

DESIGN AND DEVELOPMENT OF MODIFIED SEPIC CONVERTER FOR BLDC DRIVE



A PROJECT REPORT

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ABSTRACT

A system to work properly needs a suitable DC-DC converter. High output voltage and power, low harmonic distortion, low ripple content at both current and voltage, and high efficiency gain with fewer component requirements are just a few of the parameters for a good converter. Such types of converters are need to be designed to meet some of the aforementioned requirements. With increased potential for BLDC drive based Electric Vehicle (EV) applications, the converter chosen for this project is a type of DC-DC converter (said Modified SEPIC) that will be suitable for high power rating of applications. Before recommending a converter for a certain usage, its performance must be evaluated. The validation process goes into great detail for the design topology, equations created, calculations, components used, loss and performances. The majority of converters perform better than expected, when choosing the right component values. Applications that work well are provided together with the findings of the converters and the related values. Upon considering the performance of various converters it is proven that Modified SEPIC converter produces output voltage and output current as 41.2v and 41.12A respectively. It is 1.99 times for the voltage conversion ratio, the output ripple is observed as 0.30% with an efficiency of 73.8%.