(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
02 March 2023 (02.03.2023)

WIPO | PCT

(10) International Publication Number
WO 2023/027643 A3

(51) International Patent Classification:
H01M 8/04225 (2016.01) *H02J 7/00* (2006.01)
H01M 10/44 (2006.01) *H01M 8/18* (2006.01)

(21) International Application Number:
PCT/SG2022/050617

(22) International Filing Date:
29 August 2022 (29.08.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10202109401P 27 August 2021 (27.08.2021) SG

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(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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, 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, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,

(54) Title: FLOW BATTERY CHARGING INITIATION METHOD, CONTROLLER FOR FLOW BATTERY SYSTEM AND FLOW BATTERY SYSTEM

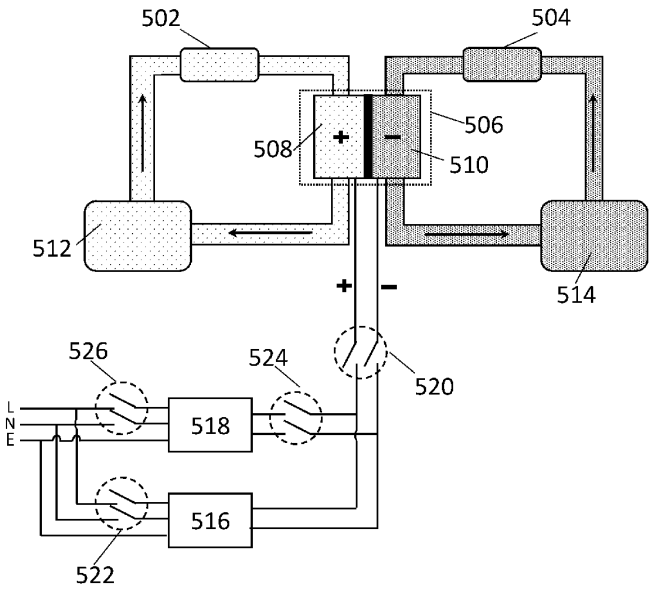


FIG. 5

(57) Abstract: Charging initiation methods for flow batteries, controllers for flow batteries and flow battery systems are disclosed. A charging initiation method for a flow battery which allows charging of the flow battery from an AC power supply with a power converter having a minimum operational DC voltage is described. The flow battery comprises a positive electrolyte tank containing a positive electrolyte, a negative electrolyte tank containing a negative electrolyte, a cell stack comprising a positive porous electrode and a negative porous electrode, a positive electrolyte pump which when activated pumps the positive electrolyte from the positive electrolyte tank through the positive porous electrode, and a negative electrolyte pump which when activated pumps the negative electrolyte from the negative electrolyte tank through the negative porous electrode. The charging initiation method comprises: connecting a DC power supply to the positive porous electrode and the negative porous electrode to charge the cell stack, while the positive electrolyte pump

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[Continued on next page]

TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, ST, 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, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

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

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

11 May 2023 (11.05.2023)

and the negative electrolyte pump are deactivated; and in response to a pre-charging condition: disconnecting the DC power supply from the positive porous electrode and the negative porous electrode; connecting the power converter coupled to an the AC power supply to the positive porous electrode and the negative porous electrode to charge the cell stack from the AC power supply; and activating the positive electrolyte pump and the negative electrolyte pump.