

ASME Journal of Solar Energy Engineering
Special Issue: Photovoltaic Tracking Technology

Photovoltaic (PV) energy systems are becoming a larger share of electricity production, with over 230 GW installed worldwide. Much of this growth is being driven by a variety of incentives, though just as important, costs are decreasing due to improvements in manufacturing technology, raw material prices, installation practices and competition. These lower costs also drive innovation in terms of increasing power plant efficiencies to maximize energy harvest within the site footprint.

Photovoltaic tracking technology is one method for increasing the energy harvest, though has been somewhat historically limited due to the cost-benefit of the technology and reliability concerns. Improvements in the technology, along with lower costs to deploy and maintain have led to an increase in PV systems using tracker technology. With this new surge has been a focus on improved engineering to ensure accurate operation for a variety of site conditions and environmental factors. This special issue explores the mechanical engineering concepts that have been employed to ensure high reliability, reduced material costs, reduced maintenance and lower levelized cost of energy. Topics of interest include, but are not limited to:

- Reliability testing of components or the system, including FMEA, Accelerated Testing, Fault Trees, Root Cause Analysis.
- Control systems and improvements in applications for PV tracker technology, such as tracker positioning, system event logging and alerts, and SCADA integration.
- Extreme weather response, including simulations or improvements to technology to mitigate impacts to tracking system and other balance-of-system equipment (modules, wiring, etc.)
- Glare mitigation due to federal or local requirements for siting near specific facilities (airports, military bases), and avian hazards.
- Improvements in transportation of trackers to the site. Vibration mitigation to ensure that the equipment isn't damaged before installation.
- Methods for improving thermal impacts to modules with field experiments or computer simulations on airflow around modules, and resulting impacts to energy performance.
- Material chemistry, including corrosion testing and impacts to mechanical operations.
- Levelized cost of energy analysis of new tracking technologies and configurations, considering differences in slope, aspect, site area constraints, outage probabilities, and other factors that impact cost.

Submission Instructions

Please submit your paper to <https://journaltool.asme.org/home/index.cfm> and e-mail the Editor, Dr. Robert Boehm at bob.boehm@unlv.edu (with a copy to: Geoff Klise at Geoff.Klise@gmail.com) to alert him that your paper is intended for the special issue. Information about the journal can be found at <https://journaltool.asme.org/home/JournalDescriptions.cfm?JournalID=15&Journal=SOL>. Note that submissions selected for publication are subject to ASME's voluntary and mandatory page charges: http://journaltool.asme.org/Help/AuthorHelp/WebHelp/JournalsHelp.htm?_ga=1.153187259.265513328.1386788237.

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