

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
03 June 2021 (03.06.2021)



(10) International Publication Number
WO 2021/107933 A1

(51) International Patent Classification:

H01M 8/04014 (2016.01) H01M 8/249 (2016.01)
H01M 8/2475 (2016.01) H01M 8/14 (2006.01)
H01M 8/2484 (2016.01)

(21) International Application Number:

PCT/US2019/063333

(22) International Filing Date:

26 November 2019 (26.11.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

16/695,368 26 November 2019 (26.11.2019) US

(71) Applicants: **EXXONMOBIL RESEARCH AND ENGINEERING COMPANY** [US/US]; 1545 ROUTE 22

EAST, P. O. BOX 900, ANNANDALE, New Jersey 08801-0900 (US). **FUELCELL ENERGY, INC.** [US/US]; 3 GREAT PASTURE ROAD, DANBURY, Connecticut 06810 (US).

(72) Inventors: **DAVIS, Keith E.**; 57 Sachem Road, Southbury, Connecticut 06488 (US). **HERSHKOWITZ, Frank**; 509 Lyons Road, Basking Ridge, New Jersey 07920 (US). **HAN, Lu**; 6485 Ellington Lane, Beaumont, Texas 77706 (US). **SUTTON, Clay R.**; 24 Grove Farm Road, Pittstown, New Jersey 08867 (US). **RUBAS, Paul J.**; 10 Foxwood Lane, Milford, New Jersey 08848 (US).

(74) Agent: **CHISHOLM, Robert D.**; Shook, Hardy & Bacon, LLP, 2555 Grand Blvd., Kansas City, Missouri 64108 (US).

(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,

(54) Title: FUEL CELL MODULE ASSEMBLY AND SYSTEMS USING SAME

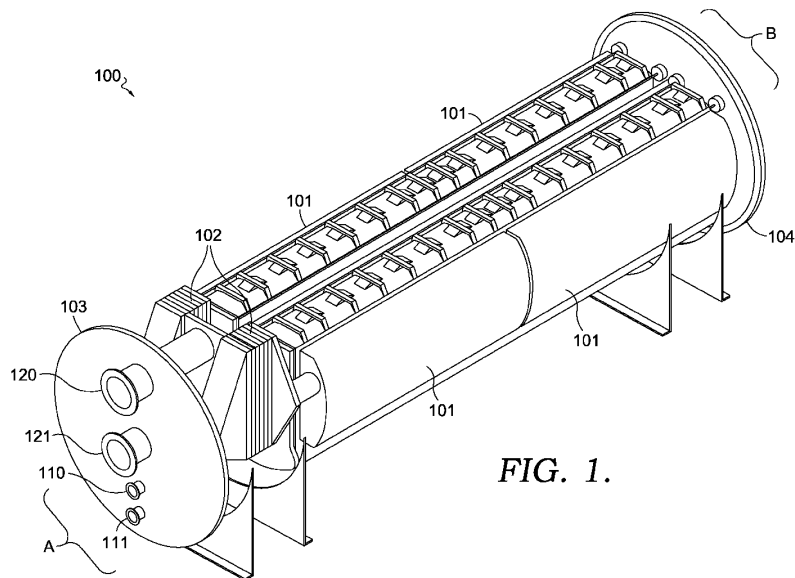


FIG. 1.

(57) Abstract: A module assembly is provided including a fuel cell stack assembly, a heat exchanger, and a housing enclosing the fuel cell stack assembly and the heat exchanger. The heat exchanger is configured to receive process gas from an external source and output said process gas to the fuel cell stack assembly, and configured to receive process gas from the fuel cell stack assembly and output said process gas. A fuel cell power plant is provided including a module assembly with a first end, a racking structure configured to hold the module assembly, balance of plant equipment, and ducting configured to provide fluid communication between the balance of plant equipment and the first end of the module assembly. The module assembly and the racking structure are configured such that the module assembly may be removed from the racking structure in a direction away from the first end of the module assembly.

WO 2021/107933 A1

[Continued on next page]

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, 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, 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, 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).

Published:

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