

Curriculum Vitae

Informazioni personali

Nome Gioele Di Marcoberardino

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Posizione

Nov. 2018 - Ricercatore a tempo determinato di tipo A (tempo definito)
Oggi SSD: ING-IND/09
Dipartimento di Ingegneria Meccanica e Industriale, Università degli Studi di Brescia

Principali esperienze di lavoro

Nov. 2015 - Assegnista di ricerca Post-Doc
Ott. 2018 Group of Energy Conversion Systems (GECOS)
Dipartimento di Energia, Politecnico di Milano
Area di ricerca: Produzione di idrogeno (modellazione ed attività sperimentale),
Micro-cogenerazione, Modellazione sistemi energetici avanzati

Sett. 2015 - Dissemination Manager of European Project BIONICO
Dic. 2019 Biogas membrane reformer for decentralized H2 production www.bionicoproject.eu

Apr. 2014 - Visiting PhD student
Ott. 2014 Department of Chemical Engineering and Chemistry, Chemical process
Intensification, University of Technology Eindhoven (TU/e)

Mag. 2012 - Partecipazione in progetti di ricerca Europei, Nazionali e Regionali
Oggi

Progetto	Anno	Ruolo
DESOLINATION (H2020) DEmonstration of concentrated SOLAr power coupled wIth advaNced desAlinaTion system in the gulf regION	2021- 2024	<u>Ruolo:</u> Partecipante
MACBETH (H2020) Membranes And Catalysts Beyond Economic and Technological Hurdles www.macbeth-project.eu	2019- 2024	<u>Ruolo:</u> Responsabile della ricerca per Università di Brescia
SCARABEUS (H2020) Supercritical CARbon dioxide/Alternative fluids Blends for Efficiency Upgrade of Solar power plants www.scarabeusproject.eu	2019 - 2023	<u>Ruolo:</u> Partecipante

BIOMASS-HUB (CALL HUB RICERCA E INNOVAZIONE Regione Lombardia) BIOMetAno per una Società Sostenibile: sviluppo di un Laboratorio Italiano di Circular Economy dal biometano	2019-2022	<u>Ruolo:</u> Partecipante
BIONICO (H2020) Biogas membrane reformer for decentralized hydrogen production www.bionicoproject.eu	2015-2019	<u>Ruolo:</u> Dissemination manager, Partecipante
FERRET (FP7) A flexible natural gas membrane reformer for m-CHP applications	2014-2017	<u>Ruolo:</u> Partecipante
FLUIDCELL (FP7) Advanced m-CHP fuel CELL system based on a novel bio-ethanol Fluidized bed membrane reformer	2014-2018	<u>Ruolo:</u> Partecipante
REFORCELL (FP7) Advanced multi-fuel reformer for fuel cell CHP systems	2012-2015	<u>Ruolo:</u> Partecipante
MICROGEN30 (Industria 2015 program - EE01_00013)	2012-2015	<u>Ruolo:</u> Partecipante

2013 - Oggi Partecipazione in contratti di ricerca con aziende quali Snam Rete Gas, Turboden, AB Impianti

Indicatori relativi alla produzione scientifica (al 18/06/2021)

Pagine dell'autore: [Scopus](#), [WOS](#), [Google Scholar](#), [ORCID](#)

Parametro	SCOPUS	WOS
Numero pubblicazioni indicizzate	31	23
Numero citazioni	318	271
H-index	12	11

Attività didattica

2021 - Oggi Docente del corso del programma di dottorato in Ingegneria Meccanica ed Industriale
“Fuel Cells Systems for Power Production: from the Fundamentals and the Multiphysics Modelling to their Applications”
Università degli Studi di Brescia

Feb. 2020 - Oggi Docente del corso di Laurea Magistrale in Ingegneria Meccanica
“Biocombustibili: produzione e applicazioni”

Università degli Studi di Brescia

Sett 2020 – Docente del corso di Laurea Magistrale in Ingegneria Meccanica
Gen. 2021 “Macchine a Fluido Idrauliche e Termiche”
Università degli Studi di Brescia

