

Personal Information

Name Gioele Di Marcoberardino

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Position

Nov. 2018 - today Assistant Professor
Dipartimento di Ingegneria Meccanica e Industriale (DIMI)
Università degli Studi di Brescia

Work experience

Sept. 2015 – Oct. 2018 Post-Doc Research Fellow
Department of Energy, Politecnico di Milano
Group of Energy Conversion Systems (GECOS)
Sector: Hydrogen production technologies, Micro-cogeneration systems,
innovative energy systems

Sept. 2015 – Oct. 2018 Dissemination Manager of European Project BIONICO
Biogas membrane reformer for decentralized H₂ production

November 2012 – Today Participation in European & National projects:



- **ReforCELL** (FP7/2007-2013)
Advanced multi-fuel reformer for fuel cell CHP systems
Participation: technical/WP management
Initiative N° 278997 - www.reforcell.eu



- **FERRET** (FP7/2007-2013)
A flexible natural gas membrane reformer for m-CHP applications
Participation: technical/WP management
Initiative N° 621181 - www.ferret-h2.eu



- **FLUIDCELL** (FP7/2007-2013)
Advanced m-CHP fuel CELL system based on a novel bio-ethanol
Fluidized bed membrane reformer
Participation: technical/WP management
Initiative N° 621196 - www.fluidcell.eu



- **BIONICO** (H2020)
Biogas membrane reformer for decentralized hydrogen production
Participation: technical/WP leader/WP management
Initiative N° 278997 - www.bionicoproject.eu



- **Microgen 30** (Industria 2015 program - EE01_00013)

April 2014 – October 2014 PhD - study period abroad
Department of Chemical Engineering and Chemistry, Chemical process Intensification, University of Technology Eindhoven (TU/e)
[website](#)

May 2012 – Nov. 2012 Research fellowship (Post-graduate)
Laboratory of Microcogeneration, Department of Energy, Politecnico di Milano
[website](#)

Didactic Activities

September 2013 - Today Tutor in Bachelor Degree Courses
“Energy Lab Workshop” (SSD: ING/IND 08-09-11)
“Energy Systems and Environmental Impact” (SSD: ING/IND 09)
Sector BS in Energy Engineering, Politecnico di Milano

September 2016 – Today Tutor in Master Degree Course “Energy Conversion A”
(SSD: ING/IND 09)
Sector MS in Energy Engineering, Politecnico di Milano

September 2017 – Today Tutor in Master Degree Course “Energy Systems LM”
(SSD: ING/IND 09)
Sector MS in Mechanical Engineering, Politecnico di Milano

September 2016 – Today Tutor in Master Courses “Ridef” & “Ridef 2.0”
Department of Energy, Politecnico di Milano

Education

Nov. 2012 – Nov. 2015 PhD in Energy and Nuclear Science and Technology
Energy Department
Politecnico di Milano, piazza Leonardo da Vinci 32, 20133, Milano, Italy

Thesis title: Application of gas fuel to membrane reactor for small-scale power production

Sept. 2009 - April 2012 Master Degree in Energy Engineering
Politecnico di Milano, piazza Leonardo da Vinci 32, 20133, Milano, Italy

Thesis title: Development of a mathematic one dimensional model of a membrane

reactor for hydrogen production and design of a test stand for membrane reactor characterization

