**PERSONAL INFORMATION**

**Gabriele Marchegiani**

Home Address:
Sesto San Giovanni, Milan, Italy

Contact by email:
gabriele.marchegiani@engie.com

Sex Male | Date of birth 05/05/1956 | Nationality Italian
Marital Status: married

**POSITION** Senior Technology Advisor at Engie EPS

**WORK EXPERIENCE**

February 2019 – now
Senior Technology Advisor
Engie EPS

February 2018 – February 2019
Chief Innovation Officer
Engie EPS

February 2017 – February 2018
Senior Vice President
EPS Elvi Energy Srl (*)
Director of Innovation and Research at EPS Elvi Energy Srl
Member of the Board of Director of EPS Elvi Energy Srl

January 2016 – February 2017
Executive Vice President
EPS Elvi Energy Srl (*)
Managing Director and member of the Board of Directors (CdA) of Elvi Energy Srl

(*) EPS Elvi Energy Srl
Via Anton Francesco Grazzini, 14 - Milan, www.electropowersystems.com
Elvi Energy Srl is subject to direction and coordination of Electro Power Systems SA.
EPS SA is listed on the Euronext Stock Exchange and regulated by AMF

2010 – 2015 Director of the Power Division
ELVI Elettrotecnica Vitali spa
Via Tavani 1 - Delebio (SO)

As Director of the Power Division he has managed more than 15 researchers/engineers at Elvi and MCM
He has started an industrial cooperation between ELVI/MCM and Northern Power Systems (Vermont – USA), by signing a Technology Partnership Agreement and a Strategic Alliance Agreement

2007 – 2014 Managing Director and member of the Board of Directors (CdA)
MCM Energy Lab srl
Spin off company of Politecnico di Milano
Co-founder partner of the company MCM

2003 – 2007 R&D Project Manager
MCM Energy Lab and ELVI Elettrotecnica Vitali spa
Partner of ELVI and MCM

Project manager of several applied research works, relative to the development of Power Converters and Digital Controls for Renewable Energy Systems (wind, PV, solar) and Distributed Generation, in cooperation with the University "Politecnico di Milano"

2000 - 2003 Managing Director
TCI
Manno (Switzerland)
TCI was a trading company selling magnetic components of Trafomec Group to EU countries

1996 - 2000 General Manager
Sirten
Milan
Manager in a group of companies dealing with Low Voltage and Medium Voltage special transformers and reactors for power electronics, in industrial, railways and energy sectors

1994 - 1995 Export Sales Manager
PLLB Elettronica SpA
Sesto San Giovanni (Mi)
Business Development of Electronic Test Equipment for telecom applications

1988 - 1993 Technical and Sales Manager
Sirten Srl
Milan
Development of international sales to EU and USA of special magnetic components in the railway sector

1986 - 1987 Product Marketing Engineer
Hewlett Packard – Component Marketing Operation
Boeblingen (Germany)
Responsible of fiber optics products on all European countries
Two months assignment at HP facilities in San Jose (California, USA) as Regional Sales Engineer

1983 - 1986 Technical and sales engineer
Sirten Srl
Milan
Design and development of special magnetic components

**EDUCATION AND TRAINING**

January 2019 MIP Politecnico di Milano
Entrepreneurship Innovation and Start Up

March – May 2019
PoliHub, Innovation District & Startup Accelerator, by Fondazione Politecnico di Milano
Entrepreneurship Lab (E-Lab)
Mentoring Program focused on early stage startups

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|---|---|
| 1998 – now | Member of the Milan Order of Engineers<br>Professional in Electrical Engineering<br>(membership n.019881, Section A, Sectors B and C = Industrial and Information) |
| 1984 - 1985 | Postgraduate Certificate in Business Management at SDA<br>Bocconi University, Milan<br>2 years programme |
| 1982 | State Exam |
| 1981 | Graduated in Electrical Engineering cum Laude<br>Politecnico di Milano |

**ADDITIONAL INFORMATION**

**Patents**

Co-inventor of a national patent concerning Static Power Conversion and Digital Control for Distributed Generation. Patent nr 0001382319, issued on the 22nd December 2010

Co-inventor of a national patent concerning Control of Microgrids.
Title: "Control System for Microgrids for the production and distribution of electrical power coming from multiple production sources of different types, and control method thereof"
Patent nr 102016000131878, issued on the 21st May 2019
Inventors: Gabriele Marchegiani, Daniele Rosati, Claudio Rosati, Luisa Frosio

Co-inventor of two pending international patents about inverters for wind generation
(Modular Converter for high power offshore wind generation).

