MULTI-PULSE OVER-MODULATION AC-DC POWER CONVERTER DESIGN FOR MEDIUM VOLTAGE

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ABSTRACT

The paper presents a details review about multipulse converter and a new approach to design, simulation and practical implementations of a multi pulse over-modulation ac-dc power converter. In these work different types of existing three phases, multi-pulse, multilevel converter performance at wide range of voltages has been analyzed and compared. A power converter has been designed newly with modified over-modulation topology in which different types of over-modulation block has been used to minimize harmonics instead of static capacitor bank. Only a small size super capacitor has been used to minimize harmonics on dc side. The proposed converter has been simulated in MATLAB/Simulink environment at wide range of voltage level. It has been found that THD is very low. Theoretical analysis has been carried out and simulated those converters for verification of theoretical concepts. It is guaranteed that the proposed converter performance is much better than others. It reduces costs, complexity, output voltage/current ripple and THD. The proposed multi-pulse over-modulation converter can be the best choice for medium voltage power conversion.

Keywords: Multi-pulse, Multilevel converter, PWM, Over modulation, DC Motor, Super capacitor, AC/DC converter, THD, MATLAB/Simulink.