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Editorial: Modeling and optimization of renewable energy systems by using novel approaches

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Editorial on the Research Topic

Modeling and optimization of renewable energy systems by using novel approaches

Information

In one of the published papers, entitled “*Developing an Artificial Hummingbird Algorithm for Probabilistic Energy Management of Microgrids Considering Demand Response*” [Alamir et al.](#), an artificial hummingbird algorithm is developed for energy management of a microgrid that included both renewable and conventional energy sources with an incentive-based demand response. In that work, two different cases of study were considered, and found that energy consumption was reduced by 104 kWh and 2,677 MWh for the 1st and 2nd cases, respectively, on the basis of the results of the applied algorithm. In another published paper, entitled “*A Detailed Review Investigating the Mathematical Modeling of Solar Stills*” [Ayoobi and Ramezanizadeh](#), a comprehensive review was performed and different types of studies including experimental, numerical and analytical works were considered. In this article, effects of different elements such as using thermal energy storage on the performance of solar still were discussed and reviewed. The 3rd paper was entitled “*Optimal Sizing Grid-Connected Hybrid PV/Generator/Battery Systems Following the Prediction of CO₂ Emission and Electricity Consumption by Machine Learning Methods (MLP and SVR): Aseer, Tabuk, and Eastern Region, Saudi Arabia*” ([Almutairi et al.](#)). In this work, emission of CO₂ and consumption of electricity in Saudi Arabia were predicted by using

intelligent techniques. Afterwards, the optimum combination of the components to supply the demand and desalination loads in residential usages were obtained by considering some assumptions such as penalty of CO₂ emission and 0% capacity shortage. In the other paper entitled “*A Logistic Modelling Analysis for Wind Energy Potential Assessment and Forecasting its Diffusion in Pakistan*” (Khatiri et al.). In this work, wind energy in Pakistan was assessed and penetration of wind power in the market of Pakistan forecasted by considering three different scenarios for the period of 2020–2050. The other paper published in this Research Topic was entitled “*Emplacement of the Photovoltaic Water Pumping System in Remote Areas by a Multi-Criteria Decision-Making Method: A Case Study*” (Heydari et al.). In this work, a multi-criteria decision making approach known as TOPSIS was applied to rank 93 cities for establishment of water pumping system based on solar PV systems. The other paper in this Research Topic was entitled “*Performance Optimization of the Helical Heat Exchanger With Turbulator*” (Xifeng et al.). In this article, performance of the helical heat exchanger was numerically investigated by considering three types of fins and pressure loss and overall heat transfer coefficient were discussed and determined. Finally, based on the numerical results, the most appropriate fin was selected on the basis of the benefit-cost-ratio. The other paper published in this Research Topic was entitled “*A Comparison Study of Multi-Objective Bonobo Optimizers for Optimal Integration of Distributed Generation in Distribution Systems*” (Eid et al.). In this article, three new Multi-Objective Bonobo Optimizer

(MOBO) variants were evaluated by applying statistical analysis to solve the multi-objective optimization of Distributed Generation (DG) into distribution systems. They observed that MOBO1 was superior for the single-DG allocation while in case of three-DG units, MOBO3 was the best one.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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