- "Modular converter for converting the electric power produced by aerogenerators, and wind-power plant that uses said converter"
- "Control system for wind farms with aerogenerators provided with modular converter

**Academic activities**

Contract Professor in "Energy Conversion and Renewable Sources" for the B.Sc. in Industrial Engineering at the Department of Industrial and Information Engineering of the University of Pavia,
Academic years:
2019-2020
2020-2021.

During 2020 he has given tutorials, in English, at Politecnico di Milano to:
M.Sc. students of the "Electric Conversion from Green Sources of Energy" course held by Prof Alberto Dolara, of Energy Department (30 hours)
and to
M.Sc. students of the Electric Propulsion" course, held by Prof Francesco Castelli Dezza, of Mechanical Department (15 hours)

Lecturer at Politecnico di Milano, he has given seminars in English, from 2012 to 2020, (6 hours/year), about Power Electronics applications in Microgrids, Renewable Energy Sources, Energy Storage Systems

and e-Mobility to the M.Sc. students of the “Dynamics of Electrical machines and Drives” course held by Professor Francesco Castelli Dezza

**Standardization activities**

- Society of Automotive Engineers

Member of the “Hybrid Communication and Interoperability Task Force” of SAE, since June 2017.
The task force has the scope to establish the use cases, signals and messages and communication protocol along with interoperability and security for Plug-in Electric Vehicles (PEV).

- IEC - International Electrotechnical Commission

Since Sept 2014 active member of the Technical Committee IEC/TC120, dealing with “Electrical Energy Storage Systems” participates to the Standards development works.

In July 2018 he has joined IEC TC69 / JWG11 dealing with Management of Electric Vehicles charging discharging infrastructures, to develop IEC 63110 and maintain IEC 61850-90-8

During 2019 he has also joined IEC TC57/WG17, dealing with “Power system intelligent electronic device communication and associated data models for microgrids, distributed energy resources and distribution automation”

The IEC TC120 has recently appointed him Project Leader of an initiative to develop a new international standard about “Distributed Energy Storage Systems, from Electrical Vehicles”.

- CEI - Comitato Elettrotecnico Italiano

Since Nov 2013 he is active member of the Italian Technical Committee CEI/CT120, dealing with “Energy Storage Systems” and participates to the Standards development works.
He has collaborated with the Joint Working Group of CEI CT120/316, responsible of “Energy Storage Systems and Connection to the LV and MV electrical Grid”. CEI CT120/316 has released the Annex Nbis of the Italian Standard CEI 016, about “Grid connection rules of energy storage systems”

**Scientific Associations**

Member of several scientific associations:

- AEIT, since 1998
- IEEE, since 1998
- VDE, since 2003
- SAE, since 2018

**R&D Projects**

Project Manager of “ENERGIA PULITA” a 3-year long research program, started in 2004, in cooperation with Politecnico di Milano, about a Universal Power Conversion and Digital Control for Distributed Generation

Project Manager of an “Offshore Wind Generation” development, started in Jan2008 and completed in Mar2011. Cooperation between MCM Energy Lab and Trevi Energy s.p.a. to study innovative wind generation systems, suitable for offshore applications, based on multilevel, modular power converters. Power transmission based on MVDC, medium voltage direct current system. Development and testing of small-scale prototypes of modular converters and related control systems

Project Manager of GENDIS project, started in Jan2007, 18month long, consisting in the development of a hybrid mini power central fed by PV solar energy and gas-fed micro co-generator.

Project Manager of DC HELIOS, a research program started in 2009, consisting in the study of high efficiency solar inverters.

Project Manager of a 3 year long applied research program, started at the beginning of 2011, aiming at the development of new families of power converters and controllers, suitable for on-grid and off-grid operation, to be used in Battery Energy Storage Systems (BESS), Hybrid Power Plants (HPP) and Micro Grids. They have found application in power systems connected to both Low Voltage and Medium Voltage networks, with power ranging from 20kVA up to multi MVA.
They have been certified at recognized laboratories according to applicable CEI and IEC standards.