Sept. 2005 – Dec. 2008

Bachelor Degree in Energy Engineering

Università di Bologna Alma Mater Studiorum, Bologna, Italy

September 2000 – July 2005

High School Diploma: Scientific curriculum

Liceo Scientifico Statale Saffo, Roseto degli Abruzzi , Italy

Publications

Peer-reviewed papers

- G. Di Marcoberardino, G. Manzolini, C. Guignard, V. Magaud, *Optimization of a micro-CHP system based on polymer electrolyte membrane fuel cell and membrane reactor from economic and life cycle assessment point of view*, **Chemical Engineering & Processing: Process Intensification**, *Accepted Manuscript, In Press*
- G. Di Marcoberardino, S. Foresti, M. Binotti, G. Manzolini, *Potentiality of a biogas membrane reformer for decentralized hydrogen production*, **Chemical Engineering & Processing: Process Intensification** 129 (2018) 131-141
- S. Foresti, G. Di Marcoberardino, G. Manzolini, N. De Nooijer, F. Gallucci, M. van Sint Annaland, *A comprehensive model of a fluidized bed membrane reactor for small-scale hydrogen production*, **Chemical Engineering & Processing: Process Intensification** 127 (2018) 136-144
- G. Di Marcoberardino, D. Vitali, F. Spinelli, M. Binotti, G. Manzolini, *Green Hydrogen Production from Raw Biogas: A Techno-Economic Investigation of Conventional Processes Using Pressure Swing Adsorption Unit*, **Processes** 6,19 (2018)
- G. Di Marcoberardino, M. Binotti, G. Manzolini, J. L. Viviente, A. Arratibel, L. Roses, F. Gallucci, *Achievements of European projects on membrane reactor for hydrogen production*, **J. of Cleaner Production** 161 (2017) 1442-1450
- M. Binotti, G. Di Marcoberardino, M. Biassoni, G. Manzolini, *Solar hydrogen production with cerium oxides thermochemical cycle*, **AIP Conference Proceedings** 1850, 100002 (2017)
- G. Di Marcoberardino, G. Manzolini, *Investigation of a 5 kW micro-CHP PEM fuel cell based system integrated with membrane reactor under diverse EU natural gas quality*, **Int. J. of Hydrogen Energy** 42 (2017) 13988-14002

- G. Di Marcoberardino, F. Gallucci, G. Manzolini, M. van Sint Annaland, *Definition of validated membrane reactor model for 5 kW power output CHP system for different natural gas compositions*, **Int. J. of Hydrogen Energy** 41 (2016) 19141-19153
- G. Di Marcoberardino, L. Roses, G. Manzolini, *Technical assessment of a micro-cogeneration system based on polymer electrolyte membrane fuel cell and fluidized bed autothermal reformer*, **Applied Energy** 162 (2016) 231–244.
- G. Di Marcoberardino, F. Sosio, G. Manzolini, S. Campanari, *Fixed bed membrane reactor for hydrogen production from steam methane reforming: Experimental and modeling approach*, **Int. J. of Hydrogen Energy** 40 (2015) 7559–7567.
- P. Bombarda, G. Di Marcoberardino, A. Lucchini, S. Leva, G. Manzolini, L. Molinaroli, F. Pedranzini, R. Simonetti, *Thermal and electric performances of roll-bond flat plate applied to conventional PV modules for heat recovery*, **Applied Thermal Energy** 105 (2016) 304-313.
- G. Valenti, P. Silva, N. Fergnani, S. Campanari, A. Ravidà, G. Di Marcoberardino, E. Macchi, *Experimental and numerical study of a micro-cogeneration Stirling unit under diverse conditions of the working fluid*, **Applied Energy** (Elsevier) 160 (2015) 920–929

Public Presentations & Posters

- P. Bombarda, G. Di Marcoberardino, C. Invernizzi, P. Iora, G. Manzolini, *Water Mixtures as Working Fluids in Organic Rankine Cycles*, Heat Powered Cycles Conference HPC 2018, 16-19 September 2018, University of Bayreuth, Germany – Accepted for oral presentation
- G. Di Marcoberardino, X. Liao, A. Dauriat, M. Binotti, G. Manzolini, *Life cycle assessment and economic analysis of an innovative biogas membrane reformer for hydrogen production*, 9th International Conference on Hydrogen Production (ICH2P-2018), July 16-19 2018, Zagreb, Croatia – Accepted for oral presentation
- G. Di Marcoberardino, L. Chiarabaglio, G. Manzolini, S. Campanari, *Economic and Energy Savings Analysis of PEM fuel cell based Micro-cogeneration systems in Residential applications EFC17*, European Fuel Cell Technology & Applications Conference - Piero Lunghi Conference, Naples, Italy, 12-15th December 2017
- P. Iora, G. Di Marcoberardino, C. Invernizzi, P. Belotti, R. Bini, *Dynamic analysis of off-grid ORC plants with various solution for the thermal storage*, IV International Seminar on ORC Power Systems (ORC2017), 13-15 September 2017, Milano, Italy

