Nathan Giovannini

Energy Engineer

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Personal Profile

Since the beginning of my master's studies, my primary area of interest has been the transition to a new sustainable energy system. Before undertaking a research experience that led to my final dissertation on energy scheduling, I have gained experience through several academic and non-academic in-hand projects. I believe in an energy system designed with a holistic approach, considering environmental, economic and social sustainability, the geopolitical context and the energy security.

Education

MSc in Energy Engineering, University of Florence (IT) 2019 - 2022

- Evaluation: 110/110 cum laude (4.0 GPA)
- Thesis: Optimization of the Energy Scheduling in the Microgrid of Tilos Island
- Modules: Renewable Energy, Industrial Energy Management, Fuel Cells, Thermodynamic and Thermoeconomics, Conventional Power Plants, Rational Use of Energy, Refrigeration Techniques
- Projects: H_2 Blending in the Gas Network, KPI of Energy Efficiency in University Campus, Techno-economic Analysis of a Carnot Battery, Energy Efficiency Project for a Country Club

Erasmus+ Studio Program, Ghent University (BE) Jan - Jun 2020

- Modules: Project Management, Circular Economy, Mechanical Vibrations
- Projects: Project Management of Albert Park F1 Circuit, Analysis of a Wastewater Treatment Plant

BSc in Mechanical Engineering, University of Florence (IT) 2016 - 2019

- Evaluation: 110/110 cum laude (4.0 GPA)
- Thesis: Energy Cost Analysis in the Italian Electricity Market
- Modules: Numerical Analysis and Calculation, Energy Systems, Technical Physics, Industrial Power Plants, Fluid Dynamics

Relevant Experiences

Technology Innovation Assistant, Baker Hughes Jan – Jul 2022

Outline

I was part of a multidisciplinary group of four students, with the aim to give to the Technology Innovation Team a fresh and unbiased view of new technological frontiers of the energy transition.

Key Responsibilities

- Scouting of new technologies related to a trend
- Analysis of the technology following a design thinking approach, verifying declared data with a focus on Technology Readiness Level
- Presentation of the research to the Team, with proposals about possible investment opportunities or trend development

Research Assistant, University of Florence Sep – Dec 2021

Outline

Project conducted in the REASE lab of the Industrial Engineering Department of the University of Florence. The project focus was the identification of inefficiencies in the energy scheduling of a hybrid energy system, the new modeling of the system in Python environment and the proposal of a new scheduling algorithm, through Mixed Integer Linear Programming. The proposed algorithm outperformed the previous one by 86.9% in terms of earnings. The research is reported in my master's thesis. A paper resuming the results is in the writing phase.

Key Responsibilities

- Data Analysis on yearly SCADA data from the microgrid
- Definition of the research goals with local administration
- Modeling of the hybrid energy system
- Optimization of the island energy scheduling

Team Leader, Firenze Race Team Sep 2019 – Aug 2021

Outline

Management of a team of 30 students in the design and manufacturing of the Formula Student vehicle of the University of Florence, leading to the competition in the Formula Student Czech Republic event.

Key Responsibilities

- Project definition, with a focus on design goals, planning and funding
- Project Management
- Relations with University department, sponsors and media

Relevant Skills

IT skills: MS Office, Python, MATLAB

Languages

	Reading	Speaking	Writing
Italian	Native	Native	Native
English	C1	C1	C1
Spanish	B1	A2	A2

References

References are available on request

- **Ass. Prof. Alessandro Bianchini** – Thesis Supervisor – Department of Industrial Engineering, University of Florence
- **Eng. Gianni Orsi** – Industrial Supervisor – Technology Innovation Office, Baker Hughes
- **Prof. Renzo Capitani** – Firenze Race Team Faculty Advisor - Department of Industrial Engineering, University of Florence