

Mostafa Esmaeili Shayan (1995)

Background Summary

I am a Ph.D. renewable and sustainable energy engineer with a passion for smart mobility and the green transition. My professional interests include mechanical and biosystems engineering, hybrid energy storage, and renewable energy generation, and their combination with data science and machine learning to tackle challenging problems. I approach problems with a very structured and analytical mindset, and I thrive working in multi-disciplinary teams. In my spare time, I like exploring new food recipes and inviting friends over, going to the movies, reading and anything related to cars, from road trips to motorsports. Currently, I am the Director of Engineering at Saba Power and Energy Group, where I am the division head. I am already involved in renewable energy technologies, and published over 15 papers/books/chapters and obtained 1 patent.

Education

Ph.D., Renewable Energy Engineering 2022
Tarbiat Modares University (It is ranked #301-350 in QS WUR Ranking by Subject 2021), Iran. GPA: 4 (18.53/20). Thesis Title: Design, Fabrication, Evaluation, and Modeling of Hybrid Renewable Energy Conversion System to Supply Electricity for a Green Cottage. (First Class with Distinction)

M. Sc., Renewable Energy Engineering 2017
Tarbiat Modares University (It is ranked #301-350 in QS WUR Ranking by Subject 2021), Iran. GPA: 4 (18.56/20). Dissertation: "Design, Fabrication, and Evaluation of a Solar Power Conversion System Based on Flexible Solar Panels". (2015-2017). (First Class with Distinction)

B. Sc., Mechanical and Biosystems Engineering 2014
Gorgan University of Sciences and Natural Resources, Iran. GPA: 4 (18.43/20). Dissertation: "Analysis of Dynamic and Static Yield Stress at JD955, JD1055". (2011-2015). (First Class with Distinction)

Areas of Interest

Renewable Energies

Energy conversion, Solar Energy, Wind Energy, Optimization.

Mechanical Engineering

Fuels, CFD, Combustion, Pollutions, Hybrid, Electrical Engines (CHP, CCHP).

Extracurricular Activities and Associations

I was elected for several positions during my Bachelor's – Ph.D. studies, the most relevant ones being Chief Delegate of the Mechanic School, Member of the University Student Council, and Member of the Renewable Energy School Council.

Key activities and responsibilities:

- Detecting and analyzing the problems affecting the students, then working with them and the faculty to find solutions
- Proposal of initiatives to enhance the students' university experience
- Organizing academic and social activities for the students
- Showing high-school students our facilities, while explaining the main aspects of higher education and answering their questions

Selected Publications

Papers:

1. "Multi-Microgrid Optimal Hybrid Energy Management Under DC-DC Boost Voltage with Predictive Analytics and Dynamic Decision Algorithm". Esmaeili Shayan, M., Najafi, G., Ghobadian, B., Gorjian, S., Mazlan, M, Renewable Energy (2022). <https://doi.org/10.1016/j.renene.2022.11.006> (IF: 8.634-Q1)
2. "A Novel Approach of Synchronization of the Sustainable Grid with an Intelligent Local Hybrid Renewable Energy Control". Esmaeili Shayan, M., Najafi, G., Ghobadian, B., Gorjian, S., & Mazlan, M. International Journal of Energy and Environmental Engineering (2022). <https://doi.org/10.1007/s40095-022-00503-7> (IF: 3.10-Q2)
3. "Phase change material mixed with chloride salt graphite foam infiltration for latent heat storage applications at higher temperatures and pressures". Esmaeili Shayan, M., Najafi, G. & Lorenzini, G. International Journal of Energy and Environmental Engineering (2022). <https://doi.org/10.1007/s40095-021-00462-5>. (IF: 3.10-Q2)
4. "Flexible Photovoltaic System on Non-Conventional Surfaces: A Techno-Economic Analysis". Esmaeili Shayan M, Najafi G, Ghobadian B, Gorjian S, Mazlan M, Samami M, Shabanzadeh A. Sustainability. (2022); 14(6):3566. <https://doi.org/10.3390/su14063566>. (IF: 3.47-Q1)
5. "Sustainable Design of a Near-Zero-Emissions Building Assisted by a Smart Hybrid Renewable Microgrid". Esmaeili Shayan, M., Najafi, G., Ghobadian, B., Gorjian, S., & Mazlan, M. (2022). International Journal of Renewable Energy Development, 11(2), 471-480. <https://doi.org/10.14710/ijred.2022.43838>. (IF: 1.67-Q3)
6. "Energy consumption during impact cutting of canola stalk as a function of moisture content and cutting height" Journal of the Saudi Society of Agricultural Sciences. (2015), 147-152. Azadbakht, M., Esmaeilzadeh, E., Esmaeili-Shayan, M., Energy consumption during impact cutting of canola stalk as a function of moisture content and cutting height, Journal of the Saudi Society of Agricultural Sciences. doi: <http://dx.doi.org/10.1016/j.issas.2013.10.002>. (IF: 6.46-Q1)
7. "Thermal Performance and Heat Dynamics Energy and Exergy of Integrated Asphalt Collector Storage: Sources of Thermal Energy, and Thermoelectric Energy". Esmaeili Shayan, M., Hayati, M, Iranian Journal of Energy and Environment (IJEE), (2022), 14(1), pp. 17-25. doi: 10.5829/ijee.2023.14.01.03
8. "Modeling the performance of amorphous silicon in different typologies of curved building-integrated photovoltaic (BIPV) conditions". Esmaeili Shayan, M., Najafi, G., Ghobadian, B., Gorjian, S. Iranian Journal of Energy and Environment (IJEE), (2022), 13(1), 87-97. doi: 10.5829/ijee.2022.13.01.10
9. "The Strategy of Energy Democracy and Sustainable Development: Policymakers and Instruments". Esmaeili Shayan, M., Hayati, M., Najafi, G., Esmaeili Shayan, S. Iranian Journal of Energy and Environment (IJEE), (2022), doi: 10.5829/ijee.2022.13.02.10
10. "Floating Solar Power Plants: A Way to Improve Environmental and Operational Flexibility". Mostafa Esmaeili Shayan, Jalaledin Hojati. Iranian Journal of Energy and Environment (IJEE), Volume 12, Issue 4, 2021. 337-348. (2021). doi: [10.5829/IJEE.2021.12.04.07](https://doi.org/10.5829/IJEE.2021.12.04.07)
11. "Possibility of supplying energy to border villages by solar energy sources". M. Esmaeili Shayan, S. Esmaeili Shayan, A. Nazari, Energy Equipment and Systems, Vol. 9, No. 3, Sep. 2021. 279-289. (2021). Doi: 10.22059/EES.2021.246079
12. "Design of an Integrated Photovoltaic Site: Case of Isfahan's Jarghouyeh photovoltaic plant", Esmaeili shayan M, najafi G, Esmaeili shayan, S. Quarterly Journal of Energy Policy and Planning Research. (2021); 6 (4) :229-250. URL: <http://epprjournal.ir/article-1-858-en.html>
13. "Power Quality in Flexible Photovoltaic System on Curved Surfaces" journal of energy policy and planning research. ministry of energy, January 2017, 105-136. Esmaeili shayan M, najafi G, banakar A. Power Quality in Flexible Photovoltaic System on Curved Surfaces. quarterly journal of energy policy and planning research. 2017; 3 (7) :105-136
14. "Design, Fabrication and Techno-Economic Analysis of Solar Energy Conversion System Based on Flexible Solar Panels" EU PVSEC 2017 - 33rd European P.V. Solar Energy Conference and Exhibition, 2017, 2582-2589. Esmaeili shayan M, najafi G, banakar A. [Link](#)

