The cascaded H-bridge (CHB) low-capacitance StatCom (LC-StatCom) has a limited operating area in the inductive region compared to a conventional StatCom's V–I characteristic. This limitation for operation in the inductive region is considered to be the biggest disadvantage of CHB LC-StatCom. In this paper, the effect of adding parallel and series reactors on the LC-StatCom system's V–I characteristic is analyzed. Then, a new configuration, which fully compensates for the lost operating area of the LC-StatCom, is introduced. A scaled down single-phase seven-level laboratory prototype is used to confirm practicability of the proposed system.

General information
State: Published
Organisations: Department of Electrical Engineering, Center for Electric Power and Energy, Electric Equipment Technologies, Nanyang Technological University, University of New South Wales, University of Newcastle
Contributors: Farivar, G., Townsend, C. D., Hredzak, B., Pou, J., Agelidis, V.
Pages: 8338 - 8348
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: IEEE Transactions on Power Electronics
Volume: 32
Issue number: 11
ISSN (Print): 0885-8993
Ratings:
BFI (2019): BFI-level 2
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
Scopus rating (2017): CiteScore 9.08 SJR 2.215 SNIP 3.106
Web of Science (2017): Impact factor 6.812
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 9.96 SJR 2.254 SNIP 3.563
Web of Science (2016): Impact factor 7.151
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 9.2 SJR 2.267 SNIP 3.808
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 8.78 SJR 2.115 SNIP 4.252
Web of Science (2014): Impact factor 6.008
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 8.41 SJR 2.189 SNIP 4.324
Web of Science (2013): Impact factor 5.726
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 6.98 SJR 1.918 SNIP 3.859
Web of Science (2012): Impact factor 4.08
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 7.12 SJR 2.009 SNIP 3.379
Web of Science (2011): Impact factor 4.65
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.655 SNIP 2.767
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.568 SNIP 2.64
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.185 SNIP 3.048
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.635 SNIP 3.101
Scopus rating (2006): SJR 2.623 SNIP 3.58
Scopus rating (2005): SJR 2.91 SNIP 3.263
Scopus rating (2004): SJR 2.453 SNIP 3.414
Scopus rating (2003): SJR 3.32 SNIP 3.059
Scopus rating (2002): SJR 3.155 SNIP 2.823
Scopus rating (2001): SJR 2.847 SNIP 2.479
Scopus rating (2000): SJR 0.549 SNIP 1.374
Scopus rating (1999): SJR 0.607 SNIP 2.166
Original language: English
Keywords: Capacitors, Automatic voltage control, Inductors, Control systems, Capacitance, Voltage measurement, Cascaded H-bridge, low-capacitance (LC)-StatCom, reactive power compensation, thin dc capacitor
Electronic versions:
07786824.pdf
DOIs:
10.1109/TPEL.2016.2641043
Source: FindIt
Source-ID: 2371746350
Research output: Research - peer-review › Journal article – Annual report year: 2017