



# Samuele Memme

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## Education

**PhD candidate in Mechanical, Energy and Management Engineering (IMEG), CV Applied Thermodynamics - XXXVII Cycle|UNIGE-DIME (Dipartimento di Ingegneria Meccanica, Energetica, Gestionale e dei Trasporti), Genoa|November 2021 – Ongoing**

- Duration: 3 years
- Research project: Energy Storage and increase of the electrical and thermal conversion efficiency: time-varying modelling and experimentation with reference to solar energy CSP technologies

**Invited researcher at École de Technologie Supérieure (ETS), Département de genie mécanique, Montréal, Canada| May 2024**

- Duration: 1 month
- Research project: assessment of the potential for solar PV applications in North America considering different data sources and correlations for diffuse solar radiation

**Research fellowship (Assegno di Ricerca)|UNIGE-DIME (Dipartimento di Ingegneria Meccanica, Energetica, Gestionale e dei Trasporti), Genoa|January 2021 – January 2023**

- Duration: 2 years
- Research project: Battery project: study for thermal control of Toshiba SciB battery modules in electrical energy storage applications and for increasing electrical and thermal conversion efficiency

**Italian Public High School teaching qualification | Subject area: Technology | 01/07/2022 | Regular teaching competition (D.D. 21/04/2020, N. 499)**

**Italian Public High School teaching qualification|Subject area: Physics | 29/07/2021 | Regular teaching competition (D.L. 25/05/2021, N. 499)**

**Italian Public High School teaching qualification | Subject area: Physics | 11/06/2021 | Extraordinary teaching competition (D.D. 510/2010)**

**Completion of “24 ECTS for teaching according to D.Lgs. 59,13/04/2017” | 30/06/2019 | University of Genoa**

- Subject area A: Pedagogy, Special Education and Inclusion Teaching (6 ECTS)
- Subject area B: Psychology (6 ECTS)
- Subject area C: Anthropology (6 ECTS)



- Subject area D: Teaching Methodologies and Technologies (6 ECTS), Physics Education (8ECTS)

**Master's Degree in Energy Engineering (LM-30) | 28/03/2019 | UNIGE-DIME (Dipartimento di Ingegneria Meccanica, Energetica, Gestionale e dei Trasporti), Genoa**

- Final grade: 110/110 summa cum laude
- Thesis title: "Solar Energy Modelling with Fresnel Systems and Exploitation in Morocco Solar Facilities"
- Main studies: Knowledge, description, simulation, and optimization of industrial and energy production systems from renewable sources (in particular solar concentrators, geothermal heat pumps, hydro turbines), with particular attention to cogeneration and trigeneration systems and energy management of microgrids; understanding of project management principles

**Bachelor's Degree in Industrial Engineering (L-9) | 21/07/2016 | UNIGE-DIME (Dipartimento di Ingegneria Meccanica, Energetica, Gestionale e dei Trasporti), Genoa**

- Final grade: 105/110
- Thesis title: Thermo-Economic Analysis of Hydrogen Storage System using Sodium Borohydride
- Main studies: Knowledge of the main renewable and non-renewable energy production systems, ability to mathematically describe energy and environmental systems, understanding of business management principles and logistics and production systems

**Classical High School Diploma | 04/07/2011 | Public High School G. Chiabrera, Savona**

- Final grade: 100/100

## Publications

- M. Fossa, A. Boccalatte, S. Memme, Solar Fresnel Modelling, Geometry Enhancement and 3D Ray Tracing Analysis devoted to Different Energy Efficiency Definitions and applied to a Real Facility, Solar Energy, Vol. 216, 2021, <https://doi.org/10.1016/j.solener.2020.12.047>
- S. Memme, A. Boccalatte, M. Brignone, F. Delfino, M. Fossa, Simulation and design of a large thermal storage system: Real data analysis of a smart polygeneration micro grid system, Applied Thermal Engineering, Vol. 201, Part B, 2022, <https://doi.org/10.1016/j.applthermaleng.2021.117789>



