

Implementation of ANN-Based MPPT for a PV System and Efficiency Improvement of DC-DC Converter by WBG Devices

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Abstract : PV systems are common in residential and industrial settings because of their low, upfront costs and operating costs throughout their lifetimes. Buck or boost converters are used in photovoltaic systems, regardless of whether the system is autonomous or connected to the grid. These converters became less appealing because of their low efficiency, inadequate power density, and use of silicon for their power components. Traditional devices based on Si are getting close to reaching their theoretical performance limits, which makes it more challenging to improve the performance and efficiency of these devices. GaN and SiC are the two types of WBG semiconductors with the most recent technological advancements and are available. Tolerance to high temperatures and switching frequencies can reduce active and passive component size. Utilizing high-efficiency dc-dc boost converters is the primary emphasis of this work. These converters are for photovoltaic systems that use wave energy.

Keywords : component, Artificial intelligence, PV System, ANN MPPT, DC-DC converter

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