

PERFORMANCE INVESTIGATION AND CONTROL OF CLOSED LOOP BUCK CONVERTER

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE
OF

MASTER OF TECHNOLOGY
IN
CONTROL & INSTRUMENTATION

SUBMITTED BY:

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Roll No- 2K14/C&I/08

UNDER THE SUPERVISION OF

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CERTIFICATE

I, Preetish Nayak, Roll No. 2K14/C&I/08 student of **M.Tech. (Control and Instrumentation)**, hereby declare that the thesis titled “**PERFORMANCE INVESTIGATION AND CONTROL OF CLOSED LOOP BUCK CONVERTER**” under the supervision of Dr.Dheeraj Joshi of Electrical Engineering Department Delhi Technological University in partial fulfilment of the requirement for the award of the degree of Master of Technology has not previously formed the basis for the award of any Degree, Diploma Associateship, Fellowship or other similar title or recognition.

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ABSTRACT

In this thesis the simulation of closed loop buck converter is carried out with considering the various parameters of the converter's operation. The Output of Buck convertor is regulated in closed loop by various control strategies and the variation of output voltage is done by controlling the switch using pulse generated by feedback. A hardware demo model of the buck converter is done for lower rating. In this, the switching action of MOSFET is controlled by the microcontroller, which controls the pulse given to gate terminal of MOSFET switch and consequently the convertor output voltage is observed. The circuit simulation is done for both parasitic and non-parasitic nature of the buck converter. The closed loop Buck converter is analyzed by keeping the photovoltaic emulator as its main application.