Feb. 2019 - Docente a contratto del corso di Laurea Triennale in Ingegneria Energetica
Oggi “Laboratorio di Microreti”
Politecnico di Milano

Sett. 2016 - Tutor del corso di Laurea Magistrale in Ingegneria Energetica
Oggi “Energy Conversion A”
Politecnico di Milano

Mag. 2017 - Docente del Master “Ridef” & “Ridef 2.0” www.ridef2.com
Oggi Dipartimento di Energia, Politecnico di Milano

Educazione

Feb 2016 PhD in Energy and Nuclear Science and Technology
Dipartimento di Energia, Politecnico di Milano
Titolo tesi: Application of gas fuel to membrane reactor for small-scale power production

Apr 2012 Laurea Specialistica in Ingegneria Energetica
Politecnico di Milano
Titolo tesi: Modellizzazione di un reattore a membrana per produzione idrogeno da gas naturale e realizzazione di un banco di prova

Dic. 2008 Laurea Triennale in Ingegneria Energetica
Università di Bologna Alma Mater Studiorum
Titolo tesi: Analisi delle prestazioni di un impianto mini-idroelettrico

Pubblicazioni

Peer-reviewed papers

- 1) E. De Angelis, C. Carnevale, G. Di Marcoberardino, E. Turrini, M. Volta, *Low Emission Road Transport Scenarios: An Integrated Assessment of Energy Demand, Air Quality, GHG Emissions, and Costs*, **IEEE Transactions on Automation Science and Engineering**, [doi: 10.1109/TASE.2021.3073241](https://doi.org/10.1109/TASE.2021.3073241)
- 2) G. Di Marcoberardino, C.M. Invernizzi, P. Iora, A. Ayub, D. Di Bona, P. Chiesa, M. Binotti, G. Manzolini, *Experimental and analytical procedure for the characterization of innovative working fluids for power plants applications*, **Applied Thermal Engineering**, 2020, 178, 115513 doi.org/10.1016/j.applthermaleng.2020.115513

- 3) A. Ayub, C.M. Invernizzi, G. Di Marcoberardino, P. Iora, G. Manzolini, *Carbon dioxide mixtures as working fluid for high-temperature heat recovery: A thermodynamic comparison with transcritical organic rankine cycles*, **Energies**, 2020, 13(15), 4014 doi.org/10.3390/en13154014
- 4) G. Di Marcoberardino, J. Knijff, C. M. Binotti, F. Gallucci, G. Manzolini, *Techno-economic assessment in a fluidized bed membrane reactor for small-scale H2 production: Effect of membrane support thickness*, **Membranes**, 2019, 9(9), 116 doi.org/10.3390/membranes9090116
- 5) G. Di Marcoberardino, L. Chiarabaglio, G. Manzolini, S. Campanari, *A Techno-economic comparison of micro-cogeneration systems based on polymer electrolyte membrane fuel cell for residential applications*, **Applied Energy**, 2019, 239, pp. 692–705 doi.org/10.1016/j.apenergy.2019.01.171
- 6) 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*, **Processes**, 2019, 7(2), 86 doi.org/10.3390/pr7020086
- 7) C. Invernizzi, A. Ayub, G. Di Marcoberardino, P. Iora, *Pure and Hydrocarbon Binary Mixtures as Possible Alternatives Working Fluids to the Usual Organic Rankine Cycles Biomass Conversion Systems*, **Energies**, 2019, 12(21), 4140 doi.org/10.3390/en12214140
- 8) C. Invernizzi, M. Binotti, P. Bombarda, G. Di Marcoberardino, P. Iora, G. Manzolini, *Water Mixtures as Working Fluids in Organic Rankine Cycles*, **Energies**, 2019, 12(13), 2629 doi.org/10.3390/en12132629
- 9) 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**, 2018, 131, pp. 70–83 doi.org/10.1016/j.cep.2018.06.003
- 10) G. Di Marcoberardino, S. Foresti, M. Binotti, G. Manzolini, *Potentiality of a biogas membrane reformer for decentralized hydrogen production*, **Chemical Engineering & Processing: Process Intensification**, 2018, 129, pp. 131–141 doi.org/10.1016/j.cep.2018.04.023
- 11) 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**, 2018, 127, pp. 136–144 doi.org/10.1016/j.cep.2018.01.018
- 12) 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**, 2018, 6(3), 19 doi.org/10.3390/pr6030019
- 13) 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**, 2017, 161, pp. 1442–1450 doi.org/10.1016/j.jclepro.2017.05.122
- 14) 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**, 2017, 42(19), 13988-14002 doi.org/10.1016/j.ijhydene.2017.02.016

