# Article information:

Full-Bridge MMC Converter Optimal Design to HVDC Operational Requirements | IEEE Journals & Magazine | IEEE Xplore  
<https://ieeexplore.ieee.org/document/7230292>

# Article summary:

1. This paper studies the design and operation of full-bridge (FB) MMCs to meet HVDC specifications.

2. Three new design parameters are introduced to specify the operation of an FB MMC: overmodulation index, dc modulation index, and minimal dc voltage.

3. The capability of overmodulation and the operation under low dc voltage with optimal submodule counts are verified using Electromagnetic Transients Program simulation.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable in its presentation of the research conducted on full-bridge (FB) MMCs for HVDC operational requirements. The authors provide a detailed overview of their research process, including introducing three new design parameters, analyzing power increase and semiconductor count increase with the increase of kMMC, calculating the required number of submodules, studying submodule voltage balancing, deducing constraints on required number of FB submodules, and verifying the capability of overmodulation and operation under low dc voltage with optimal submodule counts through simulation. The authors also provide references to other relevant research in this field which adds credibility to their work.

However, there are some potential biases that should be noted when considering this article’s trustworthiness and reliability. For example, while the authors do mention other technologies such as 2-LEVEL and 3-level NPC technologies that have dominated VSC-HVDC market since 2000 until recently, they focus primarily on HB (half-bridge) MMC converters which may lead to a bias towards this technology over others. Additionally, while the authors do discuss possible multiterminal connection applications for HB MMC technology as well as its prospect for DC grids, they do not explore any potential risks associated with these applications which could lead to an incomplete understanding of their implications. Furthermore, while the authors provide references to other relevant research in this field throughout their paper, they do not present both sides equally when discussing these works which could lead to partiality in their conclusions.

# Topics for further research:

* Multiterminal connection applications for HB MMC technology
* Risks associated with HB MMC technology applications
* Comparison of HB MMC technology with other VSC-HVDC technologies
* Impact of HB MMC technology on DC grids
* Advantages and disadvantages of HB MMC technology
* Future prospects of HB MMC technology in HVDC applications

# Report location:

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