

Europass Curriculum Vitae

Personal information

First name(s) / Surname(s) **Marco Fossa**
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E-mail marco.fossa@unige.it
Nationality Italian
Date of birth 21/3/1964
Gender male

Occupational field **Research and Teaching (University Level)**

Work experience

Dates January 1992-may 1992
Occupation or position held Scientific Associate
Main activities and responsibilities
Name and address of employer Cern, European Organization for Nuclear Research
Type of business or sector Research
Dates 1993-2007
Occupation or position held Research Professor
Main activities and responsibilities Research and Teaching
Name and address of employer University of Genova, Italy
Type of business or sector University
Dates 2006
Occupation or position held Visiting Professor
Main activities and responsibilities Research and Teaching
Name and address of employer The University of the New South Wales, Sydney, Australia
Type of business or sector University
Dates 2007-present
Occupation or position held Associate Professor
Main activities and responsibilities Research and Teaching
Name and address of employer University of Genova, Italy
Type of business or sector University

Education and training

Dates 1990-1993 Doctorate (3 yrs course)
Title of qualification awarded PhD in Thermal Engineering
Principal subjects/occupational skills covered Thermal Engineering and Heat Transfer
Name and type of organisation providing education and training University of Genova, Italy
Dates 1984-1989 Mechanical Engineering (5 yrs degree course)

Title of qualification awarded | Mechanical Engineer
 Principal subjects/occupational skills covered | Mechanical Engineering
 Name and type of organisation providing education and training | University of Genova, Italy

Personal skills and competences

Teaching, Modelling, Organising and carrying out Research activities in the field of Thermal Sciences and Thermal Engineering

Mother tongue(s) | **Italian**

Other language(s) | **English, French**

Self-assessment
European level ()*

Language

Language

Language

	Understanding		Speaking			Writing
	Listening	Reading	Spoken interaction	Spoken production		
English	C1	C1	C1	C1	C1	C1
French	C1	C1	B2	B2	B2	A2
Spanish	B1	B1	A2	A2	A2	A1

Additional information

Author of about 120 scientific papers in the field of Thermal Engineering.
 Bibliometry (Scopus): h-index=10, overall number of citations about 400

Associate Professor at the University of Genova, Italy, Faculty of Engineering, of:
 Applied Thermodynamics, Renewable Energies, Solar and Geothermal Energy

International collaborations and Agreement: University of Lyon and Insa Lyon, EdF Le Renardieres, Cern, Polytech Savoie, University of the New South Wales (Sydney), Royal Institute of Technology KTH Stockholm, Polytech Montreal

Visiting Appointments:

The University of the New South Wales, Sydney (as Visiting Professor): 2006, 2008, 2010, 2012
 Cern, Geneva: 1991, 1992, 1997-2005 (CMS particle detector project)
 University of Nottingham, SChEME, 2001

Member of international PhD juries: Unsw Sydney (2011 and 2012), Lyon 1 (2007, 2011 and 2013), Tetouan (2010)

Director of Master courses at the University of Genova:

(2010 and 2011) Design of Geothermal heat Pump systems ("Progettazione di Sistemi Geotermici a Bassa Entalpia per Applicazioni a Pompa di Calore);
 (2009 and 2010) Building Energy Certification

Research grants received In the past five years: about 130k€

Annexes

Scientific publications in the last 6 years, Scientific publications on geothermal heat pump applications

