

Abstract

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Dynamic Voltage Restorer Adopting 150° Conduction Angle VSI

This paper presents a dynamic voltage restorer based on a new firing control strategy for the three-phase six-switch voltage source inverter. In this firing control strategy, one of the three inverter legs is to be intentionally opened, one per time in a pre-planned sequence. This strategy combines the commonly used 180° and 120° conduction modes to generate a new operating mode, defined as 150° conduction mode. The performance of the proposed dynamic voltage restorer with 150° conduction angle inverter control is evaluated using dynamic transient simulation in order to illustrate the advantages of the new control scheme. The simulation results show good improvement in the magnitude and time response of the dynamic voltage restorer output voltage. This outcome results in more accurate and faster voltage restoring capability. Also, a great reduction in the total harmonic distortion of the inverter output voltage is attained; hence a consequent reduction of the voltage harmonics in the supply side.