Paralleled DC Boost Converters with Feedback Control using PSO Optimization Technique for Photovoltaic Module Application

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Authors:
Abhimanyu Kumar Yadav
Vishal Mehra
Abhijit Ray
Anil Markana
Makarand Lokhande

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Abstract

In this paper a novel method of controller design for boost type dc-dc converter is proposed. DC/DC converters are widely used in photovoltaic generating systems as an interface between the photovoltaic panel and the load. Therefore, a better possible control technique is required in order to control the variation in output voltage of DC/DC converter due to the variation occurring in the external dynamics input parameters such as radiation, temperature and internal impedance of the photovoltaic (PV) module. In this paper, two paralleled DC/DC converter with a closed loop PWM based control is simulated to obtain constant output voltage. The optimal values of feedback PID controller are obtained using Particle Swarm Optimization Algorithm.
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(PSOA). Extensive simulation result is found out with linear controller parameters and the same are presented here. Here comparison of the output of the PSOA based design and design of PID controller with transient performance specification (T-PID) for under-damped system is done. The PSO based tuning of PID controller is much better as determined by the simulation results.

References

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Index Terms

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