



## Curriculum Vitae

### Personal information

Surname / First name	<b>Franchini Giuseppe</b>
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Nationality	Italian
Date of birth	July 6, 1974

### Education and training

Graduated in Engineering at University of Bergamo (2000)

PhD in Energy at Politecnico Milano (2005)

### Work experience

Associate Professor of Energy Systems and Renewable Energy at Department of Engineering and Applied Sciences (University of Bergamo)

Researcher and Assistant Professor at the Department of Industrial Engineering (University of Bergamo) from 2005 to 2013

### Research activity and Technical competences

Prof. Giuseppe Franchini is author of about 80 papers of international relevance in the field of Energy Systems and Turbomachinery. The main topics of the research activity are:

1. Concentrated Solar Power
2. Solar Cooling systems
3. Modelling of Energy conversion systems
4. Thermo-Fluid Dynamics of Turbomachinery

Prof. Franchini participated within the University of Bergamo unit in the PRIN 2007 research project "So.Li.De. - Solar Cooling Devices" funded by the Ministry of Research and University. The project was coordinated by University of Florence and was focused on the development of solar cooling systems based on thermally driven absorption chillers.

In the period 2008-2010, Prof. Franchini was the scientific responsible for University of Bergamo unit in the European research program Intelligent Energy – Europe (IEE) "SOLAR COMBI + - Identification of most promising markets and promotion of standardised system configurations for the market entry of small scale combined solar heating & cooling applications (Contract N°: EIE/07/158/SI2.466793. Total budget: 970,000 EUR)".

In 2011 a research activity proposed by the research group of Prof. Franchini on the "Development of new solar driven technologies for air conditioning and water desalination" was funded (100,000 EUR) by the Italian Ministry for the Environment Land and Sea.

In 2012 the University of Bergamo EST research group received funding (600,000 EUR) to realize a “Solar Cooling and Desalination” laboratory, within a joint project (“RELAB – Renewable energy laboratory”) with Polytechnic of Milan, funded by Regione Lombardia.

In 2014 the research team of Prof. Franchini signed a research contract (390,000 EUR) with “K.A.CARE – King Abdullah City for Atomic and Renewable Energy”, a research institute of the Kingdom of Saudi Arabia. The funded project is finalized to promote a technology transfer on “CSP plant performance predictions and techno-economic analysis for solar cooling systems in Saudi Arabia”. The research group of University of Bergamo was selected in a competition among the most relevant international research institutions.

In 2015 the research team of Prof. Franchini signed a Memorandum of Understanding with “CTAER-Centro Tecnológico Avanzado de Energías Renovables”, to promote a collaboration between the research groups, to facilitate joint research, the use of research infrastructures and services, and to enable the exchange of experience.

In 2015, 2016 and 2017 Prof. Franchini was the group leader of approved research programs within the EU-funded research project “SFERA2-Solar Facilities for the European Research Area”:

- 2015: “Integration of Multi-Effect Distillation into Concentrated Solar Power plants” at the DESAL Facility of “CIEMAT-Plataforma Solar de Almeria”
- 2016: “Solar Combined Cooling and Power production: integration of absorption chillers into CSP plants” at the DESAL Facility of “CIEMAT-Plataforma Solar de Almeria”
- 2017: “Thermal Energy Storage systems in CSP plants operating with a load following strategy” at the MOSA facility of “CIEMAT-Plataforma Solar de Almeria”

