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I declare, I confirm, I certify and I sign that I received substantial, important, line by line peer review with several and substantial comments, important remarks and hints from, at least, 3 Reviewers and the Assistant Editor for my paper: **Thermal Dynamics and Temperature-Related Efficiency Loss in Photovoltaic Systems under High-Temperature Conditions**

with Authors: Driada MITRUSHI¹ Urim BUZRA², Irma BERDUF³, Valbona MUDA⁴,
Joan JANI⁵

I would like to thank all the reviewers for their thoughtful comments and efforts towards improving our manuscript. We revised the manuscript with special attention to the comments that we received from **Three (3)** (<-write the correct number) reviewers that were experts, specialists in the area of my paper. I declare, confirm, certify and sign that WSEAS has checked my paper for possible plagiarism by Turnitin and my paper was found without plagiarism or self-plagiarism by Turnitin. I also declare, confirm, certify and sign that also that no Associate-Editor, no Editor-in-Chief, no member of the WSEAS Secretariat forced me in this Journal to add references (citations) to any previous publications of the journal.

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A handwritten signature in blue ink, appearing to be 'D. H.', is shown on a light-colored background.

Date: 30.07.2026

Response to Reviewers

1.1 Reviewer 1

We sincerely thank Reviewer 1 for the careful evaluation of our manuscript and for the constructive comments and valuable suggestions. We appreciate the opportunity to improve the scientific quality of our work. Following the Reviewer's recommendations, the manuscript has been revised by strengthening its theoretical and mathematical framework through the addition of two new subsections. These modifications are summarized below.

Reviewer 1 Comment

The manuscript presents an interesting topic; however, the mathematical and analytical framework should be strengthened. The authors are encouraged to provide a more rigorous theoretical formulation, including the governing heat-transfer equations and a formal sensitivity analysis of the proposed model.

Response

We sincerely thank the Reviewer for this valuable suggestion. In response, we have strengthened the mathematical foundation of the manuscript by introducing two new subsections.

1. New Section 2.3.5 – *Theoretical Heat Transfer Framework*

A new subsection has been incorporated to provide the physical basis of the proposed Thermal Performance Deviation Model (TPDM). This section introduces the transient heat-transfer equation derived from the first law of thermodynamics and describes the contributions of absorbed solar radiation, convection, long-wave radiation, and electrical energy conversion. Furthermore, the steady-state energy balance is presented to establish the theoretical connection between the general heat-transfer formulation, the classical Ross and Faiman temperature models, and the proposed TPDM. This addition clarifies that the TPDM is an engineering-level empirical model supported by the underlying heat-transfer physics rather than a direct solution of the governing thermal equation.

2. New Section 2.7.1 – *Sensitivity Analysis of the Proposed Thermal Performance Deviation Model (TPDM)*

A second subsection has been added to improve the mathematical interpretation of the proposed model. This section presents a formal analytical sensitivity analysis based on first-order partial derivatives and normalized sensitivity coefficients, together with a numerical perturbation analysis in which the input variables are independently varied by $\pm 5\%$, $\pm 10\%$, and $\pm 15\%$. The results demonstrate that solar irradiation is the dominant factor influencing photovoltaic specific yield, while thermal excess provides a physically meaningful correction associated with temperature-induced efficiency losses. These analyses further support the robustness, mathematical transparency, and physical interpretability of the proposed TPDM. We believe that these additions directly address the Reviewer's concerns and significantly strengthen the theoretical and analytical aspects of the manuscript.

We would like to thank the Reviewer1 once again for the constructive comments. The newly added theoretical heat-transfer framework and sensitivity analysis have substantially improved the scientific quality, mathematical rigor, and physical interpretation of the proposed methodology. We hope that the revised manuscript satisfactorily addresses the Reviewer's concerns.

1.2 Reviewer 2

Reviewer 2 Comment

I agree that this paper can be published in your proceedings. I have heard that the conference will be only online. It is a pity . As you know I am Associate Editor in your journal and frequent WSEAS Conference participant. I always advertise the WSEAS in my University. So, the paper should maintain a more formal academic tone and avoid rhetorical questions in the introduction. Note that there are two equations with the number 8. Change the numbering please! It can be accepted after major revision.

