

Cascaded H-Bridge Multilevel Inverter Topology with a Smaller Number of Power Electronic Switching Components

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Abstract: *This topic presents a seven level cascaded H- Bridge MLI based on a Multilevel DC Link (MLDCL) topology and a single full bridge inverter to reduce the no. of power electronics switching devices required by its conventional counterpart. Normally, inverter produces square wave ac output and so it is called as two-level inverter. Compared to two-level inverter, MLI's having high efficiency since they produce accurate sinusoidal output. Cascaded H-Bridge MLI consists of separate full bridge inverters which are connected to individual dc sources for producing different levels in the output voltage. This type is advantageous because, it does not require additional clamping diodes and balancing capacitors as in the case of diode-clamped and flying capacitor types respectively. The unique feature of MLI is, "the more the number of output voltage levels, the less the harmonic content in it." But, if the number of output voltage level is increased, it requires more number of switches which leads to complex complexity. Therefore, the proposed topology introduces a Multilevel DC link using half bridge cells connected to separate DC source which produces the staircase DC voltage and a single H-Bridge inverter to invert that DC voltage to staircase ac output. Thus, the MLDCL inverter significantly reduces the switch count. Multi carrier based PWM is used to operate the switching devices in such a manner so as to achieve good fundamental output with low switching losses. MATLAB/SIMULINK is used to verify the performance of the proposed.*

Keywords: Multilevel Inverter Topology

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