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A SURVEY OF VARIOUS CONVERTERS

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Abstract: -
The demand for renewable energy systems, such as photo- voltaic systems, fuel cells and wind turbines, has been robust in recent years. High step-up dc-dc converters are currently being utilized in many applications, such as dc distribution systems, data centers and telecom centers. Power electronic converters play a substantial role in power conversion of the distributed generation and the grid integration. Increasing renewable energy sources would exceedingly catalyze the utilize of high step-up dc-dc power electronic converters to integrate renewable energy systems to electric power grid. Furthermore, power electronic converters should be highly efficient and reliable to convert the renewable energies to the electric power grid. As a result, using high step-up dc-dc converts with high efficiency is required, and it is the main goal to ensure the reliability.

Keywords: Boost converter soft switch, inverters.

SOFT SWITCH INTERLEAVED BOOST CONVERTER

To design a very high step-up voltage gain by using two coupled inductors and a voltage multiplier cell. This topology utilizes the interleaved boost converter in the input side, and the input current is shared with low ripple. Moreover, a voltage multiplier cell with the secondary windings of the coupled inductors is employed in the output side to achieve the interleaved energy storage. The voltage stress on the semiconductor switches and the passive components is significantly reduced and lower than the output voltage. The aforementioned converter can be operated without an extreme duty cycle or a high turns-ratio. The topology is fed by a single input voltage.

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Efficient and reliable to convert the renewable energies to the electric power grid. As a result, using high step-up dc-dc converts with high efficiency is required, and it is the main goal to ensure the reliability. PV system technologies are still the most favourable technologies for a huge portion of renewable energy generation.

SWITCHED INDUCTOR BOOST CONVERTER.

To develop a high gain soft switching dc-dc topology based on switched inductor boost converter (SIBC). Conventional SIBC as a high gain boost topology has the issues of high conduction loss in switching diodes and high switching loss in the main switches. Also, it has severe EMI issue due to high frequency ringing formed by parasitic inductance and diode junction capacitors. The new topology is derived with the objective of achieving zero voltage switching (ZVS) turn on of the main switch. Instead of adding extra active clamp zero voltage transition (ZVT) path at the switching node, the proposed topology augments the auxiliary ZVT path to the switching diode path. This is achieved by replacing the switching diodes with synchronous switches. The new topology can achieve soft switching for all the switches and alleviate the EMI issue. All the diodes achieve zero current switching (ZCS) turn off without reverse recovery. Auxiliary switches have ZCS turn on and ZVS turn off, and the main switches have ZVS turn on. The soft-switching-SIBC (SSSIBC) also reduces the conduction loss in the switching diodes.

BIDIRECTIONAL INTERLEAVED BOOST CONVERTER.

To design a soft-switching bidirectional dc-dc converter (BDC) with interleaved technique for the interface between the energy storage system and grid bus. The interleaved structure is employed to reduce the current ripple in the low-voltage side (LVS) and helps to achieve voltage matching on both sides of the BT under PWM control. Thus, the circulating current can be lowered to improve efficiency. Phase-shift control is adopted to regulate the power flows of the proposed BT-BDC. Moreover, the optimal design is given for component parameters to accomplish zero-voltage switching (ZVS) in a wide voltage range, which can reduce the switching losses. The operational principles and characteristics of the proposed BT-BDC are presented in detail. Recently, energy storage systems have been widely used in electric vehicles, uninterrupted power supplies, renewable energy systems, and micro grids to compensate the power imbalance between the power generations and the power consumptions. As an interactive interface between energy storage elements and the high voltage dc bus, bidirectional dc-dc converters (BDCs), which have bidirectional power conversion capabilities, are indispensable for the applications of energy conversion. The voltage ratings of energy storage elements are generally low. Thus, the series connection of storage cells has been used commonly to increase the voltage ratings with the reducing reliability.

MIMO BI-DIRECTIONAL INTERLEAVED CONVERTER

To develop a MIMO bidirectional converter for energy storage system ESS. In many industrial applications such as photovoltaic, electric vehicles, data processing centers , personal computers and so on , multiple ports with various voltage levels are demanded. In order to achieve the voltage regulation as well as the power control among different ports, multiple independent single-input single-output (SISO) converters can be simply employed. However, owing to the large number of components, high overall cost and large system volume will be incurred. To address this problem, two types of integrated multi-port dc-dc converters have been proposed, in which the number of semiconductor devices and inductors is effectively reduced, and so that both the cost and power density are improved.

CONCLUSION

This paper proposed study of various converters performance analysis. The proposed PWM technique requires less number of carrier waves when compared to the conventional SPWM technique. Furthermore, power electronic converters should be highly efficient and reliable to convert the renewable energies to the electric power grid. As a result, using high step-up dc-dc converts with high efficiency is required, and it is the main goal to ensure the reliability. PV system technologies are still the most favourable technologies for a huge portion of renewable energy generation.

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