



Europass Curriculum Vitae

Personal information

Surname(s) / First name(s) **Ferrari Mario Luigi**
Address(es) 33, via Dei Mille, 15067, Novi Ligure (AL), Italy
Telephone(s) +39 0143 71664 Mobile +39 328 1004790
E-mail mario.ferrari@unige.it
Nationality Italian
Date of birth, Gender 26.06.1978, Male

Work experience

Dates From 30th December 2010
Occupation or position held Researcher – **permanent position** (ING-IND/09)
Main activities and responsibilities Development of an experimental rig for advanced energy systems with micro gas turbine (including tri-generative configuration). Reviewer activities for international publications.
Teaching activities

- 2010/2011: 30 hours at “Sistemi Energetici 1 (IN)” (3 CFU)
- 2010/2011: Responsible of two stages (total: 75 hours) for High School students.

Name and address of employer University of Genoa – DiMSET, 1, via Montallegro, 16145, Genova
Type of business or sector Research
Dates From May 2008 to 29th December 2010
Occupation or position held Associate Researcher (ING-IND/08 and ING-IND/09)
Main activities and responsibilities Control system development for SOFC hybrid systems (in collaboration with Rolls-Royce Fuel Cell Systems Ltd.). Experimental activity on a test rig based on a micro gas turbine (Turbec T100).
Teaching activities at the University of Genoa. **Invited lecturer** at both 6th and 7th “International Solid Oxide Fuel Cell Summer School” organized by Jülich Forschungszentrum. Reviewer activities for international publications.
Name and address of employer University of Genoa – DiMSET, 1, via Montallegro, 16145, Genova
Type of business or sector Research
Dates From March 2008 to April 2008
Occupation or position held Consultant
Main activities and responsibilities Real-time model development for the “generator module” of Rolls-Royce Fuel Cell Systems Ltd.
Name and address of employer University of Genoa – DiMSET, 1, via Montallegro, 16145, Genova
Type of business or sector Research
Dates From March 2007 to February 2008
Occupation or position held Researcher (Power and Control Team) inside the European project: **Marie-Curie** Transfer of Knowledge (MTK 1-CT-2006-042298). Coordinator: EU Ing. Olivier Tarnowski.
Main activities and responsibilities Real-time model development for hybrid systems (experimental validation)
Name and address of employer **Rolls-Royce Fuel Cell Systems Limited**, Charnwood Building, Holywell Park, Ashby Road, Loughborough LE11 3GR, Leicestershire, UK.
Type of business or sector Energy systems: fuel cells, hybrid systems

Dates From April 2006 to February 2007
Occupation or position held Associate Researcher (ING-IND/08)
Main activities and responsibilities Control systems development for hybrid systems
Name and address of employer University of Genoa – DiMSET, 1, via Montallegro, 16145, Genova
Type of business or sector Research

Dates From February 2006 to March 2006
Occupation or position held Consultant
Main activities and responsibilities Experimental analysis for the study of SOFC hybrid systems
Name and address of employer University of Genoa – DiMSET, 1, via Montallegro, 16145, Genova
Type of business or sector Research

Dates From March 2005 to December 2005
Occupation or position held Consultant
Main activities and responsibilities Development of an experimental plant for the study of high temperature hybrid systems
Name and address of employer University of Genoa – DiMSET, 1, via Montallegro, 16145, Genova
Type of business or sector Research

Dates From October 2005 to December 2005
Occupation or position held Stage
Main activities and responsibilities Hybrid system experimental emulation and model validation
Name and address of employer **U.S. Department of Energy (DOE) – NETL**, 3610, Collins Ferry Road, Morgantown, WV 26507-0880, USA
Type of business or sector Research

Dates From July 2004 to November 2004
Occupation or position held Consultant
Main activities and responsibilities Support to the Development of a Model of an High Temperature Hybrid System
Name and address of employer University of Genoa – DiMSET, 1, via Montallegro, 16145, Genova
Type of business or sector Research

Education and training

Dates From March 2003 to May 2006
Title of qualification awarded Ph.D. in Mechanical Engineering, Fluid Machine curriculum
Principal subjects/occupational skills covered Turbomachinery, Energy Systems, Fuel Cells, Hybrid Systems, Control Systems, experimental experience on ejectors and turbomachines, participations at international conferences with paper presentations.
Ph.D Thesis: "Transient Analysis of Solid Oxide Fuel Cell Hybrid Plants and Control System Development", Supervisor: Prof. Aristide F. Massardo.
Name and type of organisation providing education and training University of Genoa, 5, via Balbi, 16126, Genova