- S. Memme, M. Fossa, Maximum energy yield of PV surfaces in France and Italy from climate based equations for optimum tilt at different azimuth angles, *Renewable Energy*, Vol. 200, 2022, Pages 845-866, <https://doi.org/10.1016/j.renene.2022.10.019>
- G. Tanda, S. Memme, G. Cucchia, S. Gamberini, Analysis of Thermo-Hygrometric Conditions of an Innovative Underwater Greenhouse, *Inventions*, 2022, 7, 118, <https://doi.org/10.3390/inventions7040118>
- S. Memme, M. Fossa, Ray tracing analysis of linear Fresnel concentrators and the effect of plant azimuth on their optical efficiency, *Renewable Energy*, Vol. 216, 2023, <https://doi.org/10.1016/j.renene.2023.119121>
- M. Fossa, S. Morchio, A. Priarone, S. Memme, Accurate design of BHE fields for geothermal heat pump systems: The ASHRAE-Tp8 method compared to non aggregated schemes applied to different European test cases, *Energy and Buildings*, Volume 303, 2024, 113814, ISSN 0378-7788, <https://doi.org/10.1016/j.enbuild.2023.113814>
- S. Memme, M. Fossa, A novel approach for incidence angle modifier calculation of arbitrarily oriented linear Fresnel collectors: Theory, simulations and case studies, *Renewable Energy*, Volume 222, 2024, 119857, <https://doi.org/10.1016/j.renene.2023.119857>
- A. Priarone, S. Morchio, M. Fossa, S. Memme, Low-Cost Distributed Thermal Response Test for the Estimation of Thermal Ground and Grout Conductivities in Geothermal Heat Pump Applications, *Energies*, Volume 16, Issue 21, 2023, 7393, <https://doi.org/10.3390/en16217393>
- M. Fossa, S. Morchio, S. Memme, A. Priarone, M. Parenti, Extending the ASHRAE method to a 25-year horizon through the Tp8 model for temperature penalty accurate estimation, 2024 Research Conference Proceedings of the IGSHPA, 28-30 May 2024, Montréal, <https://doi.org/10.22488/okstate.24.000005>

## Teaching and tutoring activities

- Co-supervisor of Energy Engineering MSc thesis entitled "Design and analysis of a novel solar collector with integrated storage system and movable insulation layer" (December 21, 2021), UNIGE, DIME, candidate: Serhan Yuzbey
- Supervisor of Industrial and Management Engineering BSc thesis entitled "Energy and economic analysis of a thermal storage system to be integrated into the Smart Polygeneration Microgrid of the Savona Campus" (June 15, 2021), UNIGE, DIME, candidate: Andy Steven Castro Andrade
- Supervisor of the Energy Engineering MSc thesis entitled "Solar Fresnel Modelling for Industrial Applications: Simulations and Case Studies" (July 20, 2023), UNIGE, DIME, candidate: Mahmood Mohamedain



- Supervisor of the Mechanical Engineering – Energy and Aeronautics MSc thesis “Analisi energetica ed economica di un campo solare termico asservito ad una centrale cogenerativa in territorio ligure” (), UNIGE, DIME, candidate: Mario Mattiauda
- Co-supervisor of Energy Engineering MSc thesis entitled “Single axis Tracking of bifacial PV modules at Savona Campus” (October 2023), UNIGE, DIME, candidate: Reza Sadeghi
- Co-supervisor of the Mechanical Engineering – Energy and Aeronautics MSc thesis entitled “Analisi del potenziale solare degli edifici della città di Genova: applicazione di modelli radianti a basi cartografiche GIS/Lidar per la creazione di un catasto solare su scala urbana” (March 2023), UNIGE, DIME, candidate: Davide Lepore
- Member of the examination board for the modules of Technical Physics 66041, Renewable Energies 60345, Renewable Energies in Buildings 86653 and Solar and Geothermal Energy 80043 (academic years 2020/21, 2021/22, 2022/23, 2023/24), UNIGE, DIME
- Assignment of teaching support activities according to D.R. 251/2013 (a.y. 2022/23), Energy Laboratory, UNIGE, DIME
- Seminar “Metodi e modelli per l’analisi della posizione del sole e dell’irradianza solare a terra” within the course of Solar and Geothermal Energy 80043, (16-18 October 2023), UNIGE, DIME
- Instructional tutor within the “Progetto Matricole” program, A\_ING\_10SV, UNIGE, DIME (a.y. 2022/23)
- Instructional tutor, A\_ING\_15SV, UNIGE, DIME (a.y. 2023/24)

## Professional experience

### Tenured high school teaching position

- I.I.S. Ferraris Pancaldo, Savona | Physics | September 2021 – Ongoing

### Temporary high school teaching position

- I.I.S. Falcone, Loano | Graphic representation techniques | October 2020 – January 2021
- I.I.S. Ferraris Pancaldo, Savona | Physics | October 2017 – August 2018
- I.I.S. Ferraris Pancaldo, Savona | Systems and Automation | November 2016 – June 2017
- I.I.S. Ferraris Pancaldo, Savona | Mechanical Technologies | February – June 2016



**Università  
di Genova**

**DIME** DIPARTIMENTO  
DI INGEGNERIA MECCANICA, ENERGETICA,  
GESTIONALE E DEI TRASPORTI

### Technical Employee

- Engintec S.p.A., Genoa | May 2019 – October 2020 | Technical report writing and instrumentation of machines in the field of oil & gas; system integrator; supervisor of design and workshop activities at customer sites.

### Lecturer

- Xelon Sinergetica S.R.L., Genoa | January 2018 – March 2018 | Temporary Lecturer in Logistics and in Fundamentals of Thermodynamics

## Other activities

- PhD students representative in the Teaching Board of the IMEG PhD Program, UNIGE, DIME (25/02/2022 to 31/10/2023)

Genova, 27/06/2024



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**Dipartimento di Ingegneria Meccanica, Energetica, Gestionale e dei Trasporti**

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