

Dr. Hadi Saghafi

Assistant professor
Department of Electrical Engineering, Isfahan Branch, IAU

Educational background

- PhD:

Isfahan University of Technology (IUT), 2014

Thesis title: "Reactive Power Sharing and Stability Improvement in Converter Based Standalone Microgrids"

GPA: 18.54/20

- Master:

Isfahan University of Technology (IUT), 2007

Thesis title: "Analysis and Implementation of Grid-Connected dc/ac Voltage Source Converters with L and LCL Filters "

GPA: 18.96/20

- Bachelor:

Isfahan University of Technology (IUT), 2004

GPA: 17.53/20

Honors and Awards

- Ranked 1st in PhD graduates of Isfahan University of Technology (IUT), 2014.
- Ranked 1st in PhD entrance exam of Isfahan University of Technology (IUT), 2008.
- Ranked 1st in Master graduates of Isfahan University of Technology (IUT), 2007.
- Ranked 1st in Bachelor graduates of Isfahan University of Technology (IUT), 2014.
- Giving the scholarship in Bachelor and Master grades.

Research Interests

- Microgrids
- Distributed Generations
- Renewable Energies
- Control in Power Electronics
- Application of Power Electronics in Power Systems
 - o FACTS
 - o Custom Power (including Active Filters)
- MPPT Control in Photovoltaic Systems
- Power Systems

Research Papers

- Rasoulia A, Sagha H, Abbasian M, Delshad M. Deep learning based model predictive control of active filter inverter as interface for photovoltaic generation. *IET Renewable Power Generation*. 2023 Oct;17(13):3151-62.
- Nezhad SM, Sagha H, Delshad M, Sadeghi R. Nonparametric correlative-probabilistic microgrid power energy management based sine-cosine algorithm. *IEEE Access*. 2021 Oct 28;9:156323-36.
- S. J. Aghili, H. Sagha and H. Hajian-Hoseinabadi, "Uncertainty Analysis Using Fuzzy Transformation Method: An Application in Power-Flow Studies," *IEEE Transactions on Power Systems*, vol. 35, no. 1, pp. 42-52, Jan. 2020.
- Rasoulia A, Sagha H, Abbasian M, Delshad M. Intelligent Model Based Predictive Controller for DC-DC Converter in Photovoltaic Systems. *International Journal of Smart Electrical Engineering*. 2023 Sep 1;12(03):157-64.
- Mobarakeh AI, Sadeghi R, Delshad M. Techno-economic energy management of micro-grid in the presence of distributed generation sources based on demand response programs. *International Journal of Electrical Power & Energy Systems*. 2022 Oct 1;141:108169.
- Esfahani AG, Fani B, Delshad M, Sagha H. A three-stage multi-agent-based peer-to-peer method for fault isolation of high distributed generation penetrated distribution networks. *IET Renewable Power Generation*. 2023 Apr;17(5):1255-66.
- Iranpour Mobarakeh S, Sadeghi R, Sagha H, Delshad M. Robust management and optimization strategy of energy hub based on uncertainties probability modelling in the presence of demand response programs. *IET Generation, Transmission & Distribution*. 2022 Mar;16(6):1166-88.
- Esapour K, Abbasian M, Sagha H., "A novel self-adaptive polar stochastic energy management approach for hybrid microgrids with high penetration of renewable

energy sources," *IET Generation, Transmission & Distribution*, vol. 15, issue 3, pp. 546-557, 2021.

