



- (51) International Patent Classification:
H02J 9/06 (2006.01) *G21D 3/04* (2006.01)
- (21) International Application Number:
PCT/US2013/072794
- (22) International Filing Date:
3 December 2013 (03.12.2013)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/733,258 4 December 2012 (04.12.2012) US
13/795,911 12 March 2013 (12.03.2013) US
- (71) Applicant: NUSCALE POWER, LLC [US/US]; 1000 NE Circle Blvd., Suite 10310, Corvallis, Oregon 97330 (US).
- (72) Inventor: HOUGH, Ted; 1000 NE Circle Blvd., Suite 10310, Corvallis, Oregon 97330 (US).
- (74) Agents: WERNLI, Matthew et al.; Fish & Richardson P.C., P.O. Box 1022, Minneapolis, Minnesota 55440-1022 (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, BN, 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, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, KM, 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:
6 November 2014

(54) Title: MANAGING ELECTRICAL POWER FOR A NUCLEAR REACTOR SYSTEM

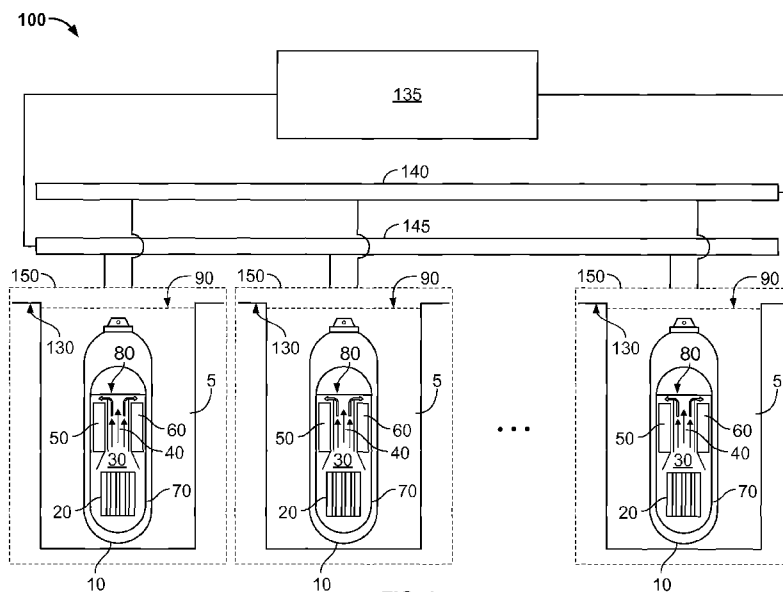


FIG. 1

(57) Abstract: An electrical power system for a nuclear power facility includes an active alternating current (AC) power bus configured to be electrically coupled to a plurality of engineered safety feature (ESF) loads of a plurality of nuclear power systems, each of the ESF loads configured to fail to a safe position upon loss of primary AC power; a critical battery system electrically coupled to the active AC bus, the critical battery system comprising a plurality of valve regulated lead acid (VRLA) batteries; and a primary AC power source electrically coupled to the active AC bus.

WO 2014/130123 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/072794**A. CLASSIFICATION OF SUBJECT MATTER****H02J 9/06(2006.01)i, G21D 3/04(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
H02J 9/06; G21D 3/04; H05B 37/02; H02J 9/00; H02J 9/02; G06F 11/00; H02J 11/00Documentation 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 modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: UPS, power, AC bus, nuclear power plant, critical load, reactor, battery, ESF(engineered safety feature)**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2012-159541 A1 (CHINA GUANGDONG NUCLEAR POWER HOLDING CORP. et al.) 29 November 2012 See paragraphs [0001]-[0002], [0028]-[0046] and figures 1-4.	20-22
A		1-19
Y	US 2008-0179956 A1 (MING JIANG et al.) 31 July 2008 See paragraphs [0023]-[0025], [0037] and figures 1-3.	20-22
A		1-19
A	US 2010-0237702 A1 (WILLIAM J. STOCKER) 23 September 2010 See abstract, paragraphs [0014]-[0023] and figures 1-2.	1-22
A	US 2008-0034256 A1 (MICHAEL J. MOSMAN) 07 February 2008 See abstract, paragraphs [0032]-[0069] and figures 1-3.	1-22
A	JP 2004-242397 A (HITACHI LTD.) 26 August 2004 See abstract, paragraphs [0007]-[0012] and figures 1-7.	1-22

 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

15 September 2014 (15.09.2014)

Date of mailing of the international search report

15 September 2014 (15.09.2014)

Name and mailing address of the ISA/KR

International Application Division
Korean Intellectual Property Office
139 Cheongsu-ro, Seo-gu, Daejeon Metropolitan City, 302-701,
Republic of Korea

Facsimile No. +82-42-472-7140

Authorized officer

JEONG, Jae Heon

Telephone No. +82-42-481-5417



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2013/072794

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2012-159541 A1	29/11/2012	CN 102255377 A CN 102255377 B EP 2600489 A1 JP 2013-537636 A KR 10-1337565 B1 KR 10-2013-0062331 A US 2014-0001863 A1	23/11/2011 05/12/2012 05/06/2013 03/10/2013 06/12/2013 12/06/2013 02/01/2014
US 2008-0179956 A1	31/07/2008	US 7550873 B2	23/06/2009
US 2010-0237702 A1	23/09/2010	US 8575787 B2	05/11/2013
US 2008-0034256 A1	07/02/2008	AU 2007-281169 A1 EP 1890371 A1 US 7459803 B2 WO 2008-017014 A2 WO 2008-017014 A3	07/02/2008 20/02/2008 02/12/2008 07/02/2008 16/10/2008
JP 2004-242397 A	26/08/2004	JP 4055189 B2	05/03/2008