Response to Reviewer 2

We sincerely thank the Reviewer 2 for the positive evaluation of our manuscript and for the constructive comments.

Following the Reviewer's recommendation, the Introduction was carefully revised to further improve its academic writing style, readability, and overall scientific presentation. Several sentences were refined to ensure a more formal and consistent academic tone throughout the introductory section.

In addition, the duplicated equation numbering identified by the Reviewer has been corrected. All equations and their corresponding in-text references have been carefully checked and renumbered to ensure consistency throughout the manuscript.

We appreciate the Reviewer's careful reading of the manuscript. We believe that these revisions have improved the clarity and overall presentation of the paper, and we hope that the revised version satisfactorily addresses the Reviewer's comments.

1.3 Reviewer 3

Reviewer 3 comment

The submitted paper titled "Thermal Dynamics and Temperature-Related Efficiency Loss in Photovoltaic Systems under High-Temperature Conditions" provides an empirical evaluation of photovoltaic thermal models using outdoor operational data from Tirana, Albania. Regarding its appropriateness for the conference, the manuscript does not align with the strict scope and standards of the Society for Industrial and Applied Mathematics, which requires significant novel mathematical theory, advanced computational methodologies, or sophisticated applied mathematical analysis. The present work relies primarily on standard algebraic engineering formulations, basic empirical regression fitting, and statistical validation metrics, which are more typical of specialized engineering or renewable energy journals than a high-level applied mathematics venue. In evaluating the consistency between the text and visual assets, several discrepancies emerge that must be resolved. The text references "Figure 1" to describe the overall methodological workflow, which accurately matches the labeling and content of the first diagram. However, the manuscript contains major internal contradictions regarding the calculation of short-term thermal efficiency loss. The abstract claims the estimated short-term loss reached 10.83% and notes that

more than 1100 operating hours exhibited losses above 3% while over 550 hours exceeded 5%. While the 10.83% maximum loss and the 552 hours exceeding 5% loss line up perfectly with the annotations at the top of Figure 14, the main body text in Section 3.3 repeats these figures but states that over 550 hours exceeded 5% thermal efficiency loss, which shows a tiny numerical variation from the exact count of 552 hours displayed in Figure 14. The paper can be accepted after major revision.

Reviewer 3 – Comment 1

Comment:

The paper is more oriented toward engineering applications than applied mathematics and may not fully match the journal's mathematical scope.

Response:

We thank the Reviewer 3 for this valuable observation. While the primary objective of this work is the development of an engineering-oriented thermal-performance model for photovoltaic systems, we have substantially strengthened the mathematical and physical foundation of the revised manuscript. Specifically, a new subsection entitled "**Theoretical Heat Transfer Framework**" (Section 2.3.5) has been added, introducing the governing transient heat-transfer equation and its steady-state energy balance, thereby providing the physical basis of the Ross, Faiman, and the proposed TPDM formulations. In addition, a new subsection "**Sensitivity Analysis of the Proposed Thermal Performance Deviation Model (Section 2.7.1)**" has been incorporated, including analytical partial derivatives, normalized sensitivity coefficients, and numerical perturbation analysis. These additions improve the mathematical rigor, physical interpretability, and theoretical consistency of the proposed methodology while preserving its engineering applicability.

Reviewer 3 – Comment 2

Comment:

There is a numerical inconsistency. The manuscript reports "over 550 hours", whereas Figure 14 indicates 552 hours.

Response:

We sincerely thank the Reviewer for identifying this inconsistency. The manuscript has been carefully revised to ensure complete numerical consistency throughout the paper. The value has been corrected and is now reported consistently as **552 operating hours** in the Abstract, Results and Discussion (Section 3.3), and Conclusions, matching the information presented in Figure 14.

Reviewer 3 – Comment 3

Comment:

Figure 1 is acceptable.

Response:

We thank the Reviewer for the positive evaluation of Figure 1.