- Mobarakeh AI, Sadeghi R, Esfahani HS, Delshad M. Optimal planning and operation of energy hub by considering demand response algorithms and uncertainties based on problem-solving approach in discrete and continuous space. *Electric Power Systems Research*. 2023 Jan 1;214:108859.
- Madanimohammadi A, Abbasian M, Delshad M, Saghafi H. Electromagnetic and Thermal Analysis of a 6/4 Induction Switched Reluctance Machine for Electric Vehicle Application. *Applied Computational Electromagnetics Society Journal*. 2023 May 1;38(5):361.
- Khorami R, Delshad M, Saghafi H. A new interleaved high step-down converter with wide range of soft switching. *International Transactions on Electrical Energy Systems*. 2021 Dec;31(12):e13214.
- Tohidi B, Delshad M, Saghafi H. A new interleaved zvt high step-up converter with low count elements for photovoltaic applications. *Journal of Renewable Energy and Environment*. 2022 Jan 1;9(1):70-7.
- Khodakhast Esapour, Mohammadali Abbasian, Hadi Saghafi, "Intelligent energy management in hybrid microgrids considering tidal, wind, solar and battery," *International Journal of Electrical Power & Energy Systems*, Volume 127, 2021.
- B. Tohidi, M. Delshad, and H. Saghafi, "A new interleaved high step up converter with low voltage stress on the main switches," *Smart Structures and Systems*, vol. 26, no. 4, pp. 521–531, Oct. 2020.
- R. S. Dastjerdi, M. A. Abbasian, H. Saghafi and M. H. Vafaie, "Performance Improvement of Permanent-Magnet Synchronous Motor Using a New Deadbeat-Direct Current Controller," *IEEE Transactions on Power Electronics*, vol. 34, no. 4, pp. 3530-3543, April 2019.
- Khorammi, Rohollah, Majid Delshad, and Hadi Saghafi. "A New Step-Down DC-DC Converter with Synchronous Rectifier and Soft Switching Conditions." *Journal of Intelligent Procedures in Electrical Technology* (2021): 93-105.
- H. Saghafi, H. Karshenas and A. Bakhshai, "Application of Integrated Series Compensator in Damping Power Oscillations in Standalone Microgrids," *Canadian Journal of Electrical and Computer Engineering*, vol. 38, no. 1, pp. 2-9, winter 2015.
- Saghafi H, Karshenas HR., "Power sharing improvement in standalone microgrids with decentralized control strategy," *Electric Power Components and Systems*, vol. 42, issue 12, pp. 1278-1288, Sep. 2014.
- H. Saghafi, H. Karshenas, A. Bakhshai and P. Jain, "Power oscillation damping in standalone microgrids using integrated series compensator," *Twenty-Seventh Annual IEEE Applied Power Electronics Conference and Exposition (APEC)*, Orlando, FL, 2012, pp. 1940-1945.
- H. R. Karshenas and H. Saghafi, "Basic Criteria in Designing LCL Filters for Grid Connected Converters," *IEEE International Symposium on Industrial Electronics*, Montreal, QC, Canada, 2006, pp. 1996-2000.

- H. R. Karshenas and H. Saghafi, "Performance Investigation of LCL Filters in Grid Connected Converters," *IEEE/PES Transmission & Distribution Conference and Exposition: Latin America*, Caracas, 2006, pp. 1-6.
- H. R. Karshenas and H. Saghafi, "Dynamic Performance of a Grid-Connected Converter Employing State Feedback," *IEEE International Conference on Harmonics and Quality of Power*, Cascais, Portugal, 2006, pp. 1-5.

Research Projects

- Design and development of arc control system in electric arc furnaces
- Identification, modelling and prepare instructions for SVC controllers in Mubarakeh Steel Company.
- Structure identification and software development for arc length control in TDRH system in Mubarakeh Steel Company.
- Modelling and feasibility study for development of online gas chromatograph (GC) for power plants in Isfahan Regional Electrical Company.
- Identification and troubleshooting of AGC system in Mubarakeh Steel Company.
- Identification and troubleshooting of JVVC system in Mubarakeh Steel Company.
- Construction and utilization of 20 KW photovoltaic power plant in Isfahan University (advisor).
- Development of semi-industrial sample of ironstone purity identifier system in Mubarakeh Steel Company.
- Cooperation in laboratory sample development of Static Transfer Switch (STS) in Isfahan University of Technology.
- Cooperation in laboratory sample development of Unified Power Flow Controller (UPFC) in Isfahan University of Technology (advisor).
- Having 1st grade license for design and supervision of buildings electrical installations.