



(12) **CORRECTED EUROPEAN PATENT APPLICATION**

(15) Correction information:  
**Corrected version no 1 (W1 A1)**  
**Corrections, see**  
**Bibliography INID code(s) 72**

(51) Int Cl.:  
**H02M 7/483 (2007.01)** **H02M 1/00 (2006.01)**

(48) Corrigendum issued on:  
**06.01.2016 Bulletin 2016/01**

(43) Date of publication:  
**09.09.2015 Bulletin 2015/37**

(21) Application number: **14275043.9**

(22) Date of filing: **05.03.2014**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB**  
**GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO**  
**PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**

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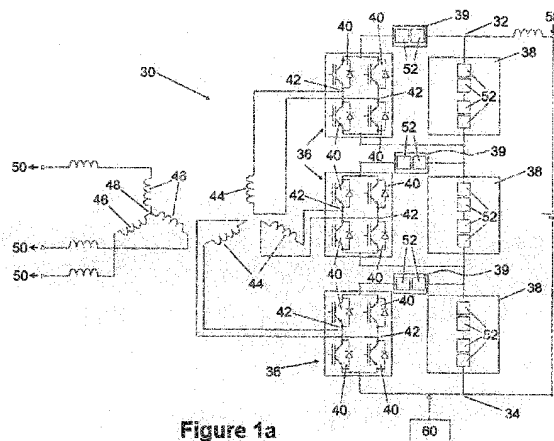
(54) **Voltage source converter**

(57) A voltage source converter (30) comprises first and second DC terminals (32,34) for connection to a DC network (58). The voltage source converter (30) further includes at least one limb connected between the first and second DC terminals (32,34). The or each limb includes:

a phase element (36) including two parallel-connected sets of series-connected switching elements (40) connected in an H-bridge to define first and second diagonal switching pairs, a respective junction between each set of series-connected switching elements (36) defining an AC terminal (40) for connection to an AC network (50); and

a sub-converter (38,39) configured to be controllable to act as a voltage waveform synthesiser; wherein the voltage source converter (30) further includes a controller (60) to operate the sub-converter (38,39) to selectively synthesise a driving commutation voltage to modify a DC side current at a DC side of the H-bridge so as to minimise any differences in magnitude and direction between the DC side current and an AC side current at an AC side of the H-bridge and thereby

carry out commutation of current from one of the first and second diagonal switching pairs to the other of the first and second diagonal switching pairs.



**Figure 1a**