Annex 1

Marco Fossa: Publications, years 2008-2013

- 1) M. FOSSA, C. Ménézo, and E. Leonardi, Experimental Natural Convection On Vertical Surfaces For Building Integrated Photovoltaic (Bipv) Applications, *Experimental Thermal and Fluid Science*, vol. 32, pp.980-990, 2008
- 2) J. Vareilles, S. Giroux-Julien, C.Ménézo, M. FOSSA, E. Leonardi, Numerical And Experimental Investigation Of Natural Convection In Double Facades, CHT-08, Int. Conf. Advances in Computational Heat Transfer, Marrakech, May 2008
- 3) M. FOSSA, G.Tanda, Pool Fire Model Comparison for Radiation Evaluation in Case of Fire in Tank Farms, CHT-08, Int. Conf. Advances in Computational Heat Transfer, Marrakech, May 2008
- 4) M.FOSSA, F.Devia, a Model for Radiation Evaluation and Cooling System Design in Case of Fire in Tank Farms, *Fire Safety Journal*, vol. 43, pp. 42-49, 2008
- 5) A. Marchitto, F. Devia, M. FOSSA, G. Guglielmini, C. Schenone, Experiments on Two-Phase Flow Distribution inside Parallel Channels of Compact Heat Exchangers, *Int. J. Multiphase Flow*, vol. 34, pp. 128-144, 2008
- 6) M.FOSSA, G.Tanda, Qualitative Observations and Measurements of Free Convection Frost Formation in Vertical Channels, 19th Int. Symp. on Transport Phenomena, 17-21 August, 2008, Reykjavik, ICELAND
- 7) A. Marchitto, M. FOSSA, G. Guglielmini, the Effect of Header Geometry on Air Water Two-Phase Flow Distribution in Parallel Vertical Channels, Int. Conf. Multiphase Flow in Industrial Plants, September 7-10, 2008, Palermo, Italy
- 8) M. FOSSA, A. Marchitto, A simplified Approach for Predicting the Intermittent Behaviour of Gas-Liquid Mixtures in Pipes, *Asme Journal of Flow Engineering*, vol. 131, 2009
- 9) G.Tanda, M. FOSSA, E.Leonardi, C.Menezo, Natural Convection Heat Transfer from Staggered Discrete Thermal Sources: State-of-the-Art, Int. Symp. on Convective Heat and Mass Transfer in Sustainable Energy, April 2009, Tunisia.
- 10) A.Marchitto, M.FOSSA, G.Guglielmini, Distribution of Air-Water Mixtures in Parallel Vertical Channels as an Effect of the Header Geometry, *Experimental Thermal and Fluid Science*, Vol. 33, 5, pp. 895-902, 2009
- 11) S.Giroux-Julien, C.Ménézo, J.Vareilles, H.Pabiou, M.FOSSA, and E.Leonardi, Natural Convection in Nonuniformly Heated Channel: application To Photovoltaic Facades, *Computational Thermal Sciences*, vol. 1, pp. 231-258, 2009
- 12) M.FOSSA, O.Cauret, M.Bernier, Comparing the Thermal Performance of Ground Heat Exchangers of Various Lengths, Effstock Int. Conference, Stockholm, June 2009.
- 13) C.Menezo ,M.FOSSA, H.Pabiou, S.Giroux-Julien C, M.Amara, V.Timchenko, G.Tanda, Optimisation des Echanges Convectifs pour l'integration de Composants Photovoltaiques au sein du cadre Bati et la Conception de Nouveaux Capteurs Solaires Hybrides Photovoltaïque-Thermiques, 1^{er} Colloque International Francophone d'Energétique et Mécanique, CIFEM 2010, pp. 196-203, Saly, (Sénégal), 17-19 may 2010.
- 14) M.FOSSA, G.Tanda, Frost Formation in Vertical Channels Under Natural Convection, *Int. J. Multiphase Flow*, vol. 36, pp. 210-220, 2010
- 15) A.Marchitto, M.FOSSA, G.Guglielmini, the Effect of the Flow Direction Inside the Header On Two-phase Flow Distribution in Parallel Vertical Channels, ASME-ATI-UIT Conference, Thermal and Environmental Issues in Energy Systems, Sorrento, Italy, 16-19 may, 2010.
- 16) M.FOSSA, the Temperature Penalty Approach to the Design of Borehole Heat Exchangers for Heat Pump Applications, *Energy and Buildings*, vol. 43; p. 1473-1479, 2011.
- 17) M.FOSSA, D. Dalla Pietà, Numerical Evaluation of Bhe Thermal Resistance for Ground Coupled Heat Pump Applications, Alternative Sources/Sinks for Heat Pump and Air-Conditioning Conference, Padova, 5-7 Aprile 2011.
- 18) M.FOSSA, F.Minchio, Comparison of Borehole Heat Exchangers Response Based On Different Hourly Load Models, Alternative Sources/Sinks for Heat Pump and Air-Conditioning Conference, Padova, 5-7 Aprile 2011
- 19) M.FOSSA, A Fast Method for Evaluating the Performance of Complex Arrangements of Borehole Heat Exchangers , *Ashrae Hvac & Res. J.* vol. 17:6, p. 948-958, 2011
- 20) S.Lazzari, A.Priarone, M.FOSSA, Territorial mapping for the exploitation of low-enthalpy geothermal resources, UIT Conference 2011, p.485-490, 2011
- 21) M.FOSSA, G.Guglielmini, A.Marchitto, Effects of The Presence of Protrusions on The Air-Water Distribution in Parallel Vertical Channels, Int. Conf. Multiphase Flow in Industrial Plants 2011.
- 22) A.Marchitto, M.FOSSA, G.Guglielmini, the Effect of the Flow Direction Inside the Header On Two-phase Flow Distribution in Parallel Vertical Channels, *Applied Thermal Eng. J.*, 36 pp. 245-251, 2012
- 23) M.FOSSA, D.Dalla Pietà, Geotermia, Analisi Tempovariante: Dinamica del Terreno e Dimensionamento degli Impianti a Pompa di Calore Geotermica, *Aicarr Journal*, pp. 62-66, 2012.
- 24) M.FOSSA, Focus Geotermia, Il Giornale dell'Ingegnere, pp. 12-15, giugno 2012.

