JOB APPLIED FOR Energy, Research & Development

PROFESSIONAL EXPERIENCE

11/11 – 11/14 PhD position
Sapienza University of Rome – Mechanical and Aerospace Department
- Experimental analysis of the two-phase flow in the anode channel of a Direct Methanol Fuel Cell

02/12 – 01/13 Researcher fellow
Sapienza University of Rome – Mechanical and Aerospace Department
- Numerical study and modelling of Proton Exchange Membrane Fuel Cell

06/11 – 09/11 Energy consultant
Altenergia srl – Renewable energy solutions
- Energy consumption assessment and upgrading of sports buildings based on renewable energy applications

EDUCATION AND TRAINING

11/11 – 01/15 PhD course in Theoretical and Applied Mechanics
Sapienza University of Rome – Mechanical and Aerospace Department
Thesis: " ***Experimental Investigation of the Two-Phase Flow in a Direct Methanol Fuel Cell***"

Main subjects: *The main objective of the research is the experimental assessment of the influence of the CO_2 bubbles generation in the anode channels of a DMFC under different operating conditions such as flow rates, current density and molar concentration. During the experiments, the behaviour of the cell at different current density regimes was determined. The CO_2 bubbles and slug generation mechanisms were characterized and a map of the critical two-phase flow regimes, with flow rates and current density dependence, was established.*

03/09 – 10/11 Energy Engineering Master Degree – Renewable Energy Sources

Sapienza University of Rome – Nuclear Energy & Energy Conversion Department 110/110 lode

Thesis: " ***Modeling and Analysis of a CHP (Combined Heat & Power) system based on SOFCs (Solid Oxide Fuel Cells) and powered by biogas***"

Main subjects: *Modeling, analysis and design of near-zero-emission energy systems based on renewables and energy saving. Analysis and balance of plant of thermal and electric energy plants. Analysis and design of combustion chambers and heat exchangers in energy power plants. Study of the generation and distribution system of electric power. Design of building air conditioning for thermo-hygrometric comfort.*

Courses

- Electric power generation form renewable energy sources 30/30
- Bioclimatic design of buildings 30/30
- Heat power generation and distribution 28/30
- Energy systems 27/30
- Laboratory of buildings air conditioning design 30/30
- Elements of electric power stations and plants 30/30
- Electrical machines and drives 30/30
- Laboratory of thermomechanical measurements 28/30
- Thermal power plants 24/30
- Reactor thermotechnics 30/30
- Laboratory of experimental aerodynamics 30/30
- Diagnostic of power plants 30/30
- Machine-Environment interaction 29/30

08/10 – 02/11 Erasmus

TU/e – Eindhoven, University of Technology

Master program: *Sustainable Energy Technology*

Exams:

- Wind energy 7/10
- Thermal energy storage 6/10
- Energy conversion 9/10
- Renewable energy sources 6/10

Attended courses:

- Energy & economy
- Sustainable energy in the built environment

09/04 – 12/08 Energy engineering degree

Sapienza University of Rome – Nuclear Energy & Energy Conversion Department Thesis: " ***Design of a solar power plant with parabolic trough technology***" 100/110

COMPLEMENTARY SKILLS

Mother tongue(s): Italian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	C2	B1	B1	C1

Computer
- Aspen Plus, master degree thesis;
- AutoCad 3D: *Bioclimatic design of buildings, Laboratory of buildings air conditioning design;*
- Autodesk Inventor, *Fuel Cell design;*
- Casanova, *Sustainable energy in the built environment;*
- Comsol Multiphysics, *PEMFC & DMFC modeling ;*
- Davis, *μPIV measurements on the fuel cells channels; for μPIV(μ-Particles Image Velocimetry) analysis (during Ph.D.);*
- Labview, Core 1 and Core 2; *Experimental measurements with the DMFC test bench;*
- Matlab & Simulink, *Applied mechanics, Wind energy, Fuel Cell Modeling, Image preprocessing*
- MCimpianti, *Laboratory of buildings air conditioning design;*
- PIVlab, *μPIV measurements on the fuel cells channels;*
- Relux, *Bioclimatic design of buildings;*
- Rhinoceros, *Fuel Cell design ;*