- 15) 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** 2016, 41(42), pp. 19141–19153 doi.org/10.1016/j.ijhydene.2016.07.102
- 16) 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**, 2016, 162, pp. 231–244. doi.org/10.1016/j.apenergy.2015.10.068
- 17) 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**, 2016, 105, pp. 304–313. doi.org/10.1016/j.applthermaleng.2016.05.172
- 18) 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**, 2015, 40(24), pp. 7559–7567. doi.org/10.1016/j.ijhydene.2014.11.045
- 19) 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**, 2015, 160, pp. 920–929 doi.org/10.1016/j.apenergy.2015.05.112

Conferenze (Oral presentations & Posters)

- I. A. Ayub, G. Di Marcoberardino, C. M. Invernizzi, P. Iora, *Advanced thermodynamic power cycles utilizing carbon dioxide based mixtures as working fluids for high temperature waste heat recovery*, 4th European sCO₂ Conference for Energy Systems, March 22-26, 2021, Prague, Czech Republic
- II. F. Crespi, G. S. Martínez, D. Sánchez, A. Ayub, G. Di Marcoberardino, C. Invernizzi, P. Iora, D. Di Bona, M. Binotti, G. Manzolini, *Thermal efficiency gains enabled by using supercritical CO₂ mixtures in Concentrated Solar Power applications*, 4th European sCO₂ Conference for Energy Systems, March 22-26, 2021, Prague, Czech Republic
- III. G. Manzolini, M. Binotti, E. Morosini, D. Sanchez, F. Crespi, G. Di Marcoberardino, P. Iora, C. Invernizzi, *Adoption of CO₂ Blended with C₆F₆ as Working Fluid in CSP Plants*, SolarPaces Conference 2020, 28 September - 02 October 2020, Virtual conference
- IV. L. Talluri, P. Niknam, A. Copeta, M. Amato, P. Iora, S. Uberti, C. Invernizzi, G. Di Marcoberardino, L. Pacini, G. Manfrida and D. Fiaschi, *A revised Tesla Turbine concept for 2-phase applications*, 100RES 2020 – Applied Energy Symposium (ICAE) 100% RENEWABLE: Strategies, technologies and challenges for a fossil free future, Pisa, Italy, October 25th – 30th, 2020, E3S Web of Conferences 238, 10006 (2021) doi.org/10.1051/e3sconf/202123810006
- V. P. Iora, A. Cassago, C. Invernizzi, A. Copeta, G. Di Marcoberardino, S. Uberti, D. Fiaschi, L. Talluri, L. Tribioli, *Assessment of Energy Consumption and Range in Electric Vehicles with High Efficiency HVAC Systems Based on the Tesla Expander*, SAE Technical Papers Issue

October, SAE 1st Conference on Sustainable Mobility, CSM 2019, 14 October 2019 - 15 October 2019 doi.org/10.4271/2019-24-0244

