**DERIVATION OF VOLTAGE SOURCE MULTILEVEL CONVERTER TOPOLOGIES**

**ABSTRACT**

Multilevel converters (MLCs) have emerged as standard power electronic converters in high power as well as quality demanding applications. They are classified into current-fed MLCs and voltage-fed MLCs. Voltage-fed MLCs have widely researched whereas the current-fed MLCs are the recent topic of research. Based on the principle of duality between voltage and current sources, several current-fed MLCs analogous to voltagefed MLCs have been identified. Current-fed MLCs offer several advantages in terms of high power capability, transformerless operation, short-circuit protection, and excellent quality of output current waveform. The goal of this paper is: 1) to present review of circuit topologies, modulation schemes, and applications of current-fed MLCs; and 2) to review an emerging lowdevice switching frequency modulation technique known as synchronous optimal pulsewidth modulation for current-fed MLCs. The circuit configuration and advantages of each topology along with various modulation techniques are discussed in detail. Compared to voltage-fed MLCs, the operation of current-fed MLCs need to satisfy additional switching constraints. A survey of classical methods for realization of these operational constraints has been done and a new generalized method has been proposed. Finally, future scope of research has been presented to encourage further development of topologies and modulation techniques for current-fed MLCs.

**BLOCK DIAGRAM FOR PROPOSED SYSTEM**



Fig. 1 Two-stage current-fed MLC. (a) Boost stage using multi-rated cell. (b) Boost stage using single rated cell.

**DESIGNG SOFTWARE AND TOOLS:**

MAT LAB /SIMULATION Software and simu power systems tools are used. Mainly control system tools, power electronics and electrical elements tools are used.