Laboratory
- Fuel cell assembly;
- Test bench assembly for pressure, temperature, flow rate, and μPIV measurements;

Driving licence: ▪ B

ADDITIONAL INFORMATION

Publications

A. Calabriso, S. G. Santori, L. Del Zotto, F. Rispoli e L. Cedola, Performance investigation of passive direct methanol fuel cell in different structural configuration, *Journal of Cleaner Energy Production*, Vol 88: 23-28, 2015. (DOI 10.1016/j.jclepro.2014.06.087)

A. Calabriso, S. G. Santori, L. Del Zotto, F. Rispoli e L. Cedola, Development of improved passive configurations of DMFC with reduced contact resistance, Energy Procedia, Volume 61, 2014, Pages 2654-2657

Speaker at conferences

A. Calabriso, D. Borello, G. P. Romano, μ-PIV investigation of the two-phase flow in the anode channels of a Direct Methanol Fuel Cell, *ASME-ATI-UIT 2015 Conference, May 17-20, 2015, Napoli, Italy.*

A. Calabriso, S. G. Santori, L. Del Zotto, D. Borello e L. Cedola, Assessment of CO2 bubble generation influence on direct methanol fuel cell performance, *7th International Conference on Applied Energy, ICAE 2015, March 28-31, 2015, Abu Dhabi, United Arab Emirates.*

A. Calabriso, S. G. Santori, L. Del Zotto, D. Borello e L. Cedola, Assessment of a Direct Methanol Fuel Cell under different operating conditions, *Scientific Advances in Fuel Cells, FUCE 2014, April 2-4, 2014, Amsterdam, Netherlands.*

A. Calabriso, S. G. Santori, L. Del Zotto, D. Borello e L. Cedola, Assessment of structural parameters in Passive Direct Methanol Fuel Cell, *Scientific Advances in Fuel Cells, FUCE 2014, April 2-4, 2014, Amsterdam, Netherlands.*

A. Calabriso, D. Borello, F. Rispoli, Simulation of fluid dynamic and electric field in a direct methanol fuel cell, *5th International Conference on Applied Energy, ICAE 2013, July 1-4, 2013, Pretoria, South Africa, Paper ID: ICAE2013-058.*

A. Calabriso, A. Marchegiani, L. Cedola, L. Del Zotto e M. Bassetti, Analisi del funzionamento di una Direct Methanol Proton Exchange Memebrane Fuel Cell soggetta all'effetto del fenomeno di cross-over e all'influenza della temperature, *67° Congresso Nazionale ATI, 11-14 Settembre, 2012, Trieste,Italy*.

A. Calabriso, A. Marchegiani, L. Cedola, L. Del Zotto e M. Bassetti, Analisi Termofluidodinamica di una Proton Exchange Memebrane Fuel Cell (PEMFC) in Ambiente Comsol, *67° Congresso Nazionale ATI, 11-14 Settembre, 2012, Trieste, Italy*.

Conference proceedings

A. Calabriso, S. G. Santori, L. Del Zotto, F. Rispoli e L. Cedola, Performance investigation of passive direct methanol fuel cell in different structural configuration, *Proceedings of 8th Conference on Sustainable Development of Energy, Water, and Environment System*, 2013, Dubrovnik, Croatia.

D. Borello, A. Calabriso, L. Cedola, L. Del Zotto, S.G. Santori, Development of improved passive configurations of DMFC with reduced contact resistance, *Proceedings of 6th International Conference on Apllied Energy*, 2014, Taipei, Taiwan.

D. Borello, A. Calabriso, A. Marchegiani, F. Rispoli, Assessment of innovative reforming procedures for biogas obtained from organic fraction of solid municipal waste, *Proceedings of 4th International Symposium on Energy from Biomass and Waste*, 2012, Venezia.

Teaching experience

Sapienza University of Rome, monographic reading "Direct Methanol Fuel Cells" for the Energy Sistems II class (Energy Engineering course), lecturer Prof. Franco Rispoli

Sapienza University of Rome, monographic reading "Laboratory of Direct Methanol Fuel Cells" for the Energy Sistems class (Environment and Land engineering), lecturer Prof. Luca Cedola

Assistant supervisor

Master Thesis - Anàlisis experimental del funcionamiento de una celda de combustible de metanol directo en diferentes condiciones operativas - *'Experimental analysis of a Direct Methanol Fuel Cell under different operative conditions'* – Author A. Grande Ruiz, Home University Supervisor F. J. Pino Lucena, Host University Supervisor D. Borello, Assistant supervisor A. Calabriso. Home University: Escula Técnica Superior de Ingenieria; Host University: Sapienza Università di Roma. 2014.

