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A Case Study on Power Generation through 200 KW Grid Connected PV System

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Abstract: *The adoption of grid-connected photovoltaic (PV) systems is gaining momentum worldwide due to their potential to meet growing energy demands while reducing greenhouse gas emissions. This review explores the technical, economic, and environmental aspects of implementing a 200 kW grid-connected PV system. It provides a comprehensive analysis of the current state of research, design methodologies, performance evaluation, and challenges associated with such systems.*

The review begins with an overview of PV technologies, including advancements in high-efficiency solar modules and inverter technologies that enhance system performance. Key design considerations, such as site selection, energy yield estimation, and system sizing, are examined. The operational performance of grid- connected PV systems is evaluated by reviewing case studies and data from installed systems.

The review concludes by identifying knowledge gaps and proposing future research directions to optimize the Performance and scalability of grid- connected PV systems. This study serves as a valuable resource for researchers, engineers, and policymakers aiming to advance the deployment of sustainable energy solutions globally

Keywords: Grid-connected PV systems, renewable energy, performance evaluation