

KOSMAS A. KAVADIAS
SHORT CURRICULUM VITAE

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Occupation: Associate Professor, Soft Energy Applications & Environmental Protection Lab, Dept. of Mechanical Engineering, University of West Attica

EDUCATION-QUALIFICATIONS

PhD in Solar Energy Evaluation and Design - Implementation of Hybrid Energy Systems
University of Ioannina-Physics Department, 2016

Master of Science in

Energy Management and Environmental Protection Systems

National Technical University of Athens-School of Chemical Engineering

University of Piraeus- Department of Industrial Management, 2002

Diploma of **Mechanical Engineering**

Technological Educational Institute of Piraeus-Mechanical Engineering Department, 1998

FIELDS OF SPECIALIZATION-RESEARCH INTERESTS

- ✓ Design and Optimization of Solar Energy Systems
- ✓ Optimization of Hybrid Renewable Energy Systems
- ✓ Design of Stand Alone Energy Systems Based on Renewable Energy Sources
- ✓ Wind-Hydro Energy Production Systems
- ✓ Hydrogen Energy Systems
- ✓ Evaluation of Energy Storage Systems
- ✓ Optimum Management of Autonomous Energy Systems
- ✓ Building Integrated Renewable Energy Systems
- ✓ Zero-Energy Buildings

RESEARCH ACTIVITIES

Indicative research projects with participation:

- "GREENART, Green Endeavour in Art Restoration", Horizon 2020.
- "DARWEN, Development of a Smart Platform for the Holistic Management of the Water & Energy Nexus in Island Regions", Action "Research – Create – Innovate".
- "TILOS Technology Innovation for the Local Scale Optimum Integration of Battery Energy Storage", Horizon 2020.
- "CRISP, Creating Innovative Sustainability Pathways", FP7.
- "Maximization of the Energy Autonomy of Greek Islands with the Use of Hybrid Energy Systems", Archimedes I.
- "Optimisation of Water Systems in Islands with Limited Water Resources", Archimedes II.
- "Simulation-Study of the Energy Behaviour of Buildings using Economically Acceptable Passive and Hybrid Solar Systems and Construction Materials in order to Improve the Thermal Behaviour of Greek Buildings", Archimedes II.
- "Integrated Study and Prediction of Electricity Related Air Pollution (NO_x , SO_2 , CO_2) in Greece in View of the European Efforts for Improving the Air Quality", Archimedes II.
- "A Comparative Evaluation of Hydrogen-Based Technologies and Other Energy Storage Systems for the Support of Autonomous RES-Based Hybrid Power Stations", Archimedes III.
- "Meteorological Data Utilization for Solar Energy Systems", Archimedes III.
- VISION: "A New Vision for Engineering Economy", TEMPUS.
- "Parametrical Investigation of Wind-Hydro Power Plant Concerning Energy Storage", Technological Educational Institute of Piraeus.
- "Desalination System Based on Gas-Turbines Exhausted Gases", Technical University of Crete.
- "Energy Saving in Technological Educational Institute of Piraeus Buildings", Technological Educational Institute of Piraeus.

- "Development of an Experimental Hybrid Plant based on a Wind Turbine-Photovoltaic Station Collaboration", Technological Educational Institute of Piraeus.
- "NATURA-2000", Greek Ministry of Environment, Physical Planning and Public Works.
- "Energy Saving on Greek Airports Plants", National Observatory of Athens.

TEACHING EXPERIENCE

Different positions at the Mechanical Engineering Department since 2002, teaching undergraduate and postgraduate courses:

1. Renewable Energy Technologies
2. Solar Energy Applications
3. Hybrid Renewable Energy Systems
4. Energy Improvement of Buildings
5. Research Methodology
6. Hydrogen Safety

PUBLISHED WORK

- **3 books** on Renewable Energy Sources (in Greek)
- **5 chapters** in international publications
- **56** published scientific research papers in **international journals**.
- **112** published scientific research papers at **international conferences**.
- **H-index 24** on the Scopus database (Author ID: 6603007899) and **26** on the Google Scholar database (user=dX8ZORIAAAAJ).

