



BOOK OF ABSTRACT

4TH INTERNATIONAL CONFERENCE

on

INDUSTRIAL ENGINEERING AND MECHANICAL POWER

IEMPOWER 2025

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ORGANIZED BY

DEPARTMENT OF MECHANICAL ENGINEERING

INSTITUTE OF ENGINEERING & MANAGEMENT, KOLKATA

SCHOOL OF UNIVERSITY OF ENGINEERING AND MANAGEMENT





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Comparative study of real-time data and PVsyst model of a rooftop solar panel in Kolkata

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Solar energy driven power sources are emerging as prominent alternative for conventional energy due to advancement of solar cell and battery technology. Different government policies encourage domestic and commercial usage of solar rooftop panels in various states of India. The installation and operation of solar rooftop panels have been made mandatory for the bulk power consumers in many states like Kerala, West Bengal, etc. PVsyst is one of the most useful software which has been widely used to design the solar panel and its accessories for both off-grid and on-grid projects. In this paper, an existing off-grid rooftop solar panel project is replicated in PVsyst situated near Nazirabad, Kolkata. The real time data obtained from the 5 kW rooftop solar panel is compared with the simulated outcome obtained from PVsyst model. These comparative studies are helpful for analyzing different real time losses with the estimated losses (like soiling loss, solar cell degradation loss etc) and understanding the operational variances of the real system with the PVsyst model. Hence, it may be concluded that how PVsyst model could be modified to achieve the optimal performance of these types of solar panel systems.

Keywords: Solar panel, PVsyst, conventional energy, off-grid, real-time loss.