Bachelor thesis - Confronto tra configurazione passiva ed attiva di celle a combustibile alimentate a metanolo diretto - *'Active and Passive Direct Methanol Fuel Cells Comparison'* –Alessandro Laviano, Supervisor Domenico Borello, Assistants Supervisor A. Calabriso. Sapienza Università di Roma, 2013.

Bachelor thesis - Studio dello stato dell'arte e analisi sperimentale di un prototipo di cella a combustibile passiva alimentata a metanolo diretto - *'Analysis of the state of art and experimental study of a Passive Direct Methanol Fuel Cell'* – Alessia Falcone, Supervisor Vincenzo Naso, Assistants Supervisor L. Del Zotto, S. Santori & A. Calabriso. Sapienza Università di Roma, 2012.

Bachelor thesis - Analisi funzionale di celle a combustibile PEM a funzionamento reversibile - *'Bibliographical analysis of Regenerative Proton Exchange Membrane Fuel Cell'* – Enrico Miletto, Supervisor D. Borello, Assistant Supervisor A. Calabriso. Sapienza Università di Roma, 2011.

DATA

16/03/2015

FIRMA

Andrea Calabriso

ELENCO PUBBLICAZIONI:

1. A. Calabriso, S. G. Santori, L. Del Zotto, F. Rispoli e L. Cedola, Performance investigation of passive direct methanol fuel cell in different structural configuration, Journal of Cleaner Energy Production, Vol 88: 23-28, 2015. (DOI 10.1016/j.jclepro.2014.06.087)
2. A. Calabriso, S. G. Santori, L. Del Zotto, F. Rispoli e L. Cedola, Development of improved passive configurations of DMFC with reduced contact resistance, Energy Procedia, Volume 61, 2014, Pages 2654-2657.

CONFERENZE:

3. A. Calabriso, S. G. Santori, L. Del Zotto, D. Borello e L. Cedola, Assessment of CO2 bubble generation influence on direct methanol fuel cell performance, 7th International Conference on Applied Energy, ICAE 2015, March 28-31, 2015, Abu Dhabi, United Arab Emirates.

4. A. Calabriso, D. Borello, G. P. Romano, μ-PIV investigation of the two-phase flow in the anode channels of a Direct Methanol Fuel Cell, ASME-ATI-UIT 2015 Conference, May 17-20, 2015, Napoli, Italy.

5. A. Calabriso, S. G. Santori, L. Del Zotto, D. Borello e L. Cedola, Assessment of a Direct Methanol Fuel Cell under different operating conditions, Scientific Advances in Fuel Cells, FUCE 2014, April 2-4, 2014, Amsterdam, Netherlands.

6. A. Calabriso, S. G. Santori, L. Del Zotto, D. Borello e L. Cedola, Assessment of structural parameters in Passive Direct Methanol Fuel Cell, Scientific Advances in Fuel Cells, FUCE 2014, April 2-4, 2014, Amsterdam, Netherlands.

7. Calabriso A., Borello D., Marchegiani A., Cedola L., Del Zotto L., Analisi del funzionamento di una DMFC soggetta al fenomeno del cross-over, 67° Congresso Nazionale ATI, 2012.

8. Calabriso A., Borello D., Di Carlo A., Cedola L., Franco R., *Analisi termofluidodinamica di una Proton Exchange Membrane Fuel Cell in ambiente COMSOL*, 67° Congresso Nazionale ATI, 2012.

9. Calabriso A., Borello D., Marchegiani A., Rispoli F., *Assessment of innovative reforming procedures for biogas obtained from organic fraction of solid municipal waste*, Fourth International Symposium On Energy From Biomass And Waste, 2012.

10. Calabriso A., Borello D., Cedola L., Rispoli F., *Simulation of fluid dynamic and electric field in a direct methanol fuel cell*, International Conference on Applied Energy, 2013.