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Editorial

Editorial to the 'Special Issue—Solar Photovoltaic System Engineering' of AIMS Energy

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In most of the countries, the solar photovoltaic systems have reached to the grid parity. The higher capacity of solar photovoltaic power plants are connecting within the higher and medium voltage networks, and lower capacity photovoltaic units within the low voltage network (i.e., distributed network). There are many technical challenges for integrating the solar PV plants at higher voltage levels as well as lower voltage levels. The key challenging issues, for increasing further penetration of solar photovoltaic systems in the electrical power network, are technology developments for intelligent power conditioning devices, integration of hybrid energy storage for making solar photovoltaic system as dispatchable power source, mitigation of power quality issues, demand side management, technology development of solar photovoltaic based micro-grid, techno-economic operational strategies, etc.

The solar photovoltaic system engineering depends on many factors (e.g., techno-economic sizing, energy management, energy dispatch strategies, resources allocations etc.). Different geographical locations as well as climatic conditions also influence the operation and performance of the solar photovoltaic-based system. The incident solar radiation has significant impact on the solar photovoltaic system energy production. The solar photovoltaic system energy output is influenced by the geometrical configuration of photovoltaic array and the view factor to sky effect. In the recent years, there are many technical innovations, developments have happened for deployments of solar photovoltaic system grid integration with energy storage for participating either as an active generator or operating as a solar photovoltaic based micro-grid. Within the distributed energy network, solar photovoltaic systems can also be used as 'building integrated photovoltaic systems (BIPV)' to provide electrical energy locally and make the buildings as 'zero energy buildings (ZEBs)'. In future, ZEBs are going to play a significant role in the upcoming smart distributed

energy network development due to their contribution of on-site electrical generation through solar photovoltaic systems, energy storage, demand side management etc. In order to increase further PV penetration within the distribution network and develop innovative mitigation techniques, there is critical need of further field-oriented research in the above-mentioned topics.

This Special Issue of AIMS Energy Journal comprises peer-review articles on advancement of power dispatching techniques for solar photovoltaic system with energy storage, shading and diffused solar radiation effects on the performance of solar photovoltaic system, intelligent controllers for distributed energy resources allocations, material characterization for heterojunction solar cells. In addition, some articles cover the typical case studies of solar photovoltaic systems in the tropical region.

As the Guest Editor of this Special Issue 'Solar Photovoltaic System Engineering' of the AIMS Energy Journal, I express my sincere appreciation to the journal editorial team, authors and reviewers of the manuscripts, journal editorial supporting team, and all those who have contributed and supported in successful fruition and publication.

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