



(51) International Patent Classification:
H02J 7/00 (2006.01) *H02J 1/10* (2006.01)

(21) International Application Number:
PCT/SG2011/000219

(22) International Filing Date:
21 June 2011 (21.06.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
201004447-7 21 June 2010 (21.06.2010) SG

(71) Applicant (for all designated States except US): **NATIONAL UNIVERSITY OF SINGAPORE** [SG/SG];
21 Lower Kent Ridge Road, Singapore 119077 (SG).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ZHOU, Haihua** [CN/US]; c/o International Rectifier Corporation, 101 N. Sepulveda Blvd., El Segundo, CA 90245, (US). **BHATTACHARYA, Tanmoy** [IN/IN]; c/o Indian Institute of Technology Kharagpur, Kharagpur - 721302, (IN). **KHAMBADKONE, Ashwin M.** [IN/SG]; c/o Institute

of Chemical and Engineering Sciences, 1 Fusionopolis Way, #08-12 Connexis North, Singapore 138632 (SG).

(74) Agent: **PEACOCK, Blayne, Malcolm**; Marks & Clerk Singapore LLP, Tanjong Pagar, P O Box 636, Singapore 910816 (SG).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,

[Continued on next page]

(54) Title: ENERGY STORAGE SYSTEM

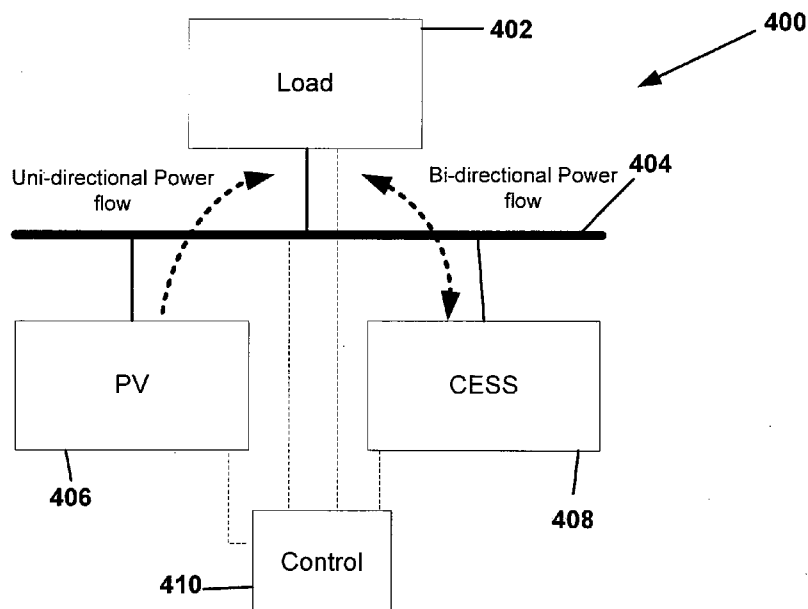


Figure 4 (a)

(57) Abstract: An energy storage system (400) comprising: a plurality (408) of storage mediums having substantially different energy and power density each connected to a DC bus 404 via a respective bidirectional isolated DC-DC converter; and a controller (410) configured to independently determine a current demand for each storage medium based on a control mode.



SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG). **Published:**

— *with international search report (Art. 21(3))*

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*