

NEW MULTILEVEL CASCADED PWM INVERTER TOPOLOGY FOR HYBRID ELECTRIC VEHICLE DRIVE

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ABSTRACT

Multilevel inverter technology is an emerging trend for the control of electric drives in hybrid electric vehicles of high power rating. Harmonic distortion in output voltage waveform is reduced by this multilevel inverters as switching frequency used is the power frequency, which also minimizes the switching losses. This paper presents a hybrid cascaded multilevel inverter with PWM technique. Hybrid electric vehicle (HEV) is an emerging technology in recent days because of the fact that it reduces the environment pollution, increases fuel efficiency of the vehicle and enhances the drive performance. Hybrid cascaded inverter with PWM technique which uses 36 switches to get 7 level output voltage which is serving the purpose of operating electric drive in HEV is proposed in this paper and different configurations of HEV are explained. The simulation results of HEV electric drive performance based on new proposed hybrid cascaded multilevel inverter (IGBT based) are compared with the simulation results of conventional multilevel inverter based HEV electric drive. Simulation is done in MATLAB.

KEYWORDS: Hybrid Electric Vehicle, Cascaded Inverter, Multilevel Inverter, Powertrain, PWM Technique