

### Review Form 3

Journal Name:	<a href="#">Journal of Engineering Research and Reports</a>
Manuscript Number:	Ms_JERR_127493
Title of the Manuscript:	<b>A Small Scale Solar-Powered Charging System for Electric Vehicles (EVs)</b>
Type of the Article	Power Electronics

#### **PART 1: Review Comments**

<b>Compulsory</b> REVISION comments	<b>Reviewer's comment</b>	<b>Author's Feedback</b> (Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<b>Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.</b>	This manuscript is significant for the scientific community as it addresses the pressing need for sustainable and efficient energy solutions in the rapidly growing field of electric vehicle (EV) infrastructure. By focusing on a small-scale solar-powered charging system, it highlights the potential for renewable energy to reduce dependence on fossil fuels, offering a greener alternative to grid-based charging. The integration of MATLAB simulations ensures the system's feasibility and allows researchers to evaluate performance under varying environmental conditions, making it a valuable resource for future advancements in renewable energy technologies. I appreciate the manuscript for its systematic approach and clear presentation of results, which contribute to the broader goals of sustainable transportation and energy efficiency.	
<b>Is the title of the article suitable? (If not please suggest an alternative title)</b>	The title could be slightly refined to make it more descriptive and aligned with the technical depth of the study. "Design and Simulation of a Small-Scale Solar-Powered Charging System for Electric Vehicles with MPPT Optimization under Varying Conditions"	
<b>Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.</b>	<b>Suggestions for Improvement</b> 1. Include the Purpose and Broader Impact 2. Refine the Results Presentation 3. Avoid Repetition	
<b>Are subsections and structure of the manuscript appropriate?</b>	Yes, additionally, Simulation Setup has to be included under subsections.	
<b>Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.</b>	1. This manuscript appears scientifically robust and technically sound, as it incorporates well-established principles in solar energy systems, electric vehicle charging, and battery management. 2. The use of the Shockley diode equation to model the solar panel's I-V characteristics ensures an accurate representation of the panel's behavior, while the Perturb & Observe (P&O) algorithm for Maximum Power Point Tracking (MPPT) is a proven method for optimizing energy extraction under variable conditions. 3. Additionally, the inclusion of a Battery Management System (BMS) demonstrates a thorough understanding of safe and efficient battery charging techniques, which is critical for maintaining battery health and longevity. 4. The MATLAB simulation approach allows for a detailed and controlled analysis of system performance under various environmental scenarios, providing valuable insights into the feasibility and efficiency of the proposed solar-powered charging system. These elements collectively validate the scientific and technical integrity of the manuscript.	
<b>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</b> =	<b>Suggestions for Additional References:</b> <b>Recent MPPT Algorithm Reviews:</b> 1. References reviewing new MPPT algorithms (e.g., fuzzy logic, artificial intelligence-based MPPT) or comparing them to traditional methods like Perturb & Observe. <b>Solar-Powered EV Charging Systems:</b> 2. Studies that explore the integration of solar power with EV charging stations, focusing on small-scale or decentralized charging systems. <b>Battery Management and Charging Techniques:</b> 3. Recent papers on advancements in Battery Management Systems (BMS), especially for lithium-ion batteries, and techniques for optimizing charging efficiency and prolonging battery life.	

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<p>Minor REVISION comments</p> <p><b>Is the language/English quality of the article suitable for scholarly communications?</b></p>	<p>The manuscript's English quality is appropriate for scholarly communication, but some minor refinements in sentence structure, redundancy, and clarity would enhance readability and ensure that the writing is both technically precise and accessible to a broader scholarly audience.</p>	
<p><b>Optional/General</b> comments</p>	<p>Here are some optional/general comments that could further enhance the manuscript:</p> <p><b>Future Work:</b> The manuscript could benefit from a more detailed discussion of future work. For instance, suggestions for integrating additional renewable energy sources (such as wind) or exploring smart grid technologies to enhance the system's flexibility and efficiency would be valuable. This can provide a more forward-looking perspective on the research.</p> <p>The Peer Review Comments: Here's a review of manuscript for areas for improvement:</p> <p>1. Clarity and Flow:</p> <ul style="list-style-type: none"> <li>The content is clear and well-organized, but some sentences could be streamlined for better readability.</li> <li>Overuse of technical jargon in certain areas might make it less accessible to a general audience.</li> </ul> <p>2. Sentence Repetition:</p> <ul style="list-style-type: none"> <li>Phrases like "optimize power extraction under varying irradiance conditions" are repeated in different forms. Consider consolidating for conciseness.</li> </ul> <p>3. Missing Information on Purpose:</p> <ul style="list-style-type: none"> <li>The why or importance of this work isn't emphasized enough in the opening sentence. You mention the global shift toward EVs but could better explain the significance of small-scale solar-powered systems specifically.</li> </ul> <p>4. Minor Typos/Stylistic Adjustments:</p> <ul style="list-style-type: none"> <li>The phrase "Simulations conducted under various conditions..." could be restructured for parallelism:             <ul style="list-style-type: none"> <li>Improved version: "Simulations were conducted under varying conditions, including ideal weather (1000 W/m<sup>2</sup> irradiance and 25°C), partially cloudy weather (400 W/m<sup>2</sup> irradiance), and different initial state-of-charge (SOC) levels (20%, 50%, 80%)."</li> </ul> </li> </ul> <p>5. Sentence Structure: The final sentence is clear but a bit dense. Consider breaking it into two for improved readability.</p>	

**PART 2:**

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p><b>Are there ethical issues in this manuscript?</b></p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

**Reviewer Details:**

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