

Article Abstract

Title:	Comparative evaluation of modified pulse width modulation schemes of Z-source inverter for various applications and demands
Author(s):	S. Thangaprakash ^{1*} , A. Krishnan ²
Address(es):	^{1*} Department of Electrical Engineering, Sri Shakthi Institute of Engineering and Technology, Coimbatore (TN), - 641 062, INDIA ² Dean (Academic), K.S.R. College of Engineering, Tiruchengode (TN), - 637 215, INDIA *Corresponding Author: e-mail:s_thangaprakash@rediffmail.com
Journal:	<i>International Journal of Engineering, Science and Technology</i> , Vol. 2, No. 1, 2010, pp. 103-115.
Abstract:	This paper presents a comparative evaluation of five different methods of modified pulse width modulation schemes to control the recently developed buck-boost type Z-source inverter. Since its inception, different control techniques have been proposed to insert the shoot-through periods in the traditional switching waveform of the power switching devices. Simple boost control, maximum boost control, constant boost control and modified space vector modulation based control methods have been presented by world wide researchers for various types of loads and applications. However, the detailed comparative evaluation has not been reported to select the suitable control method according to the application and demand. In this paper, for the common boost factor and modulation index, the output voltage, output current, output line harmonics profile of the inverters with different PWM schemes powered by the same dc power supply and three phase RL load were conducted. Comparison results are analyzed for two control variables (modulation index and boost factor) and are evidently reported. For each method, the boost factor, voltage gain, duty ratio and voltage stress across the switches are expressed and the relationships among them are analyzed. By comparing them, proper control method can be adapted according to the requirement of different applications and demands.
Keywords:	Z-source inverter, buck-boost, pulse width modulation (PWM), modified space vector modulation (MSVM), shoot-through, voltage stress