Dates April 2004
Title of qualification awarded Certificate of frequency
Principal subjects/occupational skills covered Numerical Fluid Dynamic: Basis, Recent Developments, Applications
Name and type of organisation providing education and training Laboratory for Modelling and Scientific Computing (MOX) – Dipartimento di Matematica "F. Brioschi", Politecnico di Milano, 9, via Bonardi, 20133, Milano

Dates From March 2002 to May 2002
Title of qualification awarded Certificate of frequency and mark

Principal subjects/occupational skills covered	Reliability and Quality Certification of the Mechanical Constructions
Name and type of organisation providing education and training	Welding Italian Institute, 15, Lungobisagno Istria, 16141, Genova
Level in national or international classification	Mark: 30/30
Dates	From September 1997 to January 2003
Title of qualification awarded	Degree in Mechanical Engineering (five year curriculum)
Principal subjects/occupational skills covered	Basis subjects, building science, mechanical technology, electrotechnology, applied mechanics, machines, mechanical plants, internal combustion engines, vehicle mechanics, energy systems. Thesis title: "Dynamic Model of the Anodic Side Recirculation Circuit of Solid Oxide Fuel Cells in Hybrid Systems". Supervisor: Prof. Aristide F. Massardo
Name and type of organisation providing education and training	University of Genoa, 5, via Balbi, 16126, Genova
Level in national or international classification	Mark: 110/110 with honours
Dates	From September 1992 to July 1997
Title of qualification awarded	High School Degree
Principal subjects/occupational skills covered	Italian expression and literature, math, science, Latin language and literature, English language and literature.
Name and type of organisation providing education and training	Liceo Scientifico Statale "E. Amaldi", 9, via Mameli, 15067, Novi Ligure (AL)
Level in national or international classification	Mark: 60/60

Personal skills and competences

Mother tongue(s) **Italian**

Other language(s)

Self-assessment

European level ()*

English

French

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
B2	Independent user	B2	Independent user	B2	Independent user	B2	Independent user	C1	Proficient user
A1	Basic user	A1	Basic user	A1	Basic user	A1	Basic user	A1	Basic user

(*) *Common European Framework of Reference for Languages*

Social skills and competences

Capability to work in team acquired in different situations (Ph.D., stage at DOE, researcher at Rolls-Royce Fuel Cell Systems Ltd., other collaborations inside European projects) where it was necessary to work inside a multicultural environment and with high flexibility conditions.

Organisational skills and competences

Capability of people coordination acquired as co-supervisor of master theses. Experience in the development of European integrated projects. Capability to work under stress conditions because of deadlines.

Technical skills and competences

During the work experiences, the following technical skills and competences have been acquired:

- Installation and management of facilities for experimental plants (heaters, servo-controlled valves, pumps, etc.)
- Installation and management of measurement instrumentation (thermocouples, pressure transducers, mass flow rate and level meters, etc.)
- Personal computer maintenance
- Presentation of research papers at international conferences

