



(43) International Publication Date
23 December 2010 (23.12.2010)

(10) International Publication Number
WO 2010/148062 A3

(51) International Patent Classification:
F03D 7/00 (2006.01) *H02P 9/04* (2006.01)

(21) International Application Number:
PCT/US2010/038782

(22) International Filing Date:
16 June 2010 (16.06.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/187,625 16 June 2009 (16.06.2009) US

(71) Applicant (for all designated States except US): **WIND-SPIRE ENERGY, INC.** [US/US]; 5450 Louie Lane, Reno, NV 89511 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **DE ROOIJ, Michael** [US/US]; 5450 Louie Lane, Reno, NV 89511 (US).

(74) Agents: **SCHULZE, Herbert, R.** et al.; P.O. Box 8749, Denver, CO 80201 (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, 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, 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:
7 April 2011

(54) Title: ELECTRONIC CONTROL OF WIND TURBINE ELECTRIC POWER GENERATOR

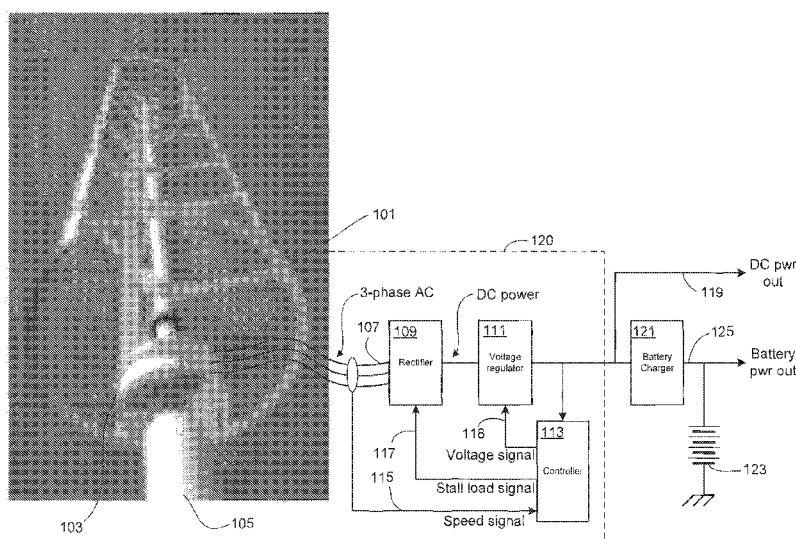


Figure 1

(57) Abstract: A wind turbine generator controller suitable for off-grid application and a method of controlling a wind turbine generator. A generator speed signal indicative of power production potential and a load signal indicative of power being drawn by a load are used to generate a stall load signal that slows the generator if a power balance mismatch condition results from such factors as excessive wind or too light a load. The stall load may be a delta connected SCR bridge or a TRIAC connected across one or more elements of a rectifier that converts AC power from the generator to DC power.

A. CLASSIFICATION OF SUBJECT MATTER**F03D 7/00(2006.01)i, H02P 9/04(2006.01)i**

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)

F03D 7/00; F03D 7/04; F03D 7/06; H02P 9/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: generator, controller, stall load, rectifier, voltage wind turbine, sensor, etc.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2003-153595 A (TOKAI UNIV) 23 May 2003 See claims 1-5, figures 1-5.	1-20
A	JP 2002-332950 A (KOUCHI YASUhide et al.) 22 November 2002 See abstract, figures 1-11.	1-20
A	KR 10-1996-0010630 B1 (UNITED TECHNOLOGIES CORPORATION) 06 August 1996 See claims 1-3, figures 1-2.	1-20
A	JP 2004-285991 A (TOSHIBA PLANT SYSTEMS & SERVICES CORP.) 14 October 2004 See claims 1-8, figures 1-5.	1-20



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 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

28 JANUARY 2011 (28.01.2011)

Date of mailing of the international search report

07 FEBRUARY 2011 (07.02.2011)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

BAEK, On Ki

Telephone No. 82-42-481-5484



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2010/038782

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2003-153595 A	23.05.2003	CN 1271779 C	23.08.2006
		CN 1484886 A	24.03.2004
		CN 1484886 C0	23.08.2006
		JP 03-465246 B2	29.08.2003
		JP 2003-153595 A	23.05.2003
		JP 3465246 B2	10.11.2003
		TW 246561 B	01.01.2006
		US 2004-041405 A1	04.03.2004
		US 6864594 B2	08.03.2005
		WO 03-041264 A1	15.05.2003
JP 2002-332950 A	22.11.2002	JP 4191910 B2	03.12.2008
KR 10-1996-0010630 B1	06.08.1996	EP 0244341 A1	04.11.1987
		EP 0244341 B1	27.12.1990
		JP 02-566953 B	03.10.1996
		JP 02-566953 B2	03.10.1996
		US 4700081 A1	13.10.1987
JP 2004-285991 A	14.10.2004	JP 4236969 B2	11.03.2009