- G. Di Marcoberardino, A. Sveshnikova, S. Foresti, G. Valenti, G. Manzoloni, A. Bischì, S. Campanari, Experimental analysis of a fixed bed membrane reactor for hydrogen production with a kW-scale PEM fuel cell, Hypothesis XII, HYdrogen POWer THEoretical and Engineering Solutions International Symposium, 28-30 June 2017, Syracuse, Italy
- S. Foresti, G. Di Marcoberardino, N. de Nooijer, F. Gallucci, M. van Sint Annaland, G. Manzoloni, A comprehensive model for fluidized bed membrane reactor, 3rd European Workshop on Membrane reactors: Membrane Reactors for Process Intensification MR4PI2017, March 9-10 2017, Villafranca di Verona, Italy
- G. Di Marcoberardino, S. Foresti, G. Manzoloni, Application and System evaluation of membrane reactors with different fuels, 3rd European Workshop on Membrane reactors: Membrane Reactors for Process Intensification MR4PI2017, March 9-10 2017, Villafranca di Verona, Italy
- M. Binotti, G. Di Marcoberardino, M. Biassoni, G. Manzoloni, Solar hydrogen production with cerium oxides thermochemical cycle, SolarPaces Conference 2016, 11-14 October 2016, Abu Dhabi
- M. Binotti, G. Di Marcoberardino, G. Manzoloni, F. Gallucci, N. Ibanez Lirio, Biogas membrane reformer for decentralized H₂ production, European Biogas Association Conference (EBA 2016), 27-29 September 2016, Ghent, Belgium.
- G. Di Marcoberardino, M. Binotti, G. Manzoloni, J. L. Viviente, F. Gallucci, L. Roses, N. Ibanez Lirio, Achievements of EU projects on membrane reactor for hydrogen production, 11th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES 2016), 4-9 September 2016, Lisbon, Portugal.
- G. Di Marcoberardino, G. Manzoloni, Investigation of a 5 kW micro-CHP PEM fuel cell based system integrated with membrane reactor under diverse EU natural gas quality, 21st World Hydrogen Energy Conference (WHEC 2016), 13-16 June 2016, Zaragoza, Spain.
- M. Binotti, G. Di Marcoberardino, Biogas membrane reformer for decentralized H₂ production, 21st World Hydrogen Energy Conference (WHEC 2016), 13-16 June 2016, Zaragoza, Spain.
- G. Di Marcoberardino, F. Gallucci, G. Manzoloni, M. van Sint Annaland, Definition of validated membrane reactor model for 5 kw power output CHP system under different natural gas composition, 12th International Conference on Catalysis in Membrane Reactors, 22-25 June 2015, Szczecin, Poland.
- G. Di Marcoberardino, F. Sosio, G. Manzoloni, S. Campanari, Fixed bed membrane reactor for hydrogen production: experimental and modelling approach, International Conference on Clean Energy, 2014, Istanbul, Turkey.

- G. Valenti, S. Campanari, P. Silva, N. Fergnani, A. Ravidà, G. Di Marcoberardino, E. Macchi, Modeling and testing of a micro-cogeneration Stirling engine under diverse conditions of the working fluid, ICAE 2014, June 2014, Taipei, Taiwan.
- G. Di Marcoberardino, D. Rota, G. Manzolini, S. Campanari, Dynamic analysis of micro-CHP PEM fuel cell based system with membrane reformer, Fuel Cells 2014 Science & Technology – A Grove Fuel Cell Event, 2014, Amsterdam, The Netherlands.
- G. Di Marcoberardino, G. Manzolini, S. Campanari, L. Roses, Experimental study of a fixed bed membrane reactor for hydrogen production, European Fuel Cell 2013, December 11-13, 2013, Rome, Italy.
- G. Valenti, , P. Silva, N. Fergnani, G. Di Marcoberardino, S. Campanari, E. Macchi, Experimental and numerical study of a micro-cogeneration Stirling engine for residential applications, Conference of the Italian Thermal Machines Engineering Association, ATI2013, Bologna, Italy.

Conferences & Workshops

Conferences & Workshops

- European Fuel Cell 2017, 12-15 December, 2017, Naples, Italy
- Hypothesis XII, HYdrogen POver THEoretical and Engineering Solutions International Symposium, 28-30 June 2017, Syracuse, Italy
- IV International Seminar on ORC Power Systems (ORC2017), 13-15 September 2017, Milano, Italy
- 3rd European Workshop on Membrane reactors: Membrane Reactors for Process Intensification MR4PI2017, March 9-10 2017, Villafranca di Verona, Italy
- 11th Conference on Sustainable Development of Energy, Water and Environment Systems (SDEWES 2016), 4-9 September 2016, Lisbon, Portugal
- 21st World Hydrogen Energy Conference (WHEC 2016), 13-16 June 2016, Zaragoza, Spain.
- 12th International Conference on Catalysis in Membrane Reactors, 22-25 June 2015, Szczecin, Poland.
- Joint Workshop on Scale-up of Pd Membrane Technology From Fundamental Understanding to Pilot Demonstration, 2014, Petten, The Netherlands.
- International Conference on Clean Energy, 2014, Istanbul, Turkey.
- Fuel Cells 2014 Science & Technology – A Grove Fuel Cell Event, 2014, Amsterdam, The Netherlands.
- European Fuel Cell 2013, December 11-13, 2013, Rome, Italy.