A Single DC Source 41-level 115V, 400Hz Cascaded Multilevel Inverter

Mohamad, A.S. , Mariun, N

Abstract

Cascaded multilevel inverters are popular in fields such as oil and gas, power supply installations, and power quality devices. While there are many advantages of the cascaded multilevel inverter, its main disadvantage is the need for large numbers of multiple dc sources. In order to reduce total harmonics distortion (THD) of the output voltage waveform, the amount of output voltage level must be increased, hence the higher number of dc sources. This essentially complicated the inverter design, as most converter transform only one voltage source to another. In this paper a cascaded multilevel inverter topology with a single dc source is discussed. The topology is based on capacitors instead of cells as the multiple voltage sources. The cascaded multilevel inverter topology validity and functionality is verified by the Matlab Simulink simulation of a 100W and 1kW aircraft single phase 41-level inverter.

Author keywords

Aircraft inverter, Multilevel inverter, Total harmonics distortion