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A NOVEL NINE-LEVEL INVERTER SYSTEM FOR DUAL- FED INDUCTION MOTOR DRIVE

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Abstract

In this paper, a new nine-level inverter system for dual-fed induction motor drive is described. The dual-fed structure is realized by opening the neutral-point of the conventional squirrel cage induction motor. The nine-level inversion is obtained by feeding the dual-fed induction motor with a symmetrical 4-level inverter from one end and a symmetrical 3-level inverter from other end. This inverter scheme does not experience neutral point fluctuations and uses a lesser number of DC sources compared to the series H-bridge topology. A multilevel carrier based Sinusoidal Pulse Width Modulation is implemented for the proposed drive where a progressive discrete DC bias depending upon the speed range is given to the reference wave to reduce the inverter switchings.

Keywords: Dual-fed induction motor, nine-level inverter, carrier based SPWM, triangular carrier signal, reference sinusoidal signal