**Mother Tongue**

Italian

**Other language(s)**

English, French

## Selection of publications

- G. Franchini, G. Brumana, A. Perdichizzi, "Performance Prediction of a Solar District Cooling System in Riyadh, Saudi Arabia - A Case Study", *Energy Conversion and Management*, 166 (2018), pp. 372-384, ISSN 0196-8904.
- S. Ravelli, G. Franchini, A. Perdichizzi, "Comparison of different CSP technologies for combined power and cooling production", *Renewable Energy*, Vol. 121C, January 2018, pp. 712-721, DOI: 10.1016/j.renene.2018.01.074.
- G. Franchini, G. Brumana, A. Perdichizzi, A. Shaheen, M. Bin Neshooq, S. Alfalasi, "Modeling, Construction and Monitoring of a Plus-Energy Building in Dubai", proceedings of ISES Solar World Congress 2017, Abu Dhabi (UAE), 29 Oct - 2 Nov 2017.
- G. Brumana, G. Franchini, E. Ghirardi, "Investigation of the Load-Following Capability of CSP Plants", *Energy Procedia* 148 (2018), pp. 615-622, (presented at 73° Congresso Nazionale ATI, 12-14 September 2018, Pisa1)
- G. Brumana, G. Franchini, A. Perdichizzi, "Design and Performance Prediction of an Energy+ Building in Dubai", *Energy Procedia*, Volume 126, pp. 155-162, (presented at 72° Congresso Nazionale ATI, 6-8 settembre 2017, Lecce)
- G. Franchini, G. Brumana, A. Perdichizzi, "Modeling, Construction and Monitoring of a Plus-Energy Building in Dubai", presented at ISES Solar World Congress 2017, Abu Dhabi (UAE), 29 Oct - 2 Nov 2017.
- S. Ravelli, G. Franchini, A. Perdichizzi, "Comparison of different CSP technologies for combined power and cooling production", *Renewable Energy*, January 2018.
- H.Sumayli, A. Al Zahrani, A. Bindaayel, A. Perdichizzi, G. Franchini, S. Ravelli, "Comparative Analysis of Different CSP Plant Configurations in Saudi Arabia", presented at SASG (Saudi Arabia Smart Grid) Conference 2016, Jeddah (KSA), 6-8 December 2016
- G. Brumana, G. Franchini, "Solar-Powered Air Conditioning for Buildings in Hot Climates: Desiccant Evaporative Cooling vs. Absorption Chiller-based Systems", *Energy Procedia*, Volume 101, 2016, pp. 288-296, (presented at 71° Congresso Nazionale ATI, 14-16 settembre 2016, Torino)
- S. Ravelli, G. Franchini, A. Perdichizzi, S. Rinaldi, V.E. Valcarengi, "Modeling of Direct Steam Generation in Concentrating Solar Power Plants", *Energy Procedia*, Volume 101, 2016, pp. 464-471, (presented at 71° Congresso Nazionale ATI, 14-16 settembre 2016, Torino)
- G. Franchini, A. Perdichizzi, S. Ravelli, "Performance prediction of solarized CC power plants operating in a load-following strategy", presented at PowerGenAfrica 2016 conference, Johannesburg (RSA), 19-21 July 2016
- G. Franchini, E. Notarbartolo, L.E. Padovan, A. Perdichizzi, "Modeling, Design and Construction of a Micro-scale Absorption Chiller", *Energy Procedia*, Volume 82, 2015, pages 577-583 (presented at "70° Congresso Annuale ATI", Roma, September 9-11, 2015)
- G. Franchini, G. Barigozzi, A. Perdichizzi, S. Ravelli, "Simulation and Performance Assessment of Load-Following CSP Plants", SASEC2015 (Southern African Solar Energy Conference), Skukuza (RSA), 11 – 13 May 2015
- G. Barigozzi, G. Franchini, A. Perdichizzi, S. Ravelli, "Peak shaving strategy through a Solar Combined Cooling and Power system in remote hot climate areas", *Applied Energy*, 143, 154-163, April 2015, ISSN: 0306-2619
- A. Perdichizzi, G. Barigozzi, G. Franchini, S. Ravelli, "Performance Prediction of a CSP Plant Integrated with Cooling Production", *Energy Procedia*, Volume 75, 2015, pp. 436-443 (presented at 7th International Conference on Applied Energy – ICAE2015, Abu Dhabi (UAE), March 28-31, 2015)
- G. Franchini, L.E. Padovan, A. Perdichizzi, "Design and construction of a desalination prototype based on HD (Humidification-Dehumidification) process", *Energy Procedia*, Volume 81, 2015, pages 472-481 (presented at "69° Congresso Annuale ATI", Milano, September 10-12, 2014)
- A. Perdichizzi, G. Barigozzi, G. Franchini, S. Ravelli, "Performance Prediction of a CSP Plant Integrated with Cooling Production", submitted for the 7th International Conference on Applied Energy – ICAE2015, Abu Dhabi (UAE), March 28-31, 2015
- G. Barigozzi, G. Franchini, A. Perdichizzi, S. Ravelli, "Peak shaving strategy through a Solar Combined Cooling and Power system in remote hot climate areas", *Applied Energy*, 143, 154-163, April 2015, ISSN: 0306-2619.
- G. Franchini, G. Barigozzi, A. Perdichizzi, S. Ravelli, "Simulation and Performance Assessment of Load-Following CSP Plants", submitted for SASEC2015 (Southern African Solar Energy Conference), 11 – 13 May 2015.
- G. Franchini, L.E. Padovan, A. Perdichizzi, "Dissalazione termica a bassa temperatura: la tecnica HD", *La Termotecnica*, Aprile 2015, pp. 59-61, ISSN: 0040-3725. Franchini, A. Perdichizzi, "Modeling of a solar driven HD (Humidification-Dehumidification) desalination system" (presented at "68° Congresso Annuale ATI", Bologna, September 11-13, 2013), *Energy Procedia*, Volume 45, 2014, Pages 588–597
- G. Barigozzi, G. Bonetti, G. Franchini, A. Perdichizzi, S. Ravelli, "A comparative study between parabolic trough and solar tower technologies in Solar Rankine Cycle and Integrated Solar Combined Cycle plants", *Solar Energy*, 98, 302-314, 2013, ISSN: 0038-092X
- G. Barigozzi, G. Franchini, A. Perdichizzi, S. Ravelli, "Simulation of solarized combined cycles: comparison between hybrid GT and ISCC plants", ASME Paper GT2013-95483 presented at the ASME Turbo Expo 2013, San Antonio, Texas, USA, June 3-7, 2013