Books/ Chapters:

1. "Book: *Principles Design and Application of Solar Power Systems*. ACECR Publication. Amirkabir University of Technology Branch, 2020, 470. University Book in Renewable Energy Technologies, Principles Design and Application of Solar Power Systems, ACECR Publication, Mostafa Esmaeili Shayan, Gholamhassan Najafi, Shiva Gorgian. Amirkabir University of Technology Branch, ISBN: 978-964-210-316-4, pp:470, 2020 (in Persian) [Link](#)

2. "Chapter title: *Solar Energy and Its Purpose in Net-Zero Energy Building* IntechOpen. London, 2020. Book in the field of Zero-Energy Buildings - New Approaches and Technologies, Chapter title: Solar Energy and Its Purpose in Net-Zero Energy Building, **Mostafa Esmaeili Shayan**, IntechOpen, DOI: 10.5772/intechopen.93500. [Link](#)
3. "Chapter title: *Nanotechnology in the service of Solar Energy Systems*. IntechOpen. London, 2020. Book in the field of Nanotechnology and the Environment, Chapter title: Nanotechnology in the service of Solar Energy Systems, **Mostafa Esmaeili Shayan**, Farzaneh Ghasemzadeh. Book editor: Prof. Nasser S. Awwad, 25.05.2020, London, IntechOpen, ISBN 978-1-78985-671-2 [Link](#)
4. "Chapter title: *Nuclear Power Plant or Solar Power Plant*. IntechOpen. London, 2020. Book in Nuclear Power Plant, Chapter title: Nuclear Power Plant or Solar Power Plant, **Mostafa Esmaeili Shayan**, Farzaneh Ghasemzadeh. Book editor: Prof. Nasser S. Awwad, 02.03.2020, London, IntechOpen, ISBN 978-1-83968-331-2. [Link](#)

Awards

- The best written book among more than 500 books of 2020, The Ministry of Science, Culture and Research, 2020, Iran.

Professional Experience

Director of Engineering Saba Power and Energy Group, Tehran, Iran	From 2022
Adjunct Professor Islamic Azad University Science and Research Branch (SRBIAU); Faculty of Natural Resources and Environment, and Faculty of Environment, University of Tehran, Iran.	From 2022
Teacher and Researcher REFAH Foundation, Tehran, Iran	2015 - 2021

Lab. Experience

Science Laboratory Experiences Refah, Iran Renewable Energy - Nanotechnology experiments for general chemistry laboratory	2015 to 2021
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Patent

- Energy Device - Iran Patent Office. Iran, 2012. Patent date Issued Mar 20, 2012 Patent issuer and number: 82822

Software and Hardware

- Python Data-processing and ML projects (pandas, tensorflow), GUI development (pyQt, wxPython), communication
- MATLAB/Simulink System modeling, control and simulation; data processing, neural networks and fuzzy logic
- C Microcontroller-based projects (ARM Cortex-M3, STM32) with motor control and multiple sensors
- R Statistics, data analysis and time-series modeling
- SimaPro LCA approach and reducing the environmental impact of products
- CAD Part and assembly design and analysis (FreeCAD, AutoCAD, Inventor, Pvsyst, Ansys, Solidworks.)
- RobotStudio development, simulation and deployment of pick-and-place applications with several tools on an ABB IRB120
- DigSILENT Battery Energy Storage System Modelling, Recording, monitoring and analysis of signals in all relevant timeframes.
- Linux Main OS for the last 7 years
- GAMS Modeling and the optimization of the energy production. Minimize the production costs, The quantity of the available green energy in the power system.

Languages

- Persian Native
- English C1