Recent Published Scientific-Research Papers on International Journals

1. Harry D. Kambezidis, Basil E. Psiloglou, Kosmas A. Kavadias, Athanasios G. Paliatsos, Aristides Bartzokas, **2016**, "Development of a Greek solar map based on solar model estimations", *Sun and Geosphere*, vol. 11/2, pp. 101-105, also presented in Workshop Solar influences on the ionosphere and magnetosphere, SOZOPOL 2015, June 2015, Sunny Beach, Bulgaria.
2. Kaldellis J.K., Tzanes G.T., Papapostolou C., Kavadias K.A., Zafirakis D., **2017**, "Analyzing the Limitations of Vast Wind Energy Contribution in Remote Island Networks of the Aegean Sea Archipelagos", *Energy Procedia*, vol. 142, pp. 787-792, also presented in 9th International Conference on Applied Energy "Energizing the Future" (ICAE2017), August 2017, Cardiff, United Kingdom.
3. Kavadias K.A., Zafirakis D., Paliatsos Ath.G., **2017**, "Application of Typical Meteorological Years for sizing building integrated PV systems under zero load rejections", *Energy Procedia*, vol. 105, pp. 881-887, also presented in 8th International Conference on Applied Energy "Transformative Innovations for a Sustainable Future" (ICAE2016), 8-11 October 2016, Beijing, China.
4. Apostolou D., Kavadias K.A., Kaldellis J.K., **2017**, "Analytical hydrogen production and storage simulation for the "Kos-Kalymnos" system", *Energy Procedia*, vol. 105, pp. 4340-4346, also presented in 8th International Conference on Applied Energy "Transformative Innovations for a Sustainable Future" (ICAE2016), 8-11 October 2016, Beijing, China.
5. Tzanes G.T., Zafirakis D., Papapostolou C., Kavadias K.A., Kaldellis J.K., **2017**, "PHAROS: An Integrated Planning Tool for Meeting the Energy and Water Needs of Remote Islands using RES-based Hybrid Solutions", *Energy Procedia*, vol. 142, pp. 2586-2591, also presented in 9th International Conference on Applied Energy "Energizing the Future" (ICAE2017), 21-24 August 2017, Cardiff, United Kingdom.
6. Kavadias K.A., Apostolou D., Kaldellis J.K., **2018**, "Modelling and optimisation of a hydrogen-based energy storage system in an autonomous electrical network", *Applied Energy*, vol. 227, pp. 574-586.
7. Tzanes G., Zafeiraki E., Papapostolou C., Zafirakis D., Moustris K., Kavadias K., Chalvatzis K., Kaldellis J.K., **2019**, "Assessing the Status of Electricity Generation in the Non-Interconnected Islands of the Aegean Sea Region", *Energy Procedia*, vol. 159, pp. 424-429, also presented in Applied Energy Symposium and Forum, Renewable Energy Integration with Mini/Microgrids (REM 2018), 28-30 September 2018, Rhodes, Greece.

