

Modulation index sets of low switching frequency multilevel inverters for wind generation system

ABSTRACT

In this paper, nine, seven, five and three level diode clamped multilevel inverters (9L-7L-5L-3L DCMI) have been designed and used in wind generation system. The DCMI is designed to operate at low switching frequency with low THD by increasing the number of output voltage levels. The proposed designed DCMI is then connected to permanent magnetic synchronous generator (PMSG) wind turbine to generate an AC output voltage. A low switching frequency sinusoidal pulse width modulation (SPWM) triggering circuit is adopted as the controlling signals. Several cases were studied with varying number of levels and/or modulation indices used. The overall system is modeled in MATLAB/Simulink and a satisfied result be obtained.

Keyword: Multilevel inverter; Wind turbine; SPWM; TH