



- (51) **International Patent Classification:**
F02C 6/16 (2006.01) *F03B 1/00* (2006.01)
- (21) **International Application Number:**
PCT/EP2010/070668
- (22) **International Filing Date:**
23 December 2010 (23.12.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
0922517.8 23 December 2009 (23.12.2009) GB
- (71) **Applicant (for all designated States except US):** GLOBAL POWER AND ENERGY LIMITED [GB/GB]; The rear of 38 High Street, Bromsgrove Worcestershire B61 8HQ (GB).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** BOWERS, Peter James [GB/GB]; c/o ICDM Limited, Viscount House, Birmingham International Airport, Birmingham West Midlands B26 3QJ (GB). PETERS, Phillip Stephen [GB/GB]; c/o ICDM Limited, Viscount House, Birmingham International Airport, Birmingham West Midlands B26 3QJ (GB).
- (74) **Agent:** FOOT, Paul Matthew James; Goldings House, 2 Hays Lane, London South Yorkshire SE1 2HW (GB).

- (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, RO, RS, RU, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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))
- 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:**
27 October 2011

(54) **Title:** COMPRESSED AIR ENERGY STORAGE SYSTEM

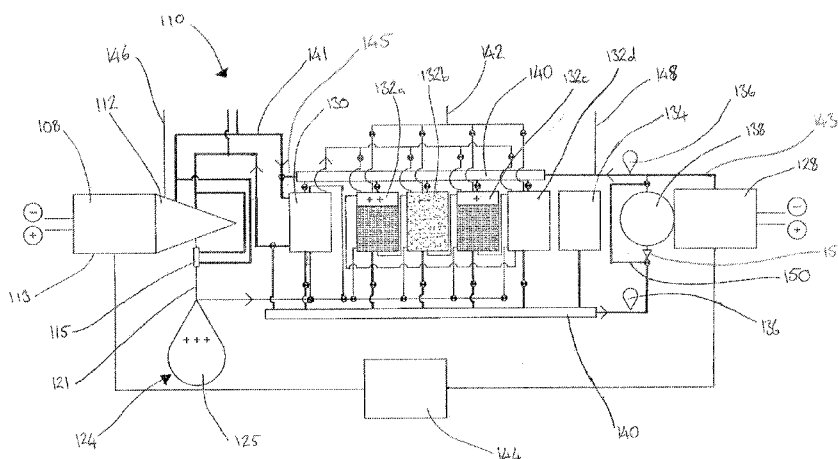


Fig. 4

(57) **Abstract:** A compressed air energy storage system for supplying pressurised fluid to a turbine to generate electricity, comprising at least one compressor for compressing air, a thermal energy recovery system for recovering the heat of compression from the air, a thermal energy store for storing at least a proportion of the recovered heat, a compressed air energy store, a thermal energy introduction system to reintroduce at least a portion of the heat to the air downstream of the compressed air energy store and a compressed air flow path connecting the at least one compressor and the compressed air energy store.



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2010/070668

A. CLASSIFICATION OF SUBJECT MATTER INV. F02C6/16 F03B1/00 ADD.		
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) F02C F03B		
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 practical, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 150 547 A (HOBSON MICHAEL J [US]) 24 April 1979 (1979-04-24)	1-4,6,7, 13-17, 19-21
Y	figure 1 column 3, line 26 - line 31 -----	9-12,18
Y	US 2 433 896 A (GAY FRAZER W) 6 January 1948 (1948-01-06) column 2, line 32 - line 38 figures	9-12,18
X	DE 26 36 417 A1 (BBC BROWN BOVERI & CIE) 16 February 1978 (1978-02-16) figures 1,3 ----- -/--	1-3,5,8, 13-17, 19-21
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
Date of the actual completion of the international search	Date of mailing of the international search report	
18 August 2011	26/08/2011	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Angelucci, Stefano	

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2010/070668

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/158740 A1 (LITTAU KARL A [US] ET AL) 25 June 2009 (2009-06-25) paragraph [0026] figure 2 -----	1,3,4,6, 14,16, 17,21
X	DE 34 40 579 A1 (LAING OLIVER [DE]) 7 May 1986 (1986-05-07) figures 1,2 -----	1,3,8, 14,16, 17,21
X	WO 2007/066117 A1 (UNIV NOTTINGHAM [GB]; GARVEY SEAMUS DOMINIC [GB]) 14 June 2007 (2007-06-14) figure 1 page 9, line 23 - line 28 -----	1,3,14, 16,17,21
A	GB 2 013 318 A (MOTOR COLUMBUS ING) 8 August 1979 (1979-08-08) figure 3 -----	9,10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2010/070668

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4150547	A	24-04-1979 GB 1583648 A	28-01-1981
US 2433896	A	06-01-1948 NONE	
DE 2636417	A1	16-02-1978 BE 857763 A1 DK 359077 A ES 461529 A1 NL 7708896 A SE 7708903 A ZA 7704919 A	01-12-1977 14-02-1978 01-06-1978 15-02-1978 14-02-1978 28-06-1978
US 2009158740	A1	25-06-2009 NONE	
DE 3440579	A1	07-05-1986 NONE	
WO 2007066117	A1	14-06-2007 EP 1971773 A1 US 2011169275 A1	24-09-2008 14-07-2011
GB 2013318	A	08-08-1979 DE 2900122 A1 DK 3179 A JP 54133211 A NL 7900100 A	26-07-1979 07-07-1979 16-10-1979 10-07-1979