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ADVANCE POWER ELECTRONICS TECHNOLOGY FOR RENEWABLE ENERGY SYSTEMS IN 21ST CENTURY

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ABSTRACT

Because of increased climatic concerns, renewable electricity generation is replacing conventional energy generation. Most of the renewable energy sources (RES) require advance power electronics converters for maximizing the production and enhancing the reliability during the operation. Highly efficient power converters at the renewable generation end can contribute to energy production maximization. Recently, application ofan advanced power electronic interface (APEI) has played a major role in renewable energy systems in improving the efficiency of overall systems by using smart devices. Production of green energy is the present demand of 21st century customers due to the environmental concerns. For the mentioned objective,this paper aims to provide an overview on application of advance techniques for APEI for RES. These advanced power electronics interfaces are also useful for the operation of electrical drives. Due to enhanced controllability and energy efficiency, traditional motors are also being replaced by the permanent magnet motors. This paper also shows a review that how APEI has improved the operability of electric drives with higher efficiency. It also outlines how, where and why, the power electronics converters are used in renewable energy systems.

KEYWORDS: Advanced Power Electronic Interface (APEI), Renewable Energy Sources (RESs), Levelized Cost of Energy (LCOE) and Silicon Carbide (SiC), Electrical Drives, Permanent Magnet AC/DC Motor

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