



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
06.05.2009 Bulletin 2009/19

(51) Int Cl.:
F01K 7/02 (2006.01) F01K 25/08 (2006.01)

(43) Date of publication A2:
03.12.2008 Bulletin 2008/49

(21) Application number: **07425218.0**

(22) Date of filing: **16.04.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

• **Bini, Roberto**
25122 Brescia (IT)
• **Duvia, Andrea**
25122 Brescia (IT)

(74) Representative: **Sangiaco, Fulvia**
BIESSE S.R.L.,
Corso Matteotti 42
25122 Brescia (IT)

(71) Applicant: **Turboden S.r.l.**
25122 Brescia (IT)

(72) Inventors:
• **Gaia, Mario**
25122 Brescia (IT)

(54) **Apparatus for generating electric energy using high temperature fumes**

(57) This invention concerns an apparatus for the production of electric energy by a turbine operating according to the Rankine cycle using an organic work fluid made to evaporate through a heat exchange with a

source of heat. In the work fluid circuit, upstream of the main turbine, an additional electric generator is inserted having a rotation speed aimed at optimising the extraction of power from a pre-expansion of the work fluid.

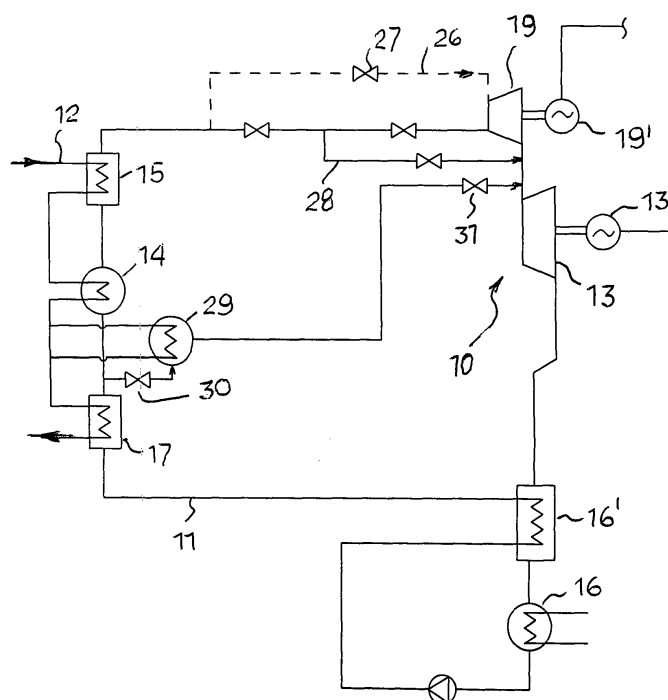


FIG. 2



EUROPEAN SEARCH REPORT

Application Number
EP 07 42 5218

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	W0 2004/102082 A (AMP CAPITAL PARTNERS [US]) 25 November 2004 (2004-11-25) * figure 5 * * page 7, line 9 - line 15 * * page 14, line 12 - page 15, line 8 *	1-9,12, 14-16,19	INV. F01K7/02 F01K25/08
E	W0 2008/101711 A (EN HOLDING GMBH DEUTSCHE [DE]; PRIEBE KLAUS-PETER [DE]) 28 August 2008 (2008-08-28) * abstract; figure 2 *	14	
E	EP 1 936 129 A (EXERGY INC [US]) 25 June 2008 (2008-06-25) * paragraph [0010]; figure 2 *	14	
A	EP 0 062 932 A (BBC BROWN BOVERI & CIE [CH]) 20 October 1982 (1982-10-20) * page 4, line 16 - page 5, line 22; figure 1 *	1-21	
A	W0 93/01397 A (HIGH SPEED TECH LTD OY [FI]) 21 January 1993 (1993-01-21) * abstract; figure 1 *	1-21	TECHNICAL FIELDS SEARCHED (IPC)
A	GB 2 010 974 A (FIAT SPA) 4 July 1979 (1979-07-04) * figures 1-3 *	1-21	F01K
A	EP 1 473 442 A (TOKYO SHIBAURA ELECTRIC CO [JP]) 3 November 2004 (2004-11-03) * figure 4 *	4-6	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 March 2009	Examiner Coquau, Stéphane
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 3
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 42 5218

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-03-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 2004102082	A	25-11-2004	AU 2004239304 A1	25-11-2004
			CA 2525384 A1	25-11-2004
			EP 1639235 A2	29-03-2006
			IS 8124 A	10-11-2005
			JP 2007500315 T	11-01-2007
			US 2005066660 A1	31-03-2005

WO 2008101711	A	28-08-2008	DE 102007009503 A1	18-09-2008

EP 1936129	A	25-06-2008	DE 69938039 T2	22-01-2009
			DK 1070830 T3	02-06-2008
			ES 2301229 T3	16-06-2008
			SI 1070830 T1	30-06-2008

EP 0062932	A	20-10-1982	DE 3261410 D1	17-01-1985
			JP 1490513 C	07-04-1989
			JP 57176309 A	29-10-1982
			JP 63040244 B	10-08-1988
			US 4424668 A	10-01-1984

WO 9301397	A	21-01-1993	AT 150134 T	15-03-1997
			AU 2182292 A	11-02-1993
			BR 9206262 A	10-10-1995
			CA 2113167 A1	21-01-1993
			DE 69218206 D1	17-04-1997
			DE 69218206 T2	03-07-1997
			DK 593525 T3	20-05-1997
			EP 0593525 A1	27-04-1994
			US 5570579 A	05-11-1996

GB 2010974	A	04-07-1979	DE 2852076 A1	07-06-1979
			FR 2410742 A1	29-06-1979

EP 1473442	A	03-11-2004	CN 1550644 A	01-12-2004
			US 2004261417 A1	30-12-2004
