

Title (en)
ELECTROLYSIS SYSTEM

Title (de)
ELEKTROLYSESYSTEM

Title (fr)
SYSTÈME D'ÉLECTROLYSE

Publication
EP 3137654 A4 20180117 (EN)

Application
EP 15885696 A 20150313

Priority
SG 2015000077 W 20150313

Abstract (en)
[origin: WO2016148637A1] An electrolysis cell system (100) for producing hydrogen and oxygen from water comprising: at least one electrolysis cell (101) including a membrane electrode assembly (102) which comprises at least one pair of gas permeable electrodes (107, 109) comprising an anode (107) and a cathode (109), and an ion conductive electrolyte (108) arranged between each pair of anode (107) and cathode (109); an electrode gas space (104, 106) on the non-electrolyte side of each electrode (107, 109) comprising an anode gas space (104) and a cathode gas space (106), at least one electrode gas space (104) including an inlet (130) and an outlet (132); a recirculating loop (143) for recirculating at least a portion of produced oxygen product gas from the outlet (132) of at least one electrode gas space (104) to the inlet (130) of the respective electrode gas space (104) and through the respective electrode gas space (104); a water supply vessel (142) in fluid communication with the recirculating loop (143), the water supply vessel (142) vaporising water from a water supply (144) utilising heat of vaporisation provided by the respective product gas in the recirculating loop (143) and feeding said water vapour into the recirculating loop (143); and a heat transfer arrangement (105) for transferring heat between the membrane electrode assembly (102) and gas in the anode gas space (104) located in the electrode gas space (104) fluidly connected to the recirculating loop through the inlet and outlet thereof, wherein the heat transfer arrangement (105) is in contact with the membrane electrode assembly (102) and also allows for gas circulation between the membrane electrode assembly (102) and the respective gas space (104).

IPC 8 full level
C25B 9/23 (2021.01); **C25B 15/08** (2006.01)

CPC (source: EP KR US)
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Citation (search report)
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• [X] US 2009325014 A1 20091231 - NEWKIRK JAMES S [US]
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• [YD] MARTIN KALMAR HANSEN ET AL: "PEM steam electrolysis at 130C using a phosphoric acid doped short side chain PFSA membrane", INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, ELSEVIER SCIENCE PUBLISHERS B.V., BARKING, GB, vol. 37, no. 15, 30 May 2012 (2012-05-30), pages 10992 - 11000, XP028400326, ISSN: 0360-3199, [retrieved on 20120502], DOI: 10.1016/J.IJHYDENE.2012.04.125
• See references of WO 2016148637A1

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WO 2016148637 A1 20160922; AU 2015387266 A1 20161201; AU 2015387266 B2 20170216; CA 2979659 A1 20160922; CA 2979659 C 20181030; CN 106661741 A 20170510; CN 106661741 B 20190604; EP 3137654 A1 20170308; EP 3137654 A4 20180117; JP 2018511694 A 20180426; JP 6371413 B2 20180808; KR 101840717 B1 20180321; KR 20170131199 A 20171129; MY 199464 A 20231031; SG 11201609603Y A 20161229; US 2017152605 A1 20170601

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