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Chapter 10

Augmentation of PV- Wind Hybrid Technology with Adroit Neural Network, ANFIS , and PI Controllers Indeed Precocious DVR System

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Summary

Renewable energy is a perennial form of energy that provides an imperishable and sustainable environment for living beings. For establishing an unconventional society, there is a considerable need of making the power generation to the level of extent in the revitalization of technology. In this chapter, authors proposed such a system that is PV-Wind Hybrid Power generation system. As for extracting and maximizing the output of the proposed configuration in the photovoltaic (PV) system, use of Neural Network Predictive and Adaptive Neuro-Fuzzy Inference System (ANFIS) Controllers as maximum power point tracking (MPPT) is implemented. Further, for Wind Energy Conversion system, PMSG-Based Wind Turbine is enabled, and for intensifying the generation of the system, the pitch angle control is actualized by the combination of NN-based NARMA-L2, PI, and Fuzzy Logic Controllers which has elevated the processing of the performance of the system. Also, for assuring the distortion less power generation the ingenious Dynamic Voltage Restorer is realized in the Hybrid Power System, and it is controlled by skillful ANFIS and PI Controller for maintaining the consistent output power for the virtuous and vigorous system. The simulations were performed in MATLAB/SIMULINK, and the results-oriented performance is decisively validated.

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