



- (51) International Patent Classification:
H01M 8/06 (2006.01)
- (21) International Application Number:
PCT/US2012/036640
- (22) International Filing Date:
4 May 2012 (04.05.2012)
- (25) Filing Language:
English
- (26) Publication Language:
English
- (30) Priority Data:
61/482,495 4 May 2011 (04.05.2011) US
61/515,900 6 August 2011 (06.08.2011) US
61/635,176 18 April 2012 (18.04.2012) US
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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, 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))

(88) Date of publication of the international search report:
8 May 2014

(54) Title: ZERO EMISSION POWER PLANT WITH CO₂ WASTE UTILIZATION

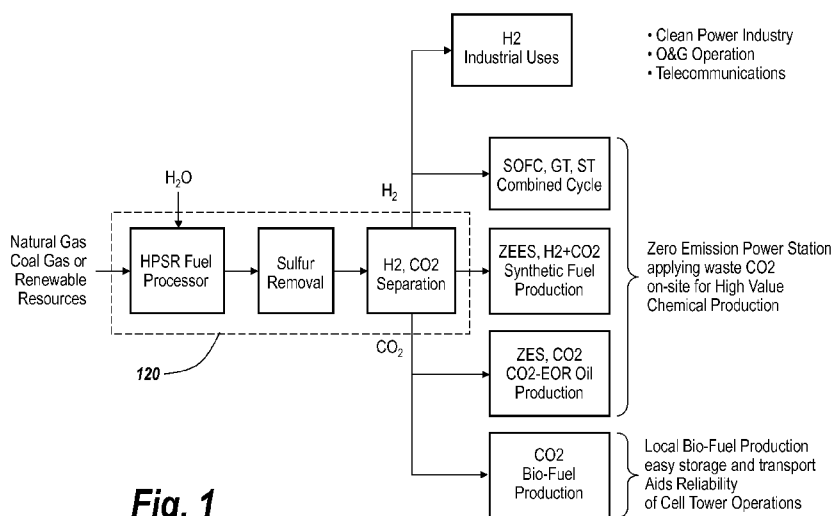


Fig. 1

(57) Abstract: A clean energy system, a renewable energy system or a zero emission energy system (ZEEES) to utilize CO₂ waste. The energy system may include a fuel processor, an energy catalytic reactor, and a power generator. The fuel processor may catalytically convert the CH₄ component in the natural gas, biogas or syngas into a reformat including H₂, CO, CO₂ and H₂O species. The energy reactor may convert the reformat in gas form into a liquid fuel. The power generator may generate power using an output of the fuel processor and/or an output of the energy reactor.

WO 2012/151545 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/036640

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H01M 8/06 (2012.01)
USPC - 429/423
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - H01M 8/06, 8/04; E05B 65/04; E05C 7/02 (2012.01)
USPC - 429/423, 420, 435; 49/63

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Patbase, Orbit.com, Proquest, GooglePatents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/0175320 A1 (SCHUETZLE et al) 15 July 2010 (15.07.2010) entire document	21
Y		1-6, 8-20, 22
Y	US 7,882,692 B2 (PRONSKE et al) 08 February 2011 (08.02.2011) entire document	1-6, 8-20, 22
Y	US 2008/0134666 A1 (KULKARNI et al) 12 June 2008 (12.06.2008) entire document	3
Y	US 2009/0041641 A1 (WOODS et al) 12 February 2009 (12.02.2009) entire document	4-5
Y	US 4,696,871 A (PINTO) 29 September 1987 (29.09.1987) entire document	6
Y	US 5,858,314 A (HSU et al) 12 January 1999 (12.01.1999) entire document	8
Y	US 4,909,808 A (VOECKS) 20 March 1990 (20.03.1990) entire document	9
Y	US 2009/0126276 A1 (JOHNSON et al) 21 May 2009 (21.05.2009) entire document	10, 18
Y	US 2010/0317747 A1 (OKUYAMA et al) 16 December 2010 (16.12.2010) entire document	11
Y	US 2003/0008183 A1 (HSU) 09 January 2003 (09.01.2003) entire document	16-17
A	US 6,630,260 B2 (FORTE et al) 07 October 2003 (07.10.2003) entire document	1-22
A	US 6,316,134 B1 (COWNDEN et al) 13 November 2001 (13.11.2001) entire document	1-22

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Date of the actual completion of the international search 30 July 2012	Date of mailing of the international search report 10 AUG 2012
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