

**PERFORMANCE EVALUATION OF A GENERALIZED
MULTILEVEL INVERTER WITH DIFFERENT
OPERATING MODES**

V.K. Ruchira Sampath

(168531X)

Degree of Master of Science in Electrical Engineering

Department of Electrical Engineering

University of Moratuwa

Sri Lanka

May 2022

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Vidana Kankanamge Ruchira Sampath

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Dissertation submitted in partial fulfillment of the requirements for the

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Abstract

Multilevel inverters are found in many applications in high power levels. These converters are available in different topological options, such as Cascaded Half Bridge, Neutral Point Clamp, Flying Capacitor, Hybrid and so on. By selecting appropriate switching sub-circuit, generalized multilevel inverter can be used to derive all common topologies.

A Generalized 9 Level Inverter is developed and controlled to operate in Cascaded Half Bridge, Neutral Point Clamped and Flying Capacitor modes for operation in 3, 5, 7 and 9 levels with square-wave and Pulse Width Modulation control. Relative performances were investigated in terms of Total Harmonic Distortion and efficiency.

Acknowledgement

I would like to express my heartfelt gratitude to all the people who have helped me in successfully achieve the targets of my MSc Electrical Engineering research project.

First of all, I take this opportunity thank my project Supervisor Prof. J.P. Karunadasa for providing the concept and for his continuous guidance and support throughout the period.

My sincere thanks go to all my colleagues at Ceylon Electricity Board who supported me in several ways to achieve my targets during this busy time period.

Finally, I would like to take this opportunity to say my heart felt respect and gratitude to my family members, for helping me to complete my MSc Research Project during this busy and difficult time period.

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LIST OF ABBREVIATIONS

Abbreviation	Description
PWM	Pulse Width Modulation
SWM	Square Wave Modulation
NPC	Neutral Point Clamped
CHB	Cascaded Half Bridge
FC	Flying Capacitor
THD	Total Harmonic Distortion
G9LI	Generalized 9 Lever Inverter
SV	Space Vector