



(51) International Patent Classification:

E21B 41/00 (2006.01) H02K 5/128 (2006.01)
F04D 25/06 (2006.01) F04D 29/58 (2006.01)
F04D 29/056 (2006.01) F04D 29/063 (2006.01)
F04D 29/08 (2006.01)

(21) International Application Number:

PCT/EP2012/060206

(22) International Filing Date:

31 May 2012 (31.05.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

20110786 31 May 2011 (31.05.2011) NO

(71) Applicant (for all designated States except US): **FMC KONGSBERG SUBSEA AS** [NO/NO]; P.o.box 1012, N-3601 Kongsberg (NO).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **TØNNESEN, Leif Arne** [NO/NO]; Grorudhaugen 23, N-1354 Bærums Verk (NO).

(74) Agents: **DAHLSRUD, Per Ole** et al.; c/o Onsagers AS, P.O.Box 1813 Vika, N-0123 Oslo (NO).

(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))
- 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))

[Continued on next page]

(54) Title: SUBSEA COMPRESSOR DIRECTLY DRIVEN BY A PERMANENT MAGNET MOTOR WITH STATOR AND ROTOR SUBMERGED IN LIQUID

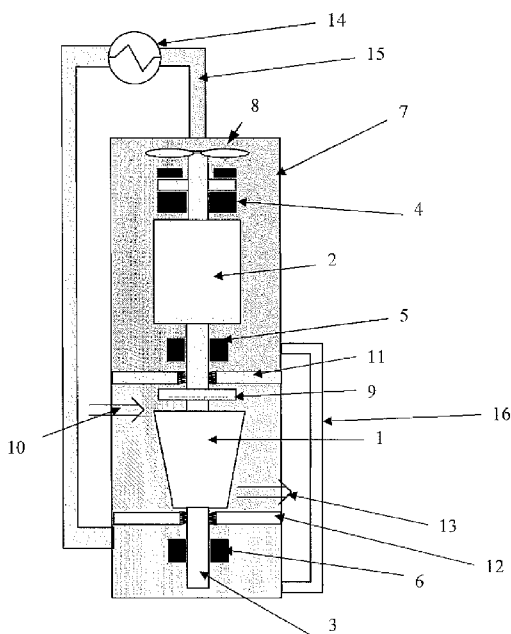


Fig. 1

(57) Abstract: The present invention regards a compressor system comprising a compressor unit (1) and a motor unit (2) arranged on bearings (4, 5, 6), where motor and bearings are submerged in a cooling, lubricating and barrier liquid enclosed in a housing (7) having a cooling arrangement and a circulation arrangement, wherein the motor unit (2) is a permanent magnet motor unit.

WO 2012/163996 A3

(88) Date of publication of the international search report:
18 July 2013

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/060206

A. CLASSIFICATION OF SUBJECT MATTER
 INV. E21B41/00 F04D25/06 F04D29/056 F04D29/08 H02K5/128
 F04D29/58 F04D29/063
 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)
 E21B F04D H02K

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)
 EPO-Internal, PAJ, 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	WO 2010/014640 A2 (DIRECT DRIVE SYSTEMS INC [US]; SABAN DANIEL M [US]; STOUT JOHN [US]; K) 4 February 2010 (2010-02-04) cited in the application page 10, line 2 - line 5 page 10, line 32 - page 11, line 3; figure 1b page 11, line 11 - line 13 page 11, line 33 - page 12, line 4 page 12, line 32 - page 13, line 15 page 15, line 13 - line 15	1-12
A	EP 2 284 399 A1 (SIEMENS AG [DE]) 16 February 2011 (2011-02-16) paragraph [0021] - paragraph [0022]; figure 2	1-5,7,9

Further documents are listed in the continuation of Box C.

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 application or patent 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 17 May 2013	Date of mailing of the international search report 28/05/2013
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 Di Giorgio, F

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/060206

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 2 103 810 A1 (SIEMENS AG [DE]) 23 September 2009 (2009-09-23) paragraph [0021] - paragraph [0024] paragraph [0026]; figure 1 -----	1-5,7,9, 11
A	WO 00/73621 A1 (KVAERNER EUREKA AS [NO]; STINESSEN KJELL OLAV [NO]; THORKILDSEN BREDE) 7 December 2000 (2000-12-07) page 1, line 33 - page 2, line 5; figure 2 page 4, line 17 - page 5, line 31 page 6, line 30 - page 7, line 2; figure 3 -----	1-5,7,9, 11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2012/060206

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010014640	A2	04-02-2010	NONE

EP 2284399	A1	16-02-2011	NONE

EP 2103810	A1	23-09-2009	CN 101978169 A 16-02-2011
		EP 2103810 A1	23-09-2009
		EP 2252797 A1	24-11-2010
		RU 2010142499 A	27-04-2012
		US 2011008184 A1	13-01-2011
		WO 2009115389 A1	24-09-2009

WO 0073621	A1	07-12-2000	AU 4958100 A 18-12-2000
		BR 0011048 A	12-03-2002
		EP 1200707 A1	02-05-2002
		NO 992627 A	04-12-2000
		US 6655932 B1	02-12-2003
		WO 0073621 A1	07-12-2000
