

## عنوان مقاله:

Design and control strategy of solid state transformer using CHB, MMC and  $\Delta$ -L ANPC multilevel converters

## محل انتشار:

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## خلاصه مقاله:

In this paper, the process of designing and comparing cascaded H-bridge (CHB) converter, modular multilevel converter (MMC), and five-level active neutral-point clamped ( $\Delta$ -ANPC) converter as a solid-state transformer (SST) utilized in the distribution network was investigated. The design was based on 1.7 kV IGBT modules (for CHB and MMC converters) and 3.3 and 4.5 kV IGBT modules (for  $\Delta$ -ANPC converter). The converters were compared at voltage levels of 6.9, 11, and 20 kV and power levels of 0.5 and 2 MW. As well, when the number of MC voltage levels increases, the complexity of the control system, as well as the control algorithm, increases largely. In order to simplify the control system, a hierarchical control system is designed for these MCs. In the process of designing converters, thermal analysis and selecting smaller parts with lower losses due to enhanced efficiency were considered.

## کلمات کلیدی:

Active NPC (ANPC), Cascaded H-bridge (CHB), Modular multilevel converter (MMC) efficiency, Modular multilevel converter (MMC), Solid state transformers (SST), Control systems

## لینک ثابت مقاله در پایگاه سیویلیکا:

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