



A STUDY OF THERMAL REGULATIONS AND EFFICIENCY ANALYSIS IN HYBRID PVT PANEL

Md Tofael Ahmed^{1,2*}, Masud R. Rashel^{1,2}, Md Jubair Ahmed¹ and Mouhaydine Tlemçani^{1,2}

1: Instrumentation and Control Laboratory
Institute of Earth Sciences (ICT)
University of Évora
7000-671, Évora, Portugal

2: Department of Mechatronics Engineering
School of Science & Technology
University of Évora
7000-671, Évora, Portugal
e-mail: ahmed@uevora.pt

e-mail: mrashel@uevora.pt, jahmedbc@gmail.com, tlem@uevora.pt web: <http://www.icterra.pt/>

Keywords: PVT system, mathematical model, parameters effect, efficiency analysis.

Abstract Thermal regulation and efficiency analysis is an important aspect in the context of energy production of a hybrid Photovoltaic Thermal (PVT) system. This work provides a detailed study of thermal regulation including efficiency analysis of hybrid PVT system. Mathematical modeling of hybrid PVT panel electrical and thermal part is introduced. An energy management method and distribution techniques are also shown. Parameters impact including sensitivity analysis is also discussed here. Different other parameters including thermal parameters variation shows an effective change in the optimal power output. Obtained result shows the overall impact on MPP output also.

REFERENCES

- [1] Chow, T.T., "A review on photovoltaic/thermal hybrid solar technology," *Applied Energy*, 87 (2010), pp. 365-379.
- [2] Sredensek, K., Seme S., "A review of hybrid photovoltaic/thermal systems," *Journal of energy technology*, vol. 12(4), p.p. 39-49, 2020.
- [3] Abdelrazik, A.S., Saidur, R., Al-Sulaiman, F.A., "Thermal regulation and performance assessment of a hybrid photovoltaic/thermal system using different combinations of nano-enhanced phase change materials" *Sol. Energy Mater. Sol. Cells*, 215 (2020).
- [4] Ahmed, M.T., Rashel, M.R., Sellami, A., Janeiro, F., Tlemçani, M., "Modelling and Sensitivity Analysis of Hybrid Solar System" 4th International conference AMPSECA, 2021.