

13. A HIGH EFFICIENT SINGLE PHASE INVERTER BRIDGE TOPOLOGIES FOR TRANSFORMERLESS PV SYSTEM

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Transformerless inverter topologies have gathered more attention in photovoltaic (PV) generation system since they have high efficiency and low cost. For safety and security purposes, in a transformerless grid tied inverters, the leakage current has to be limited carefully. Neutral point clamped (NPC) topology is a helpful way to eradicate the inevitable leakage current that occurs due to the presence of parasitic capacitance in a panel. In this paper, a family of transformerless inverter topologies which possess low leakage currents are compared and the intrinsic relationship between H5 topology, H6 topology and the PN NPC topology has been discussed. Two systematic method of basic switching cell topologies such as the positive neutral point clamped cell and negative neutral clamped cell are anticipated to build the Positive Negative NPC topology. The circuit is simulated using MATLAB Simu-link. Simulation results show that the PN NPC topology features higher efficiency and low leakage current than that of H5 and H6 topologies.

Key words: NPC, leakage current, transformerless inverter, photovoltaic (PV)

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