



(51) International Patent Classification:

H02J 7/04 (2006.01) *H02J* 7/35 (2006.01)
H01M 10/46 (2006.01)

(21) International Application Number:

PCT/IB2012/054534

(22) International Filing Date:

3 September 2012 (03.09.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicants (for all designated States except US):

ROBERT BOSCH (SEA) PTE. LTD. [SG/SG]; 11 Bishan Street 21, Singapore 573943 (SG). **NANYANG TECHNOLOGICAL UNIVERSITY** [SG/SG]; 50 Nanyang Avenue, Singapore 639798 (SG).

(72) Inventors; and

(75) Inventors/Applicants (for US only):

WOLST, Oliver [DE/SG]; 116 Hua Guan Avenue, Singapore 589209 (SG). **HE, Mao Jun** [CN/SG]; Blk 684c #15-340, Chua Chu Kang Crescent, Singapore 683684 (SG). **HAMADA, Mahmoud** [TN/DE]; Robert-Bosch-Platz 1, 70839 Gerlingen-Schillerhoehe (DE). **ADELMANN, Peter** [DE/DE]; Beutelsch 44, 89171 Illerkirchberg (DE). **SENGBUSCH, Falco** [DE/SG]; 967 Bukit Timah Road #06-09, Singapore 589663 (SG). **LI, Yanlin** [CN/SG]; 126 #03-03, Serangoon Ave 3, Singapore 556126 (SG). **KUFNER, Annika** [DE/SG]; 18A Holland Drive, #32-467, Singapore 272018 (SG).

(74) Agents: **SCHWEIGER, Martin** et al.; Schweiger & Partners (Singapore) LLP, 105 Cecil Street, #03-02, The Octagon, Singapore 069534 (SG).

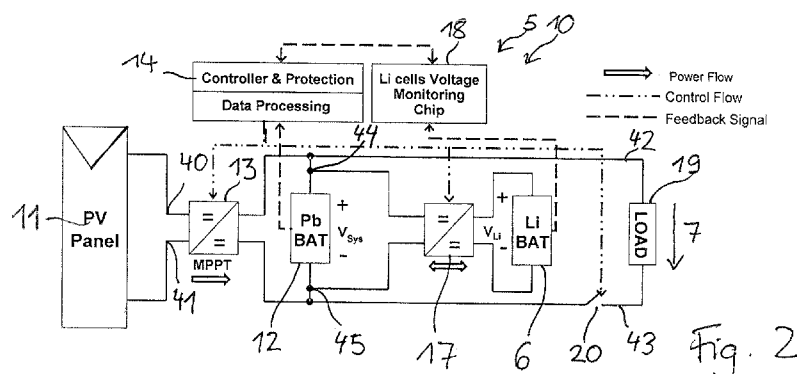
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, 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, 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.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, 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))

(54) Title: TOPOLOGY AND CONTROL STRATEGY FOR HYBRID STORAGE SYSTEMS



(57) Abstract: The application discloses a hybrid battery charging device that comprises input terminals for connecting a photovoltaic panel or other current sources, first battery connections for connecting a lead-acid battery and second battery for connecting a high-cycle chemical battery. Furthermore, the battery charging device comprises a two-way DC/DC converter with a first set of terminals that is connected with the second battery connections, and with a second set of terminals that is connected with the first battery connections. An input of the second set of terminals is derived from the input terminals. Furthermore, the battery charging device comprises a charge and discharge control system which is connected to the DC/DC converter via respective control lines and output terminals for connecting a load, wherein an input to the output terminals is derived from the first battery connections.