During 2017-2018, as manager of the EPS Power Electronics Lab, he has coordinated the activities of engineers and researchers in the design and construction of static power converters for energy storage and photovoltaic systems, as well as the development of electronic systems for Electric Mobility.
Most significant works in that period:

Development of static power converters

- 110kW solar string inverter with 1500V input voltage;
- 25kW bidirectional chopper for hydrogen and battery energy storage
- Qualification and certification tests according to IEC and CEI standards of a 900KVA static converter for battery energy storage systems

E-Mobility - Vehicle to Grid

- Project Leader of an engineering team of EPS which studied Vehicle-to-Grid and Second Life Battery applications in cooperation with an international car maker
- Testing and qualification of an electronic relay for railway signaling

**Projects**

As Managing Director of Elvi Energy and Director of Innovation and Research at EPS Elvi Energy he has coordinated the technical activities of engineers and researchers in the design of hybrid power plants, energy storage systems, medium size micro grids, ranging from 500kW to some MW and also in the development of electronic systems for e-Mobility.

As Managing Director of MCM and Director of Elvi Power Division he has been responsible to complete several projects, using Lithium Ion batteries, lead-acid batteries for off grid systems and NaNiCl, high temperature batteries.

Recently, as Senior Technology Advisor at Engie Eps, he has participated to:

- Implementation of a Research Contract with Politecnico di Milano, about Innovative Digital Control Platforms and Predictive Diagnostics applied to Microgrids.
- Development of Electrical Vehicle Charging Systems and Vehicle to Grid (V2G) functions

**List of publications**

Universal digital controller for power quality and distributed generation
Carmeli, M.S.; Dezza, F.C.; Faranda, R.; Marchegiani, G.; Mauri, M.;
Year: 2006 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

A novel small-scale variable speed hydropower emulator using an inverter-controlled induction motor
Mauri, M.; Dezza, F.C.; Marchegiani, G.;
Year: 2007 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

Hardware in the Loop (HIL) test bench for small-scale Distributed Generation systems
Mauri, M.; Dezza, F.C.; Marchegiani, G.;
Year: 2008 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

Advanced control strategy for PQ improvement in PV systems without energy storage device
Carmeli, M.S.; Dezza, F.C.; Faranda, R.; Marchegiani, G.; Mauri, M.;
Year: 2008 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

Design and application of a Linux Real Time board for distributed power generation
Carmeli, M.S.; Dezza, F.C.; Marchegiani, G.; Mauri, M.; Rosati, D.;
Year: 2009 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

Hybrid PV-CHP distributed system: Design aspects and realization
Carmeli, M.S.; Castelli-Dezza, F.; Marchegiani, G.; Mauri, M.; Piegari, L.; Rosati, D.;
Year: 2009 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

MVDC connection of offshore wind farms to the transmission system
Carmeli, M.S.; Castelli-Dezza, F.; Rosati, D.; Marchegiani, G.; Mauri, M.;
Year: 2010 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

Reduction of motor overvoltage fed by PWM AC drives using a universal model
Castelli-Dezza, F.; Maglio, M.M.; Marchegiani, G.; Ortega, D.F.; Rosati
Year: 2010 | Conference Paper | Publisher: IEEE | other authors from Politecnico di Milano

Design and analysis of a Medium Voltage DC wind farm with a transformer-less wind turbine generator
Carmeli, M.S.; Castelli-Dezza, F.; Rosati, D.; Marchegiani, G.; Mauri, M.; Power Electronics Electrical Drives Automation and Motion (SPEEDAM), 2010 International Symposium

“Control strategies and configurations of hybrid distributed generation systems”
Maria Stefania Carmeli , Francesco Castelli-Dezza, Marco Mauri, Gabriele Marchegiani, Daniele Rosati
2012 published on Renewable Energy by Elsevier

“MVDC grid System for Future Offshore DC Wind Farms”
L. Frosio, M. Laghi, G. Marchegiani, D. Rosati
21 - 23 May 2009, Brindisi Italy - OWEMES 2009 - OFFSHORE WIND AND OTHER MARINE RENEWABLE ENERGIES IN MEDITERRANEAN AND EUROPEAN SEAS.

