



Francesco Superchi

Nationality: Italian | **Email address:** francesco.superchi@gmail.com | **LinkedIn:**

<https://www.linkedin.com/in/francesco-superchi-63253720a/> | **Address:** Firenze, Italy (Home)

WORK EXPERIENCE

EUNICE ENERGY GROUP – ATHENS, GREECE

ENERGY ENGINEER – 15/05/2023 – 06/12/2023

Internship part of the PhD program.

Data analysis and simulation of hybrid energy systems (HES) powered by wind and solar energy. Machine learning to improve forecasting of renewable power production. Development of new control logics to optimize HES techno-economic outcome

DEPARTMENT OF INDUSTRIAL ENGINEERING - UNIVERSITÀ DEGLI STUDI DI FIRENZE, FIRENZE (ITALY) – FLORENCE, ITALY

RESEARCH FELLOW – 01/01/2025 – CURRENT

Research fellow in the TETHYS Project, a collaboration between the University of Cyprus, the University of Florence, Aarhus University, and NEEST (Greece), advancing renewable energy research with emphasis on floating wind turbines and green hydrogen systems.

Other activities:

- Advanced Mixed-linear programming for the simultaneous optimization of the design and control of renewable energy systems supported by storage devices
- Advanced modeling of electrochemical storage components to account for degradation processes in techno-economic analyses
- Integration of different offshore energy systems (e.g., wind, solar and wave) and multi-objective optimization of floating hybrid energy systems

EDUCATION AND TRAINING

01/01/2022 – 05/06/2025

PHD, INDUSTRIAL ENGINEERING Department of Industrial Engineering - Università degli Studi di Firenze, Firenze (Italy)

PhD in Smart Energy Systems and Renewable Energy Integration

- Developed advanced models for smart energy systems and grid integration with a focus on renewable sources, including wind (onshore and offshore) and solar PV.
- Conducted comprehensive data analysis of production data from SCADA systems, PV arrays, and smart meters to improve system insights and operational efficiency.
- Designed robust energy dispatch algorithms using Mixed-Integer Linear Programming (MILP) optimization, achieving reliable and efficient energy flow management.
- Applied machine learning and data-driven techniques to improve forecasting of energy demand and renewable energy production, enhancing predictive capabilities for energy commodities.
- Modeled and simulated storage technologies (e.g., Li-ion batteries, alkaline electrolyzers, PEM fuel cells) using both empirical and physics-based approaches to support energy storage optimization.
- Created advanced optimization frameworks for sizing hybrid energy systems, incorporating long-term performance degradation analysis to ensure reliable, cost-effective system design.

Field of study Modeling of renewable energy systems, Power systems optimization, Machine learning for power production and load forecasting, Hydrogen and batteries energy storage, Wind and solar energy



12/10/2019 – 12/10/2021

MASTER'S DEGREE IN ENERGY AND NUCLEAR ENGINEERING Politecnico di Torino, Torino (Italy)

Renewable power production (Solar photovoltaic systems, Solar thermal technologies, Wind and ocean energy plants), Energy Systems Management (Thermal design and optimization, Energy networks, Smart electricity system, Energy economics) and Energy Storage Technologies (Energy storage, Polygeneration and advanced energy systems).

Field of study Renewable energy systems | **Final grade** 110/110 cum laude |

Thesis Machine learning strategies assessment for energy commodities forecasting

10/10/2016 – 06/07/2019

BACHELOR'S DEGREE IN MECHANICAL ENGINEERING Università degli Studi di Firenze, Firenze (Italy)

Final grade 108/110 | **Thesis** Water desalination process powered by renewable energy

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Programming languages: Python, MATLAB | Microsoft Office: Word, Excel, Powerpoint | Simulation programs: AspenPlus, Simulink, WAsP

DRIVING LICENCE

Driving Licence: B