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Grid interconnection of renewable energy source with T-type inverter based DSTATCOM

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Abstract



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Abstract:

In this paper, the grid integrated T-type inverter based DSTATCOM presented for harmonics elimination, reactive power compensation and active injection. It is renowned multilevel converters can possess great advantages in case of harmonic elimination and reduced switching losses compared to that of two-level counterparts. But, the neutral-point-clamped inverter in low voltage applications suffer from very large semiconductor conduction losses due to the flow of current through two conducting devices. T-type multilevel inverter alleviate problem of conduction losses, because it requires only single outer loop to connect the converter output to the positive and negative dc side. The switching losses will increases; due to the full dc voltage appearing across the switching. The instantaneous reactive power theory based reference current estimation is presented with maximum power point (MPPT) tracking. The MPPT algorithm based on perturb and observe is integrated with instantaneous reactive power theory. The simulated response of the T-type inverter based DSTATCOM is show effective for injecting active power from photo voltaic system.

Keywords

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Date Added to IEEE Xplore: 01 June 2020**Publisher:** IEEE**► ISBN Information:****Conference Location:** Coimbatore, India**Print on Demand(PoD) ISSN:** 2329-7190 **Contents****I. Introduction**

Now a day, the grid integration of renewable energy based generation is increasing with improved power quality feature such as harmonics elimination, reactive power compensation and load balancing. In recent studies the two and three level inverters are compared based on semiconductor losses and filter consideration and evaluated that three level inverter possess lower semiconductor losses for higher switching frequencies than the two level counterparts because three level inverters have only one device commutate at each transition. In addition to that, ac output waveform of a multilevel inverter possess a lower harmonic and reduced sizes of the ac filter components are possible [1]–[4].

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Figures



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