- 25) M.FOSSA, C.De Domenico, Astronomic Sun Tracker Performance and Solar Energy Collection Comparison for Different Italian Sites, 7th IEEE SOSE Conference, pp. 65-70, Genova, Italy 16-19 July 2012.
- 26) M.FOSSA, D.Rolando, Ground properties evaluation for the design of geothermal heat pump systems and uncertainty measurement during the Thermal Response Test, pp. 180-185, 7th IEEE SOSE Conference, pp. 119-124, Genova, Italy 16-19 July 2012.
- 27) G.E. Lau, V. Timchenko, C. Ménézo, S. Giroux-Julien, M. FOSSA, E. Sanvicente, J. Reizes, G.H. Yeoh, Numerical and Experimental Investigation of Unsteady Natural Convection in an Open Channel, Proceedings of CHT-12 ICHMT International Symposium on Advances in Computational Heat Transfer, Bath, England, July 1-6, 2012.
- 28) G.E. Lau, V. Timchenko, C. Ménézo, S. Giroux-Julien, M. FOSSA, E. Sanvicente, J. Reizes, G.H. Yeoh, Numerical and Experimental Investigation of Unsteady Natural Convection in an Open Channel, Computational Thermal Science, 4 (5), pp 443–456, 2012.
- 29) J. Acuna, M.FOSSA, P.Monzo, B. Palm, Numerically Generated g-functions for Ground Coupled Heat Pump Applications , Comsol European Conference, Milan, 2012
- 30) Lau, G.E., Sanvicente, E., Yeoh, G.H., Timchenko, V. , FOSSA, M., Ménézo, C., Giroux-Julien, S., Modelling of Natural Convection in Vertical and Tilted Photovoltaic Applications, *Energy and Buildings*, vol. 55, pp. 810-822, 2012.
- 31) M.FOSSA, F.Minchio, The effect of borefield geometry and ground thermal load profile on hourly thermal response of geothermal heat pump systems, , *Energy*, Volume 51, n.1, pp. 323-329, 2013
- 32) M.FOSSA, D.Rolando (2013). An improved method for vertical geothermal borefield design using the Temperature Penalty approach. In: EGEC. Proceedings European Geothermal Congress. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 33) M.FOSSA, E.Paietta (2013). Comparison of Multiple Load Aggregation Algorithms for annual hourly simulations of geothermal heat pumps. In: Proc. Egc 2013. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 34) M.FOSSA, D.Rolando, A.Priarone, J.Vaccaro (2013). Numerical evaluation of the Ground Response to a Thermal Response Test experiment. In: Proceedings of EGC 2013. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 35) Monzo P, Acuña J., FOSSA M., Palm B. (2013). Numerical generation of the temperature response factors for a Borehole Heat Exchangers field. In: Proceedings EGC 2013. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 36) M.Misale, M.FOSSA, G.Tanda (2013). Experimental and numerical investigation of free convection in a vertical water channel. In: Proc. ExHFT-8. p. 1-7, P.J.Coelho, M.Costa, ISBN: 9789728620233, Lisbon, Portugal, 16 June 2013

