

Nikolaos Sifakis

Chemical And Environmental Engineer, PhD

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Holding a Ph.D. in Chemical & Environmental Engineering, Highly motivated and dedicated to conducting high-quality research through creative problem-solving and innovative solutions. The Ph.D. thesis focused on the "Formation of a typology for the evaluation of the sustainability of nearly zero energy ports." I specialize in Hybrid Renewable Energy Systems, Smart Energy Management Systems, Energy Storage Technologies, Data Analytics, and AI/Machine Learning forecasting models.

Education

From: Sep - 2022

To: Today

Master in Business Administration (MBA)

Technical University of Crete, School of Production Engineering and Management

From: Mar - 2018

To: Sep - 2021

Ph.D.: Chemical & Environmental Engineer

Technical University of Crete - Chania

- Funded by the Onassis Foundation through Scholarship
- Thesis entitled "Formation of the typology for the evaluation of the sustainability of nearly zero energy ports"

During my Ph.D. studies, I have supervised six undergraduate Diploma Thesis and one postgraduate (MSc) Diploma Thesis:

- Energy assessment and upgrade of Heraklion port, Stefanos Konidakis
- Designing a nearly Zero Energy Port, the case of Adamantas on the island of Milos, Emmanouil Vichos
- Sustainable noise management on the coastal road of Rethymnon, Petros Kyriakakis
- Forecasting the energy profile of the port of Souda for the year 2030, Konstantinos Kouletakis
- Assessment of sustainable mobility in a tourist destination. The case of the urban island center of Platanias
- Environmental Impact Assessment of Ship Loading/Unloading: The Case of Souda Port, Christos Nikoloudakis
- "Planning a sustainable island, through the forecasting of its energy profile in 2030, the case of Milos, Emmanouil Vichos

From: Sep - 2012

To: May - 2017

Integrated Master of Science: Environmental Engineering

Technical University of Crete - Chania

- Awarded a GPA of 8.94/10
- Diploma Thesis entitled "HVAC optimization genetic algorithm for industrial near-zero-energy building demand response"

From: Sep - 2006

High School Diploma

To: May – 2012

High School of Melesses - Heraklion, Crete

- Awarded 18.7/20 GPA

Work History

From: Jun - 2022

To: Today

Postdoctoral Researcher

Technical University of Crete – Industrial and digital innovations research group, Chania, Greece

Currently employed in the CHAMELEON EU project.

Supervised three undergraduate Diploma Thesis:

- Integration Of Multiple Local Energy Resources in A Food Industry: A Techno-Economic Analysis, Xenofon Kotakidis
- The role of Hybrid Renewable Energy Systems into the waste-to-energy generation concept, Marina Petropoulou
- Integrating biomass-based Hybrid Renewable Energy Systems in the food production industry, Georgios Alexandros Argyropoulos

From: Sep - 2018

To: Jul - 2021

Graduate Research Associate

Technical University of Crete - Renewable and Sustainable Energy Systems Laboratory, Chania, Greece

I have been employed for almost 3 years as a research associate in three H2020 projects.

The first one was the RESCOOP Plus project, in which I have been responsible for getting in touch and acquiring datasets from 7 REScoops from different EU countries. The raw data were preprocessed using analytical tools by taking advantage of the SPSS, Stata, and Minitab software. Various trivial task were handled using the Python Programming language, while the visualization of the results was conducted using the Microsoft Excel software. I have also been responsible for the whole authorship of the project's final deliverable and of two relative scientific research papers.

The second H2020 project that I have participated into was the CIVITAS Destinations project, in which I have been totally responsible for the monitoring systems, the data acquisition, the formulation of the data analysis methodology, as well as the implementation and the maintenance of the monitoring systems and their software. Several parameters have been monitored, such as the environmental pollution indexes, noise, traffic counts, etc.

The raw data have been extensively analysed, evaluated, and configured several times through the whole duration of the project. Three monitoring stations have been set up in the city of Rethymno under my supervision, while their unhampered operation was ensured by strongly cooperating with the Municipality of Rethymno.

The Data Engineering tasks and the Data Analytics have been explicitly handled by me through the utilization of several Python's toolboxes and the use of SPSS, and Minitab software. The visualization of the outcomes has been conducted using the Microsoft Excel and the Tableau software. Last but not least, I have been the author of several technical manuals for the innovative monitoring systems, the project's last deliverable regarding the Data Analysis outcomes; the revision of several project's MERs has been among the assignments I have been assigned.

Lastly, I have participated into the COMPOSE Plus project, in which I was responsible for the maintenance and the unhampered operation of various monitoring systems.

From: Jan – 2020
To: Aug – 2020

Environmental Engineer

Region of Crete, Crete, Greece

I have been employed as an Environmental Engineer to perform and assess a survey feasibility study for the Implementation of the Net-Metering and the Virtual Net-Metering Functionality in 9 Local Land Improvement Organizations (TOEB) of Crete – *Phase B*.

During this period, I have been responsible for acquiring the raw energy data of the 20 local Land Improvement Organisations of Crete, and then for applying various data preprocessing and data analysis methods to get the data into usable datasets. The newly-established datasets were used to formulate the energy profile of each organization in order to be able to conduct the feasibility study of implementing Renewable Energy Systems to cover their energy demands, in accordance with the existing legislative framework in Crete.