Computer skills and competences	<p>During the Ph.D. course and the previous work experiences, the following computer skills and competences have been acquired:</p> <ul style="list-style-type: none"> • Operative systems: DOS, WINDOWS, LINUX • Programming languages: FORTRAN, C • Mathematical tools: MATLAB • Data acquisition: LabVIEW • CFD simulators: FLUENT (elementary level) • Mesh generators: Gambit (elementary level) • Multibody simulators: DADS • Computer Aided Design: AUTOCAD, ProE20, Solid Works • Internet: Netscape, Explorer, Outlook Express, Eudora • Editor: OFFICE
Artistic skills and competences	Guitar player at the "S. Antonio" parish of Novi Ligure (AL)
Other skills and competences	Personal hobbies: trekking, cycling, fishing
Military service	Duty performed
Publications (papers)	<p>2004</p> <ol style="list-style-type: none"> 1 Ferrari M. L., Traverso A., Massardo A. F., 2004, "Transient Analysis of Solid Oxide Fuel Cell Hybrids. Part B: Anode Recirculation Model", GT2004-53716, ASME Turbo Expo 2004, Vienna, Austria. 2 Magistri L., Ferrari M. L., Traverso A., Costamagna P., Massardo A. F., 2004, "Transient Analysis of Solid Oxide Fuel Cell Hybrids. Part C: Whole Cycle Model", GT2004-53845, ASME Turbo Expo 2004, Vienna, Austria. <p>2005</p> <ol style="list-style-type: none"> 3 Ferrari M. L., Traverso A., Magistri L., Massardo A. F., 2005, "Influence of the Anodic Recirculation Transient Behaviour on the SOFC Hybrid System Performance", <i>Journal of Power Sources</i>, Elsevier, Vol. 149, pp. 22-32. 4 Ferrari M. L., Magistri L., Traverso A., Massardo A. F., 2005, "Control System for Solid Oxide Fuel Cell Hybrid Systems", GT2005-68102, ASME Turbo Expo 2005, Reno, Nevada, USA. <p>2006</p> <ol style="list-style-type: none"> 5 Ferrari M. L., Pascenti M., Massardo A. F., 2006, "Experimental Validation of an Unsteady Ejector Model for Hybrid Systems", GT2006-90447, ASME Turbo Expo 2006, Barcelona, Spain, winner of Best Paper Award for the committee "Cycle Innovations". 6 Ferrari M. L., Bernardi D., Massardo A. F., 2006, "Design and Testing of Ejectors for High Temperature Fuel Cell Hybrid Systems", <i>Journal of Fuel Cell Science and Technology</i>, Vol. 3, pp. 284-291. 7 Traverso A., Ferrari M. L., Pascenti M., Massardo A. F., 2006, "Physical Simulator of Start-up for Hybrid System Cathode Side", FUELCELL2006-97051, ASME Fuel Cell Conference, Irvine, California, USA. <p>2007</p> <ol style="list-style-type: none"> 8 Pascenti M., Ferrari M. L., Magistri L., Massardo A. F., 2007, "Micro Gas Turbine Based Test Rig for Hybrid System Emulation", ASME Paper GT2007-27075, ASME Turbo Expo 2007, Montreal, Canada. 9 Ferrari M. L., Liese E., Tucker D., Lawson L., Traverso A., Massardo A. F., 2007, "Transient Modeling of the NETL Hybrid Fuel Cell/Gas Turbine Facility and Experimental Validation", <i>Journal of Engineering for Gas Turbines and Power</i>, Vol. 129, pp. 1012-1019. 10 Ferrari M. L., Traverso A., Pascenti M., Massardo A. F., 2007, "Early Start-up of SOFC Hybrid Systems with Ejector Cathodic Recirculation: Experimental Results and Model Verification", <i>Proceedings of the Institution of Mechanical Engineers, Part A, Journal of Power and Energy</i>, Vol. 221, pp. 627-635. 11 Ferrari M. L., Pascenti M., Magistri L., Massardo A. F., 2007, "A General Purpose Test Rig for Innovative Cycles Based on a 100 kWe Micro Gas Turbine", IGTC2007-TS-015, International Gas Turbine Congress 2007, Tokyo, Japan. <p>2008</p> <ol style="list-style-type: none"> 12 Ferrari M. L., Pascenti M., Magistri L., Massardo A. F., 2008, "Emulation of Hybrid System Start-up and Shutdown Phases with a Micro Gas Turbine Based Test Rig", ASME Paper GT2008-50617, ASME Turbo Expo 2008, Berlin, Germany.