“Reduction of High Frequency zero sequence harmonics in parallel connected PV-inverters”
A. Bezzolato, M.S. Carmeli, L.Frosio, G. Marchegiani, M. Mauri
EPE'11 ECCE Europe, the 14th European Conference on Power Electronics and Applications, Birmingham (UK), 30th August-1st September 2011.

“Centrali ibride – Tecniche di controllo per la gestione di micro reti intelligenti”
L. Frosio, G. Marchegiani,I. Mazzucco, C. Rosati
Automazione e Strumentazione Magazine – April 2013

“Harmonic Analysis of Output Filters for Grid Connected Converters in Battery Energy Storage Systems”
Alberto Dolara, Giulia Magistrati and Riccardo Zich (Politecnico di Milano), Luisa Frosio and Gabriele Marchegiani (MCM Energy Lab)
25-28 May 2014, IEEE Conference at Bucharest

“Storage Application for Ancillary Service Support to the Main Grid”
M.Delfanti, M.Merlo, D.Falabretti, G.Monfredini (Politecnico di Milano), S.Nassuato (FIAMM), C.Rosati, G.Marchegiani (ElviGroup)
CIRED – Rome – 11-12 June 2014

“Hybrid distributed generation system for a rural village in Africa”
M. S. Carmeli ; P. Guidetti ; M. Mancini ; S. Mandelli ; M. Mauri ; M. Merlo ; R. Perini ; G. Tomasini ; G. Marchegiani ; D. Rosati
3rd Renewable Power Generation Conference (RPG 2014) / IET Conferences / Year: 2014

Part I of II : “Technical Strategies for Voltage Power Regulation in LV Distribution Networks”
M.Delfanti, G.Monfardini, M.Merlo (Politecnico di Milano), D.Rosati, C.Rosati, L.Frosio (MCM), G.Marchegiani (ELVI)
July 2015 – Distributed Generation and Alternative Energy Journal

Part II of II :“Technical Strategies for Voltage Power Regulation in LV Distribution Networks”
M.Delfanti, G.Monfardini, M.Merlo (Politecnico di Milano), D.Rosati, C.Rosati, L.Frosio (MCM), G.Marchegiani (ELVI)
Sept 2015 - Distributed Generation and Alternative Energy Journal

“Hybrid Microgrid Experimental Application in Tanzania”
S.Mandelli, S.Carmeli, M.Mauri, R.Perini, M.Merlo (Politecnico di Milano), D.Rosati, P.Guidetti (MCM), G.Marchegiani (ELVI)
June 2015

“Optimal management algorithm for battery energy storage system included in an islanded Micro-Grid”
A. Dolara; F. Grimaccia; G. Magistrati; G. Marchegiani
2016 IEEE 16th International Conference on Environment and Electrical Engineering (EEEIC)
Year: 2016

“Modified droop control for the optimal management of the battery systems in isolated microgrids”
Luisa Frosio; Gabriele Marchegiani; Alberto Bolzoni; Roberto Perini
2017 IEEE International Conference on Environment and Electrical Engineering and 2017 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)

“Performance analysis of a hybrid micro-grid in Somalia”
A. Dolara; E. Donadoni; S. Leva; G. Magistrati; G. Marchegiani
2017 IEEE Manchester PowerTech / IEEE Conference

“Lithium-ion batteries for electric vehicles: A review on aging models for vehicle-to-grid services”
M. Scarfogliero; S. Carmeli; F. Castelli-Dezza; M. Mauri; M. Rossi; G. Marchegiani; E. Rovelli
2018 International Conference of Electrical and Electronic Technologies for Automotive

“Electro-Thermal Aging Model of Li-Ion Batteries for Vehicle-to-Grid Services”
M. Mauri, F. Castelli-Dezza, M.S. Carmeli, M. Scarforgliero, G. Marchegiani
2019 AEIT International Conference of Electrical and Electronic Technologies for Automotive

Autorizzo al trattamento dati ai sensi del GDPR 2016/679 del 27 aprile 2016 (Regolamento Europeo relativo alla protezione delle persone fisiche per quanto riguarda il trattamento dei dati personali).

Autorizzo la pubblicazione del Curriculum Vitae sul sito istituzionale dell'Università, in ottemperanza al D. Lgs n. 33 del 14 marzo 2013 (e s.m.i.).

Milano, 12 January 2021
Gabriele Marchegiani