All the data preprocessing and the data analytics and visualization have been accomplished by using the Python programming language and the Tableau software. For the needs of the feasibility studies, the HelioScope and the PVGIS software have been extensively used. Through the strong cooperation and continuous discussion with the organisations' stakeholders, the evaluation each study's suggested systems has ensured the provision of solid and reliable outcomes. Lastly, I have been the author of the vast majority of the deliverables.

From: Jan – 2019
To: May – 2019

Environmental Engineer

Region of Crete, Crete, Greece

I have been employed as an Environmental Engineer to perform and assess a survey feasibility study for the Implementation of the Net-Metering and the Virtual Net-Metering Functionality in 20 Local Land Improvement Organizations (TOEB) of Crete – *Phase A*.

During this period, I have been responsible for acquiring the raw energy data of the 20 local organisations, and then for applying various data preprocessing and data analysis methods to get the data into usable datasets. The newly-established datasets were used to formulate the energy profile of each organization in order to be able to conduct the feasibility study of implementing Renewable Energy Systems to cover their energy demands, in accordance with the existing legislative framework in Crete.

All the data preprocessing and the data analytics and visualization have been accomplished by using the Python programming language and the Tableau software. For the needs of the feasibility studies, the HelioScope and the PVGIS software have been extensively used. Through the strong cooperation and continuous discussion with the organisations' stakeholders, the evaluation each study's suggested systems has ensured the provision of solid and reliable outcomes. Lastly, I have been the author of the vast majority of the deliverables.

From: Sep - 2017
To: Sep - 2018

Sales Manager - Company Supplies' Administrator

EMELKO S.A., Alagni, Crete, Greece

During my employment at the company, I was responsible of the whole company's supply chain and mainly contributed to the Sales and Supplies Department. My main responsibility was to manage the sales, by communication with the customers, as well as administrating the supply chain of the company by getting into contact with the various company's suppliers and the cargo & logistics companies. Also, as a side quest, by cooperating with the company's CEO and the actual Technical Department, I redesigned and developed the company's main software tool to better fit the employers' needs by concurrently increasing their effectiveness. Last but not least, during the last six months of employment to the company, in strong cooperation with the Accounting Department, we created a database of the company's records for the past 5 years. By taking advantage of the database, we managed to apply some Data Analytics models to evaluate the past records and forecast several of the future company's indexes.

At a glance, my main responsibilities (roles) were:

- Sales Manager
- Supplier Administrator
- Front-end Developer
- Back-end Developer
- Data Analyst
- Accounting employer

Languages

- Greek (Native)  Excellent
- English  Excellent
- French  Average

Interests

- Software Programming (Front-end & Back-end)
- Computer enthusiast
- Sports
- Music

Certifications

- 2013-09 Highest grade of Env. Eng. class of 2012-2013

- 2014-09** • Highest grade of Env. Eng. class of 2013-2014
- 2015-09** • Highest grade of Env. Eng. class of 2014-2015
- 2016-09** • Highest grade of Env. Eng. class of 2015-2016
- 2017-09** • Highest grade of Env. Eng. class of 2016-2017
- 2017-11** • Award of Academic Excellence (LimmatStiftung)
- 2017-09** • Highest GPA in my Graduation Class
- 2018-09** • Onassis Foundation Scholarship for PhD Studies - 3yr contract

Skills

- Research implementation ●●●●●○
Very Good
- Problem-Solving ●●●●●○
Very Good
- Responsible ●●●●●●
Excellent
- Teamwork & Collaboration ●●●●●●
Excellent
- Decision Making ●●●●●○
Very Good
- Programming (Front-end & Back-end) ●●●●●○
Very Good
- Data Analytics ●●●●○●
Good
- Hybrid Renewable Energy Systems ●●●●●●
Excellent
- Energy modeling ●●●●●○
Very Good
- Environmental assessment ●●●●●○
Very Good

Energy usage strategy	●●●●●	Excellent
Self-Motivated	●●●●●	Excellent

Software

● 3-D Modelling (SketchUP, Autodesk REVIT)	●●●●●	Good
● AutoCAD	●●●●●	Good
● ArcGIS	●●●●●	Average
● Programming Languages (MATLAB, Python, R)	●●●●●	Very Good
● Energy Plus	●●●●●	Very Good
● HelioScope, RETScreen Expert, Homer PRO	●●●●●	Excellent
● Relux, Dialux EVO, ReluxCAD	●●●●●	Very Good
● SPSS, Minitab, Stata, Anaconda(+libs), R)		

