

Title (en)
VANADIUM ELECTROLYTE PREPARATION USING ASYMMETRIC VANADIUM REDUCTION CELLS AND USE OF AN ASYMMETRIC VANADIUM REDUCTION CELL FOR REBALANCING THE STATE OF CHARGE OF THE ELECTROLYTES OF AN OPERATING VANADIUM REDOX BATTERY

Title (de)
VERFAHREN ZUR HERSTELUNG VON VANADIUMHALTIGEN ELEKTROLYTEN MITTELS VANADIUM-REDUKTIONSZELLEN ZUM AUSGLEICH DES LADEZUSTANDES VON VANADIUM-REDOX-BATTERIEN-ELEKTROLYTEN

Title (fr)
PREPARATION D'UN ELECTROLYTE AU VANADIUM AU MOYEN DE CELLULES DE REDUCTION DU VANADIUM ASYMETRIQUES ET UTILISATION D'UNE CELLULE DE REDUCTION DU VANADIUM ASYMETRIQUE POUR REEQUILIBRER L'ETAT DE CHARGE DES ELECTROLYTES D'UN ACCUMULATEUR REDOX AU VANADIUM EN FONCTIONNEMENT

Publication
EP 1310008 A1 20030514 (EN)

Application
EP 00954901 A 20000816

Priority
IT 0000342 W 20000816

Abstract (en)
[origin: WO0215317A1] An acid vanadium electrolyte solution containing V^{+3} and V^{+4} in a desired concentration ratio from solid vanadium pentoxide fed into the electrolyte solution, is produced by electrochemically reducing at least partly of the dissolved vanadium in the acid electrolyte solution by circulating the electrolyte solution through a plurality of electrolytic cells in cascade to at least partly to a V^{+3} state; reacting the so reduced vanadium content in electrolyte solution outlet from the last of said electrolytic cells with a stoichiometric quantity of vanadium pentoxide obtaining an electrolyte solution containing vanadium substantially in a V^{+4} ; adding acid and water to maintain a certain molarity of the solution; and continuously recycling the electrolyte solution through the cascade of electrolytic cells while bleeding a stream of yielded electrolyte solution containing V^{+3} and V^{+4} in the desired concentrations at the exit of one of the cells of said cascade. Each cell is highly asymmetric, having a cathode and an anode with respective surface morphologies, geometry and mutual disposition such to establish on the anode surface a current density from 5 to 20 times greater than the current density on the projected cathode surface and evolve oxygen at the anode. An asymmetric cell of this type may be used in the circuit of one of the positive and negative electrolytes of a working battery for rebalancing the respective states of oxidation of their vanadium content.

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H01M 8/06; **H01M 8/18**; **C01G 31/00**; **C25B 1/00**

IPC 8 full level
C01G 31/00 (2006.01); **C25B 1/00** (2006.01); **H01M 8/06** (2006.01); **H01M 8/18** (2006.01); **H01M 50/77** (2021.01); **H01M 8/04** (2006.01)

CPC (source: EP KR)
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Citation (search report)
See references of WO 0215317A1

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