8. Kavadias K.A., Karamanou E., **2019**, "Meteorological input data effect on sizing stand-alone photovoltaic systems", *Energy Procedia*, vol. 159, pp. 90–95, also presented in Applied Energy Symposium and Forum, Renewable Energy Integration with Mini/Microgrids (REM 2018), 28–30 September 2018, Rhodes, Greece.
9. Kavadias K.A., Alexopoulos P., Charis G., **2019**, "Techno-economic evaluation of geothermal-solar power plant in Nisyros island in Greece", *Energy Procedia*, vol. 159, pp. 136–141, also presented in Applied Energy Symposium and Forum, Renewable Energy Integration with Mini/Microgrids (REM 2018), 28–30 September 2018, Rhodes, Greece.
10. Alamo D.H., Medina R.N., Ruano S.D., García S.S., Moustiris K.P., Kavadias K.A., Zafirakis D., Tzanes G., Zafeiraki E., Spyropoulos G., Kaldellis J.K., Notton G., Duchaud J.-L., Nivet M.-L., Fouilloy A., Lespinats S., **2019**, "An Advanced Forecasting System for the Optimum Energy Management of Island Microgrids", *Energy Procedia*, vol. 159, pp. 111–116, also presented in Applied Energy Symposium and Forum, Renewable Energy Integration with Mini/Microgrids (REM 2018), 28–30 September 2018, Rhodes, Greece.
11. Kavadias K.A., Alexopoulos P., Charis G., Kaldellis J.K., **2019**, "Sizing of a solar–geothermal hybrid power plant in remote island electrical network", *Energy Procedia*, vol. 157, pp. 901–908, also presented in Technologies and Materials for Renewable Energy, Environment and Sustainability (TMREES18), 19–21 September 2018, Athens, Greece.
12. Moustiris K., Kavadias K.A., Zafirakis D., Kaldellis J.K., **2020**, "Medium, short and very short-term prognosis of load demand for the Greek Island of Tilos using artificial neural networks and human thermal comfort-discomfort biometeorological data", *Renewable Energy*, vol. 147, p.p. 100–109.
13. Kambezidis H.D., Psiloglou B.E., Kaskaoutis D.G., Karagiannis D., Petrinoli K., Gavriil A., Kavadias K., **2020**, "Generation of typical meteorological years for 33 locations in Greece: adaptation to the needs of various applications", *Theoretical and Applied Climatology*, <https://doi.org/10.1007/s00704-020-03264-7>.
14. Kavadias K.A., Tzelepis S., **2020**, "A Simplified Optimization Model for Sizing Proton-Exchange Membrane Fuel Cells", *Journal of Energy and Power Technology*, vol. 2/3, <https://doi.org/10.21926/jept.2003011>.
15. Darmanis M., Çakan M., Moustiris K.P., Kavadias K.A., Nikas K.-S.P., **2020**, "Utilisation of mass and night ventilation in decreasing cooling load demand", *Sustainability*, vol. 12, 7826, <https://doi.org/10.3390/su12187826>.
16. Kavadias K.A., Triantafyllou P., **2021**, "Hybrid Renewable Energy Systems' Optimisation. A Review and Extended Comparison of the Most-Used Software Tools", *Energies*, vol. 14/24, <https://doi: 10.3390/en14248268>.
17. Tzelepis S., Kavadias K.A., Marnellos G.E., Xydis G., **2021**, "A review study on proton exchange membrane fuel cell electrochemical performance focusing on anode and cathode catalyst layer modelling at macroscopic level", *Renewable and Sustainable Energy Reviews*, vol. 151, <https://doi.org/10.1016/j.rser.2021.111543>.
18. Kavadias K.A., Kosmas V., Tzelepis S., **2022**, "Sizing, optimization, and financial analysis of a green hydrogen refueling station in remote regions", *Energies*, vol. 15, 547, <https://doi.org/10.3390/en15020547>.
19. Sakellariou E.I., Axaopoulos P. J., Bot B.V., Kavadias K.A., **2022**, "First Law Comparison of a Forced-Circulation Solar Water Heating System with an Identical Thermosyphon", *Energies*, vol. 16/1, 431, <https://doi.org/10.3390/en16010431>.
20. Tzelepis S., Kavadias K.A., **2022**, "Progress on Platinum-Based Catalyst Layer Materials for H-PEMFC", *Energy Engineering*, vol. 119/5, pp. 1745–1769, <https://doi.org/10.32604/ee.2022.020984>.
21. Kambezidis H.D., Mimidis K., Kavadias K.A., **2022**, "Correction of the Solar Azimuth Discontinuity at Sunrise and Sunset", *Sun and Geosphere*, vol. 15/1, pp. 19–34, <https://doi.org/10.31401/SunGeo.2022.01.04>.
22. Tzelepis S., Kavadias K.A., Marnellos G.E., **2023**, "A Three-Dimensional Simulation Model for Proton Exchange Membrane Fuel Cells with Conventional and Bimetallic Catalyst Layers", *Energies*, vol. 16/10, Article 10, <https://doi.org/10.3390/en16104086>.
23. Kambezidis H.D., Mimidis K., Kavadias K.A., **2023**, "The Solar Energy Potential of Greece for Flat-Plate Solar Panels Mounted on Double-Axis Systems", *Energies* vol. 16, pp. 5067. <https://doi.org/10.3390/en16135067>.

24. Sakellariou E.I., Axaopoulos P.J., Kavadias K.A., Nazos A., **2023**, "Probabilistic economic evaluation of the most prevalent in Greek market space heating systems", *Journal of Building Engineering*, vol. 75, 107005. <https://doi.org/10.1016/j.jobe.2023.107005>.
25. Olorunfemi B.O., Nwulu N.I., Adebo O.A., Kavadias K.A., **2024**, "Advancements in machine visions for fruit sorting and grading: A bibliometric analysis, systematic review, and future research directions", *Journal of Agriculture and Food Research*, vol. 16, 101154. <https://doi.org/10.1016/j.jafr.2024.101154>.
26. Kambezidis H.D., Kavadias K.A., Farahat A.M., **2024**, "Solar Energy Received on Flat-Plate Collectors Fixed on 2-Axis Trackers: Effect of Ground Albedo and Clouds", *Energies*, vol. 17, 3721. <https://doi.org/10.3390/en17153721>.