Journal Publications

- Sifakis N, Tsoutsos T. Nearly Zero Energy Ports: A necessity or a green upgrade? IOP Conf Ser Earth Environ Sci 2020; 410:012037. <https://doi.org/10.1088/1755-1315/410/1/012037>.
- Sifakis N, Tsoutsos T. Planning zero-emissions ports through the nearly zero energy port concept. J Clean Prod 2021;286:125448. <https://doi.org/10.1016/j.jclepro.2020.125448>.
- Sifakis N, Konidakis S, Tsoutsos T. Hybrid renewable energy system optimum design and smart dispatch for nearly Zero Energy Ports. J Clean Prod 2021;310:127397. <https://doi.org/10.1016/j.jclepro.2021.127397>.
- Argyriou, I., Sifakis, N. & Tsoutsos, T. Ranking measures to improve the sustainability of Mediterranean ports based on multicriteria decision analysis: a case study of Souda port, Chania, Crete. Environ Dev Sustain (2021). <https://doi.org/10.1007/s10668-021-01711-7>

- Sifakis N, Kalaitzakis K, Tsoutsos T. Integrating a novel smart control system for outdoor lighting infrastructures in ports. *Energy Convers Manag* 2021;246:114684. <https://doi.org/10.1016/j.enconman.2021.114684>.
- Sifakis N, Tsoutsos T. A nearly Zero Energy Port optimized by a Hybrid Renewable [Submitted]
- Argyriou, I., Sifakis, N., & Tsoutsos, T. (2022). Ranking measures to improve the sustainability of Mediterranean ports based on multicriteria decision analysis: a case study of Souda port, Chania, Crete. *Environment, Development and Sustainability*, 24(5), 6449–6466. <https://doi.org/10.1007/s10668-021-01711-7>
- Vichos, E., Sifakis, N., & Tsoutsos, T. (2022). Challenges of integrating hydrogen energy storage systems into nearly zero-energy ports. *Energy*, 241, 122878. <https://doi.org/10.1016/j.energy.2021.122878>
- Sifakis, N., Vichos, E., Smaragdakis, A. Zoulias, E., & Tsoutsos, T. Introducing the cold-ironing technique and a hydrogen-based hybrid renewable energy system into ports. *International Journal of Energy Research*. doi: 10.1002/er.8059
- Sifakis N, Savvakis N, Daras T, Tsoutsos T. Analysis of the Energy Consumption Behavior of European RES Cooperative Members. *Energies* 2019; 12:970. <https://doi.org/10.3390/en12060970.1>
- Kampelis N, Sifakis N, Kolokotsa D, Gobakis K, Kalaitzakis K, Isidori D, et al. HVAC Optimization Genetic Algorithm for Industrial Near-Zero-Energy Building Demand Response. *Energies* 2019; 12:2177. <https://doi.org/10.3390/en12112177>.
- Sifakis N, Daras T, Tsoutsos T. How Much Energy Efficient are Renewable Energy Sources Cooperatives' Initiatives? *Energies* 2020; 13:1136. <https://doi.org/10.3390/en13051136>.
- Sifakis N, Aryblia M, Daras T, Tournaki S, Tsoutsos T. The impact of COVID-19 pandemic in Mediterranean urban air pollution and mobility. *Energy Sources, Part A Recover Util Environ Eff* 2021;00:1–16. <https://doi.org/10.1080/15567036.2021.1895373>.
- Sifakis N, Kouletakis K, Tsoutsos T. Forecasting a port's energy demand for 2030 on the base of nearly Zero Energy Ports concept, 2021[Will be submitted]

Scientific Conferences

- Sifakis N, Theocharis T. 1st PhD candidates conference TUC, Dec. 18 Sifakis N, Tsoutsos T. Decarbonisation of ports and tourist cities, towards sustainable development, Blue Growth, Heraklion Crete, January 2019
- Sifakis N, Mavroudis O, Tsoutsos T. Evaluating the prospect of nearly Zero Energy Ports, DPMCO, Athens, May 2019
- Argyriou I, Sifakis N, Tsoutsos T. What measures are needed to improve the sustainability of the Mediterranean ports from the stakeholder's viewpoint: A case study of Souda port, Chania, Crete, EiNT, Sep 2019
- Sifakis N, Tsoutsos T. Nearly Zero Energy Ports: A necessity or a green upgrade? SBE19, Thessaloniki, Oct. 2019 Sifakis N, Theocharis T. 2nd PhD candidates conference TUC, Dec. 19

- Vichos E, Sifakis N, Tsoutsos, T. Challenges Of Nearly Zero Energy Ports: An Essential Or An Ambition?, 9th Global Conference on Global Warming (GCGW-2021), August 1-4, 2021, Virtual conference
- Sifakis N, Savvakis N, Daras T, Tsoutsos T. Sustainable Urban Energy Systems Conference, November 2018, Delft (Netherlands) : Renewable Energy Cooperatives as prosumers, results from the REScoop plus project
- Sifakis N, Savvakis N, Daras T, Tsoutsos T. The European experience from the operation of the Energy Communities. The Experience of the program RESCOOP PLUS, Social Entrepreneurship Forum 2018, Athens, 23-25 November 2018
- Aryblia M, Sifakis N, Tournaki S, Tsoutsos T. Mitigating climate change through the monitoring of the urban environment in a touristic Mediterranean city, 9th IWACP, May 2020
- Theocharis Tsoutsos, Maria Aryblia, Nikos Sifakis, Stavroula Tournaki Monitoring and Assessment of The Urban Environment in A Touristic Mediterranean City, ECOMM, 2020