2019

**Main responsibilities:** NPI introduction to the plant; development of new repair techniques and new repairs introduction; integration of new technologies in Healthcare products; coordination of multidisciplinary teams; supervision of hardware implementation; analysis of data and writing technical reports. Presenting technical data to managers/customers. Product qualification and standards application. In charge of MV and LCS projects in the ROC.

Main achievements:

- Collaborated in more than 90 projects bringing revenue to the ROC for more than \$1M in 2 years.
- Successful implementation of new repairs in Multivendor area.
- Support to current repairs and improve capacity in LCS area bringing revenue to the ROC for \$0.5M.

GE Healthcare, 120 Opus Dr, Oak Creek, WI 53154, USA

## GE SWITZERLAND GmbH

### GE Power

#### Developm. Engineer Elec. Systems in R&D Execution

Nov. 2012 – Jan. 2017

**Main responsibilities:** development and improvement of control and protection functions for power plants; integration of new technologies in power plants; coordination of multidisciplinary teams; supervision of hardware implementation; analysis of data and writing technical reports. Presenting technical data to managers/customers. Product qualification and standards application.

*Main achievements*

- World Record Guinness holder for “Most Efficient Combined Cycle Power Plant installed”, April 2016.
- Creation of the Software Filters for a prototype power plant, resulting in savings (40%), hardware simplification and improve of efficiency for the power plant.
- Successful implementation and validation of the Software Filters in a prototype power plant due my coordination of a Workshop between the groups GE GPS and GE Power Conversion.
- Successful implementation of new technology in a 400 MW Power Plant.
- Creation of the functionalities Inertia Response and Frequency response for improvement of grid support (avoid of blackouts and frequency variations) of Prototype Power Plants (400 – 700 MW). Validated during the tests of a 400 MW Power Plant.

- Revision and improvement of the controllers for the change of 50 to 60 Hz of a prototype Power Plant achieving in a successful startup for the current Test Campaign of a 500 MW Power Plant.

GE Switzerland GmbH, Zentralstrasse 40, 5242, Birr, Switzerland

**INSISOL S.A de C.V.**

**Technical Project Manager, Electrical Design responsible.**

Jul, 2010 - Aug, 2011

Main responsibilities: design and implementation of power electronics converters; design and planning of a photovoltaic plant for grid-connected applications. Coordinate integration teams for the power plant (planning, costing, customer requirements). In direct charge of more than 10 persons. Application of international standards for power electronics equipment, control automatization and solar power plants.

*Main achievements*

- Winning of Conacyt project: INVERNADEROS AUTOSUSTENTABLES A TRAVÉS DEL USO DE ENERGÍAS RENOVABLES PARA EL SECTOR AGROPECUARIO, resulting in investing for the company of a 70% of the total project amount.
- Construction of 2 power electronics converters, of 16 kW and 50 kW
- Design of a photovoltaic plant of 10 kW of power.
- Design of 100% self-sustained greenhouses with Eolic and photovoltaic plants.

INSISOL S.A. de C.V., Antonio e Valdez 156, 78388 SLP, SLP, Mexico. - Spin-off Company of the Energy Sector

**OM S.A. de C.V.**

**Technical Project Manager, Electrical Design responsible.**

Oct, 2008 - May, 2010

Responsible of the project "Cogeneration of electricity based on photovoltaic systems". Main responsibilities: electrical design responsible, review of technical design (mechanical and structural), integration of multidisciplinary teams, coordination of construction of photovoltaic power plants, administrative coordination of project (expenses, meetings, suppliers, planning, costing, and customer requirements). Product qualification team leader. In direct charge of more than 30 persons.

*Main achievements*

- Winner of the national competition INNOVAPYME of CONACYT, with the project: "Cogeneration of Electricity Based on Photovoltaic Systems", resulting in investing for the company of a 70% of the total project amount.
- Construction of a 6 kW photovoltaic plant in 8 months in the ITESI, Irapuato, Mexico.
- Construction of a 4 kW photovoltaic plant in 6 months in the UASLP, SLP, Mexico.
- Close cooperation agreements with the following entities: UASLP, ITESI, KYOCERA, SCHUAN JUI SHOU OPTOELECTRONICS CO. LTD., WUHAN FIBERPON TECHNOLOGY CO. LTD., MODULIGHT INC.

Design and Optomecatronic Development of Mexico (OM), S.A. de C.V., Boulevard Adolfo Lopez Mateos 3021-C Oriente, 37280 Leon, Gto., Mexico. - Spin-off Company of the Energy Sector

**Autonomous University of San Luis Potosi (UASLP)**

**Researcher-Professor**

Jun, 2008 - Aug, 2011

Researcher-Professor in postgrade, IICO-UASLP. Responsible of Power Electronics and Renewable Energies Area.

*Main achievements*

- Coordinate and lead the Power Electronics and Renewable Energies Area at IICO-UASLP.
- Execute CONACYT project "Control of grid-connected photovoltaic systems", resulting in a photovoltaic power plant installed in the labs of IICO-UASP.
- Lead the diplomat for companies "Power Electronics and Photovoltaic Systems".

Autonomous University of San Luis Potosi (UASLP), IICO-UASLP, Av. Karakorum 1470 Lomas 4a. secc., C.P. 78210, San Luis Potosi, S.L.P., Mexico.

**PATENTS AND PUBLICATIONS**

- 2 patents registered in USA.
- 12 papers published on international journals.
- 25 publications on International Conferences.
- 5 presentations on International Conferences.

**AWARDS**

- World Record Guinness holder for "Most Efficient Combined Cycle Power Plant installed", April 2016.
- Recognition of Best Student of the Generation 1998-2002 of Electronic Engineer by the Autonomous University of San Luis Potosi, SLP, Mexico.
- GE Lean Six Sigma trained.

**LANGUAGES**

Spanish (native tongue), English (fluent), Italian (medium), German (beginner).

**PERSONAL INFO**

- Status: Married, three sons.
- TN US work visa

**CORE COMPETENCIES**

Over 10 years experienced in Research and Development (NPI, transfer technology, beta prototypes, etc.), Power Electronics (Design of power converters, erection & commissioning, testing), Power Generation (Photovoltaic plants, Eolic plants, Gas plants), Control Design (Model-based design, non-linear controls, passivity based controllers, Gas plant control, etc.), Mathematical modeling, Electronic Design, Advanced Simulation Software and Programming

(MATLAB, Simulink, PLECS, PSCAD, PSPICE, Texas Instrument DSPs, C++, Real-Time Simulators Opal RT, Typhoon)

- Statistical Packages: Statistics Toolbox (Matlab), Maple, Mathematica
- Programming: Matlab, C/C++, Visual Studio, VHDL, P80i.
- Power Electronics CAD: PLECS, PSCAD, PSIM
- Electronic CAD: Orcad, Eagle, P--CAD
- DSP Devices: Microchip Families 18, 24 and DSPIC, Texas Instrument Fixed and Floating Point.
- Publishing:\LaTeX
- Design: AutoCAD, Visio Microsoft Office: Word, Excel, Powerpoint, OneNote, Outlook.
- Real-Time simulators for HIL, CHIL and PHIL: Opal RT and Typhoon.

Lead innovative teams for execution of Multidisciplinary Projects, Application of norms and product qualification standards (ISO9000, IEEE 1547, IEC 61727), Communicating Scientific Data (reporting, datasheets, technical reports, presentations), strong experience in hands-on testing and in system analysis including troubleshooting, planning, execution and coordination of test for prototypes (from lab prototypes to complete Power Plants), Operations Management (setting new organizations, processes, projects, costing).