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Chapter 10

PV System Maximum Power Point Tracking Under Partial Shadowing Using Gray Wolf Optimization Algorithm

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Summary

Solar energy is utilized efficiently with photovoltaic (PV) installation when operated at or near the point of maximum or peak power. In order to implement such an operation, proper tracking becomes essential, which is undoubtedly a challenging objective as PV systems possess a multitude of peaks on their power-voltage characteristics due to varying weather conditions, particularly during partially shaded conditions. The main drawback of conventional MPP is the proper step size selection. Otherwise, the system may be operated at a local MPP instead of the global MPP. In the present study, gray wolf optimization was adopted in the MPPT controller and a comparative analysis was carried out between GWO and P&O-based results on the same system simultaneously. The outcomes reflected the efficacy of the proposed methodology during partially shaded conditions.

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