- 13 Ghigliazza F., Traverso A., **Ferrari M. L.**, Wingate J., 2008, "Multi-Purpose Model of SOFC Hybrid Systems", ASME Paper GT2008-50562, ASME Turbo Expo 2008, Berlin, Germany.
- 14 **Ferrari M. L.**, Pascenti M., Massardo A. F., 2008, "Ejector Model for High Temperature Fuel Cell Hybrid Systems: Experimental Validation at Steady-State and Dynamic Conditions", *Journal of Fuel Cell Science and Technology*, Vol. 5, pp. 041005_1-7.
- 2009**
- 15 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2009, "Hybrid System Emulator Enhancement: Anodic Circuit Design", ASME Paper ICEPAG2009-1041, International Colloquium on Environmentally Preferred Advanced Power Generation 2009, Newport Beach, California, USA.
- 16 Pascenti M., **Ferrari M. L.**, Cafaro S., 2009, "Emulatore celle a combustibile: controllo dinamico temperature e pressione stack, monitoraggio remoto impianto ibrido con microturbina", NIDays09, Forum tecnologico sulla progettazione grafica di sistemi, pp. 109-111, Fiera Milano Editore.
- 17 Ghigliazza F., Traverso A., Massardo A. F., Wingate J., **Ferrari M. L.**, 2009, "Generic Real-Time Modeling of Solid Oxide Fuel Cell Hybrid Systems", FC-08-1019, *Journal of Fuel Cell Science and Technology*, Vol. 6, pp. 021312_1-7.
- 18 **Ferrari M. L.**, Pascenti M., Bertone R., Magistri L., 2009, "Hybrid Simulation Facility Based on Commercial 100 kWe Micro Gas Turbine", FC-07-1134, *Journal of Fuel Cell Science and Technology*, Vol. 6, pp. 031008_1-8.
- 19 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2009, "Micro Gas Turbine Recuperator: Steady-State and Transient Experimental Investigation", ASME Paper GT2009-59172, ASME Turbo Expo 2009, Orlando, Florida, USA (accepted for publication on ASME Transactions).
- 20 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2009, "A Micro Gas Turbine Based Test Rig for Educational Purposes", ASME Paper GT2009-59138, ASME Turbo Expo 2009, Orlando, Florida, USA.
- 21 Cafaro S., Traverso A., **Ferrari M. L.**, Massardo A. F., 2009, "Performance Monitoring of Gas Turbine Components: a Real Case Study Using a Micro Gas Turbine Test Rig", ASME Paper GT2009-59059, ASME Turbo Expo 2009, Orlando, Florida, USA.
- 2010**
- 22 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2010, "Micro Gas Turbine Recuperator: Steady-State and Transient Experimental Investigation", GTP-09-1041, *Journal of Engineering for Gas Turbines and Power*, Vol. 132, pp. 022301_1-8, New York, USA, ISSN: 0742-4795.
- 23 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2010, "A Micro Gas Turbine Based Test Rig for Educational Purposes", GTP-09-1050, *Journal of Engineering for Gas Turbines and Power*, Vol. 132, pp. 024502_1-5, New York, USA, ISSN: 0742-4795.
- 24 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2010, "Hybrid System Test Rig: Start-up and Shutdown Physical Emulation", *Journal of Fuel Cell Science and Technology*, Vol. 7, pp. 021005_1-7.
- 25 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2010, "Analysis of the Interaction Between Cathode and Anode Sides With a Hybrid System Emulator Test Rig", ASME Paper ICEPAG2010-3435, International Colloquium on Environmentally Preferred Advanced Power Generation 2010, Costa Mesa, California, USA.
- 26 **Ferrari M. L.**, Sorce A., Pascenti M., Massardo A. F., 2010, "Experimental Investigation of the Dynamic Performance of a Micro Gas Turbine Recuperator Including Innovative Cycle Configurations", ASME Paper GT2010-22299, ASME Turbo Expo 2010, Glasgow, UK.
- 2011**
- 27 **Ferrari M. L.**, Pascenti M., Magistri L., Massardo A. F., 2011, "MGT/HTFC Hybrid System Emulator Test Rig: Experimental Investigation on the Anodic Recirculation System", *Journal of Fuel Cell Science and Technology*, Vol. 8, pp. 021012_1-9.
- 28 **Ferrari M. L.**, 2011, "Solid Oxide Fuel Cell Hybrid System: Control Strategy for Stand-Alone Configurations", POWER-D-10-01768, *Journal of Power Sources*, Elsevier, Vol. 196(5), pp. 2682-2690.
- 29 **Ferrari M. L.**, Pascenti M., Traverso A. N., Massardo A. F., 2011, "Hybrid System Test Rig: Chemical Composition Emulation With Steam Injection", Proceedings of International Conference on Applied Energy 2011, pp. 2821-2832, Perugia, Italy.
- 30 Caratozzolo F., **Ferrari M. L.**, Traverso A., Massardo A. F., 2011, "Real-Time Hardware-in-the-Loop Tool for a Fuel Cell Hybrid System Emulator Test Rig", accepted for publication at ASME 2011 5th International Conference on Energy Sustainability & 9th Fuel Cell Science, Engineering and Technology Conference, ASME Paper ESFuelCell2011-54315.

Publications (chapters in books)	<p>2008</p> <p>1 Liese E. A., Ferrari M. L., VanOsdol J., Tucker D., Gemmen R. S., 2008, "Modeling of Combined SOFC and Turbine Power Systems", chapter n. 8 of book: "Modeling Solid Oxide Fuel Cells: Methods, Procedures and Techniques", pp. 239-268, Springer Science, ISBN-13: 978-1-4020-6994-9.</p> <p>2011</p> <p>2 Ferrari M. L., Pascenti M., 2011, "Flexible Micro Gas Turbine Rig for Tests on Advanced Energy Systems", accepted for publication on the book: "Gas Turbines", INTECH, Rijeka, Croatia, ISBN 978-953-308-68-4</p>
Patents	<p>2005</p> <p>1 Italian Patent, "Non Intrusive Heater for Fluids", Traverso A., Ferrari M. L., Massardo A. F., Pascenti M., deposit n. TO2005A000912.</p> <p>2 Italian Patent, "Turbovir: Hardware Simulation of Virtual Turbomachinery", 2005, Traverso A., Ferrari M. L., Massardo A. F., Pascenti M., deposit n. GE2005A00092.</p>
Additional information	<p>Winner of ASME Best Paper Award 2006. Prize to best paper of the committee "Cycle Innovations", presented at ASME TURBO EXPO 2006, Barcelona, Spain.</p>