- VI. M. Binotti, G. Di Marcoberardino, P. Iora, C. Invernizzi, G. Manzolini, Scarabeus: Supercritical carbon dioxide/alternative fluid blends for efficiency upgrade of solar power plants, SolarPaces Conference 2019, South Korea, AIP Conference Proceedings, 2020, 2303 doi.org/10.1063/5.0028799
- VII. M. Binotti, G. Di Marcoberardino, P. Iora, C. Invernizzi, G. Manzolini, Supercritical carbon dioxide/alternative fluid blends for efficiency upgrade of solar power plants, 3rd European sCO₂ Conference for Energy Systems, 2019, Paris, France
- VIII. G. Di Marcoberardino, BIONICO Biogas Membrane Reformer for decentralized H₂ production, ICCMR-14, Eindhoven, The Netherlands, July 8-11, 2019 (RELATORE)
- IX. 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
- X. 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 (RELATORE)
- XI. 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 (RELATORE)
- XII. 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, Energy Procedia, 2017, 129, pp. 216–223 doi.org/10.1016/j.egypro.2017.09.144 (RELATORE)
- XIII. L. Mastropasqua, G. Di Marcoberardino, P. Chiesa, S. Campanari, Simulation of Oxygen Transport Membranes for CPO Reactors in Small-scale Hydrogen or Syngas Production Applications, 9th International Conference on Applied Energy, ICAE2017, 21-24 August 2017, Cardiff, UK, Energy Procedia, 2017, 142, pp. 1589–1594 doi.org/10.1016/j.egypro.2017.12.535
- XIV. A. Sveshnikova, G. Di Marcoberardino, C. Pirrone, A. Bischì, G. Valenti, A. Ustinov, S. Campanari, The Impact of Humidification Temperature on a 1 kW Proton Exchange Membrane Fuel Cell Stack, 9th International Conference on Applied Energy, ICAE2017, 21-24 August 2017, Cardiff, UK, Energy Procedia, 2017, 142, pp. 1661–1667 doi.org/10.1016/j.egypro.2017.12.546
- XV. G. Di Marcoberardino, A. Sveshnikova, S. Foresti, G. Valenti, G. Manzolini, 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 (RELATORE)

- XVI. S. Foresti, G. Di Marcoberardino, N. de Nooijer, F. Gallucci, M. van Sint Annaland, G. Manzolini, 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
- XVII. G. Di Marcoberardino, S. Foresti, G. Manzolini, 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 (RELATORE)
- XVIII. M. Binotti, G. Di Marcoberardino, M. Biassoni, G. Manzolini, Solar hydrogen production with cerium oxides thermochemical cycle, SolarPaces Conference 2016, 11-14 October 2016, Abu Dhabi, AIP Conference Proceedings, 2017, 1850, 100002 doi.org/10.1063/1.4984459
- XIX. M. Binotti, G. Di Marcoberardino, G. Manzolini, F. Gallucci, N. Ibanez Lirio, Biogas membrane reformer for decentralized H₂ production, European Biogas Association Conference (EBA 2016), 27-29 September 2016, Ghent, Belgium. (POSTER)
- XX. G. Di Marcoberardino, M. Binotti, G. Manzolini, 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. (RELATORE)
- XXI. 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, WHEC 2016 - 21st World Hydrogen Energy Conference 2016, Proceedings, 2016, pp. 571–573 (RELATORE)
- XXII. M. Binotti, G. Di Marcoberardino, Biogas membrane reformer for decentralized H₂ production, WHEC 2016 - 21st World Hydrogen Energy Conference 2016, Proceedings, 2016, pp. 560-561. (POSTER)
- XXIII. G. Di Marcoberardino, F. Gallucci, G. Manzolini, 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. (POSTER)
- XXIV. G. Di Marcoberardino, F. Sosio, G. Manzolini, S. Campanari, Fixed bed membrane reactor for hydrogen production: experimental and modelling approach, International Conference on Clean Energy, 2014, Istanbul, Turkey. (RELATORE)
- XXV. 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, Energy Procedia, 2014, 61, pp. 484–487 doi.org/10.1016/j.egypro.2014.11.1154
- XXVI. 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. (POSTER)

- XXVII. G. Di Marcoberardino, G. Manzolini, S. Campanari, L. Roses, Experimental study of a fixed bed membrane reactor for hydrogen production, EFC 2013 - Proceedings of the 5th European Fuel Cell Piero Lunghi Conference, 2013, pp. 247–248 (RELATORE)
- XXVIII. 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, Energy Procedia, 2014, 45, pp. 1235–1244, doi.org/10.1016/j.egypro.2014.01.129