Annex 2

Marco Fossa: Publications, Geothermal Heat Pump Applications

- 1) D. Dalla Pietà, M.FOSSA, Modeling and Design of Borehole Heat Exchangers for Ground-Source Heat Pump Applications, XXIV Congresso Nazionale UIT, Napoli 21-23, June 2006
- 2) D. Dalla Pietà, M.FOSSA, A Tool for Borehole Heat Exchanger Design for Ground-Source Heat Pump Applications, Climamed Conference 2007, pp. 527-543, Genova, September 2007.
- 3) M.FOSSA, O.Cauret, M.Bernier, Comparing the Thermal Performance of Ground Heat Exchangers of Various Lengths, Effstock Int. Conference, Stockholm, June 2009.
- 4) Channels, ASME-ATI-UIT Conference, Thermal and Environmental Issues in Energy Systems, Sorrento, Italy, 16-19 May, 2010.
- 5) M.FOSSA, the Temperature Penalty Approach to the Design of Borehole Heat Exchangers for Heat Pump Applications, *Energy and Buildings*, vol. 43; p. 1473-1479, 2011.
- 6) M.FOSSA, D. Dalla Pietà, Numerical Evaluation of Borehole Thermal Resistance for Ground Coupled Heat Pump Applications, Alternative Sources/Sinks for Heat Pump and Air-Conditioning Conference, Padova, 5-7 April 2011.
- 7) M.FOSSA, F.Minchio, Comparison of Borehole Heat Exchangers Response Based On Different Hourly Load Models, Alternative Sources/Sinks for Heat Pump and Air-Conditioning Conference, Padova, 5-7 April 2011
- 8) M.FOSSA, A Fast Method for Evaluating the Performance of Complex Arrangements of Borehole Heat Exchangers, *Ashrae Hvac & Res. J.* vol. 17:6, p. 948-958, 2011
- 9) S.Lazzari, A.Priarone, M.FOSSA, Territorial Mapping for the Exploitation of Low-Enthalpy Geothermal Resources, UIT Conference 2011, p.485-490, 2011
- 10) M.FOSSA, D.Dalla Pietà, Geotermia, Analisi Tempovariante: Dinamica del Terreno e Dimensionamento degli Impianti a Pompa di Calore Geotermica, *Aicarr Journal*, pp. 62-66, 2012.
- 11) M.FOSSA, Focus Geotermia, *Il Giornale dell'Ingegnere*, pp. 12-15, June 2012.
- 12) M.FOSSA, D.Rolando, Ground properties evaluation for the design of geothermal heat pump systems and uncertainty measurement during the Thermal Response Test, pp. 180-185, 7th IEEE SOSE Conference, pp. 119-124, Genova, Italy 16-19 July 2012.
- 13) J. Acuna, M.FOSSA, P.Monzo, B. Palm, Numerically Generated g-functions for Ground Coupled Heat Pump Applications, Comsol European Conference, Milan, 2012
- 14) M.FOSSA, F.Minchio, The effect of borefield geometry and ground thermal load profile on hourly thermal response of geothermal heat pump systems, *Energy*, Volume 51, n.1, pp. 323-329, 2013
- 15) M.FOSSA, D.Rolando. An improved method for vertical geothermal borefield design using the Temperature Penalty approach. In: EGEC. Proceedings European Geothermal Congress. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 16) M.FOSSA, E.Paietta. Comparison of Multiple Load Aggregation Algorithms for annual hourly simulations of geothermal heat pumps. In: Proc. European Geothermal Conference 2013. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 17) M.FOSSA, D.Rolando, A.Priarone, J.Vaccaro. Numerical evaluation of the Ground Response to a Thermal Response Test experiment. In: Proceedings of European Geothermal Conference 2013. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 18) Monzo P, Acuña J., FOSSA M., Palm B. (2013). Numerical generation of the temperature response factors for a Borehole Heat Exchangers field. In: Proceedings European Geothermal Conference 2013. p. 1-8, ISBN: 9782805202261, Pisa, 3/6/2013
- 19) M.FOSSA, D.Rolando, Fully analytical FLS solution for Fast Calculation of Temperature Response Factors in Geothermal Heat Pump Borefield Design, 11th Int. Energy Agency Heat Pump Conf., Montreal, May 12-16, 2014
- 20) M.FOSSA, D.Rolando, Improving the Ashrae Method for Vertical Geothermal Borefield Design, 11th Int. Energy Agency Heat Pump Conf., Montreal, May 12-16, 2014
- 21) M.FOSSA, D.Rolando, Improving the Ashrae Method for Vertical Geothermal Borefield Design, *Energy and Buildings*, vol. 93, pp. 315-323, 2015.