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[Continued on next page]

(54) Title: HIGH VOLTAGE HIGH POWER MULTI-LEVEL DRIVE STRUCTURE

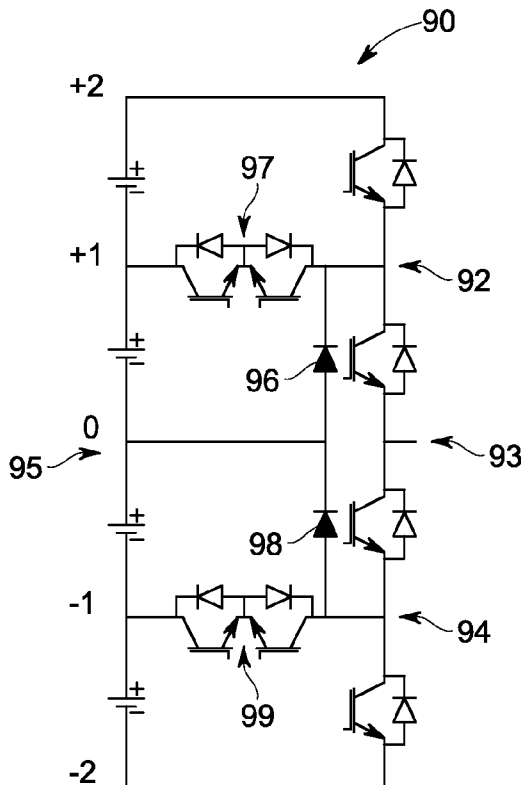


FIG. 9

(57) Abstract: A high voltage, high power multi-level drive structure includes a plurality of neutral-point-piloted (NPP) converter cells stacked together. At least one clamping diode is connected to one or many NPP converter cell to provide a neutral-point-pilot-clamped (NPPC) converter structure. Flying capacitors connected to the NPPC converter structure yield a neutral-point-clamped-flying-capacitor converter cell structure.

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ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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INTERNATIONAL SEARCH REPORT

International application No  
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A. CLASSIFICATION OF SUBJECT MATTER  
INV. H02M7/487  
ADD.  
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED  
Minimum documentation searched (classification system followed by classification symbols)  
H02M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/219692 A1 (FLURY GUY [FR]) 2 September 2010 (2010-09-02) the whole document	2-6, 11-15
A	BARBOSA P ET AL: "Active-Neutral-Point-Clamped (ANPC) Multilevel Converter Technology", POWER ELECTRONICS AND APPLICATIONS, 2005 EUROPEAN CONFERENCE ON DRESDEN, GERMANY 11-14 SEPT. 2005, PISCATAWAY, NJ, USA, IEEE, PISCATAWAY, NJ, USA, 11 September 2005 (2005-09-11), pages P.1-P.10, XP010933291, DOI: 10.1109/EPE.2005.219713 ISBN: 978-90-75815-09-2 figure 2(a)	1-18

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search  20 February 2014	Date of mailing of the international search report  03/03/2014
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  van Wesenbeeck, R
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2013/042264

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>BANAEI M R ET AL: "A modified selective harmonic elimination switching strategy for Hybrid Flying Capacitor Multicell converter", ELECTRICAL AND ELECTRONICS ENGINEERING (ELECO), 2011 7TH INTERNATIONAL CONFERENCE ON, IEEE, 1 December 2011 (2011-12-01), pages I-278, XP032102992, ISBN: 978-1-4673-0160-2 figure 1</p> <p style="text-align: center;">-----</p>	1-18
A	<p>XIAOMING YUAN ET AL: "ARCPPI Resonant Snubber for the Neutral-Point-Clamped Inverter", IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 36, no. 2, 1 March 2000 (2000-03-01), XP011022753, ISSN: 0093-9994 figure 1</p> <p style="text-align: center;">-----</p>	1-18

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/042264

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010219692 A1	02-09-2010	EP 2219287 A1	18-08-2010
		FR 2942088 A1	13-08-2010
		US 2010219692 A1	02-09-2010
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