- G. Barigozzi, G. Bonetti, G. Franchini, A. Perdichizzi, S. Ravelli, "Performance prediction of CSP conventional steam plants and hybrid combined cycles", proceedings and book of abstracts of the International Conference on Renewable Energy and its Future in the Arab World 2013, (ICREFAW) Amman: University of Jordan, April 2013
- G. Franchini, D. Manazzale, A. Perdichizzi, "Design and Construction of a Solar Heating and Cooling Plant", presented at "67° Congresso Annuale ATI", Trieste, September 11-14, 2012, ISBN: 978-88-907676-0-9
- G. Barigozzi, G. Bonetti, G. Franchini, A. Perdichizzi and S. Ravelli, "Solar Hybrid Combined Cycle Performance Prediction: Influence of GT Model and Different Spool Arrangement", Journal of Engineering for Gas Turbines and Power, Volume 134, Issue 12, 2012, Article nr. 12170
- G. Barigozzi, G. Bonetti, G. Franchini, A. Perdichizzi, S. Ravelli, "Thermal performance prediction of a solar hybrid gas turbine", Solar Energy, 86, 2116-2127, 2012, ISSN: 0038-092X
- G. Barigozzi, G. Bonetti, G. Franchini, A. Perdichizzi and S. Ravelli, "Solar Hybrid Combined Cycle Performance Prediction: Influence of GT Model and Different Spool Arrangement", ASME Paper GT2012-68881 presented at the ASME Turbo Expo 2012, Copenhagen, Denmark, June 11-15, 2012
- G. Franchini, A. Perdichizzi, A. Picinardi "HD desalination by heat rejected from solar cooling systems" presented at IEEE EnergyCon 2010, Bahrain, December 20-22, 2010, ISBN: 9789990171105
- G. Barigozzi, S. Carrara, G. Franchini, A. Perdichizzi, "Small-scale biomass power generation", ASME-ATI-UIT Conference on Thermal and Environmental, Sorrento, Italy, May 16 – 19, 2010, ISBN: 978-884672659-9
- D. Alberti, S. Brancatelli, A. Carrara, G. Franchini, "System performance and economic analysis of a p-Si grid-Connected PV plant in Northern Italy", ASME-ATI-UIT Conference on Thermal and Environmental, Sorrento, Italy, May 16 – 19, 2010, ISBN: 978-884672659-9
- G. Franchini, A. Perdichizzi, "Freshwater and cooling cogeneration by solar energy" presented at ISES Solar World Congress 2009, Johannesburg, South Africa, October 11-14, 2009, ISBN: 978-1-920017-42-2
- R. Fedrizzi, G. Franchini, D. Mugnier, P.N. Melograno, M. Theofilidi, A. Thuer, B. Nienborg, L. Koch, R. Fernandez, A. Troi, W. Sparber, "Evaluation of Standard Solar Combi Plus Systems for Small Scale", 47° AICARR International Conference, Tivoli – Roma, October 2009
- P. N. Melograno, J. R. Santiago, G. Franchini, W. Sparber, "Experimental Analysis of a Discontinuous Sorption Chiller Operated in Steady Conditions", 3rd International Conference Solar Air-Conditioning, Palermo, October 2009, ISBN: 978-3-941758-06-9
- R. Fedrizzi, G. Franchini, D. Mugnier, P. N. Melograno, M. Theofilidi, A. Thuer, B. Nienborg, L. Koch, R. Fernandez, A. Troi, W. Sparber, "Evaluation of Standard Solar Combi Plus Systems for Small Scale Applications", CISBAT 2009 International scientific Conference, Lausanne, September 2009
- A. Napolitano, G. Franchini, A. Perdichizzi, W. Sparber, "Design criteria for trigeneration systems coupled with solar thermal collectors", presented at "64° Congresso Annuale ATI", L'Aquila, Italy, September 8-11, 2009, ISBN: 978-88-87182-37-8
- R. Fedrizzi, G. Franchini, D. Mugnier, P. N. Melograno, M. Theofilidi, A. Thuer, B. Nienborg, L. Koch, R. Fernandez, A. Troi, W. Sparber, "Assessment of Standard Small-Scale Solar Cooling Configurations within the SolarCombi+ Project", 3rd International Conference Solar Air-Conditioning, Palermo, October 2009, ISBN: 978-3-941758-06-9
- G. Franchini, G. Nurzia, A. Perdichizzi, "Combined solar heating and cooling systems: simulation and design optimization", ASME Paper ES2008-54127, presented at ASME International Solar Energy Division 2008, Jacksonville, FL, USA, August 10-14, 2008, ISBN: 978-0-7918-4320-8

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