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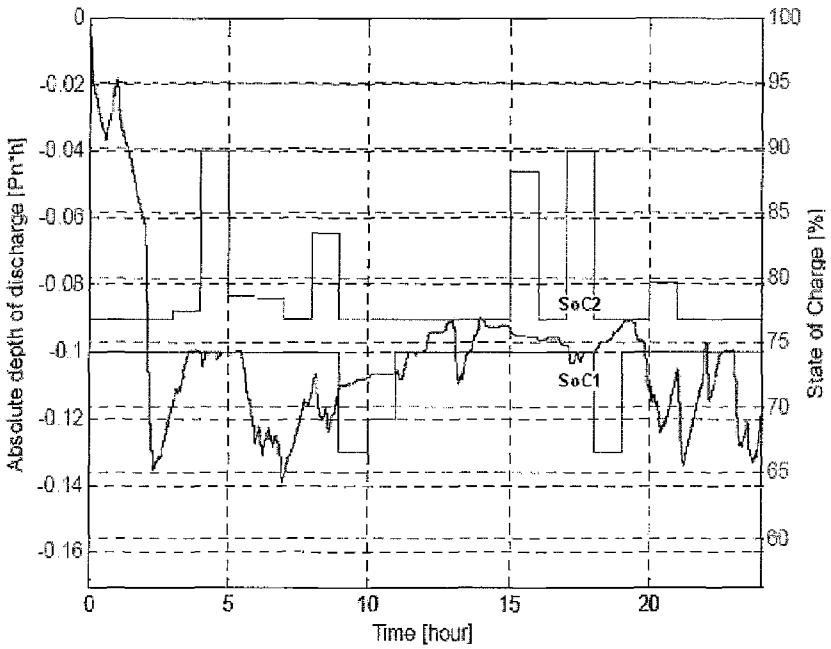
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— *with international search report (Art. 21(3))*

[Continued on next page]

(54) **Title**: METHOD FOR OPERATING A BATTERY ENERGY STORAGE SYSTEM

FIG. 3b



(57) **Abstract**: The present invention is concerned with the operation of a battery energy storage system (BESS) connected to an electric power system. The upper and lower state-of-charge (SoC) set-points of the BESS are adapted based on the analysis of the historical frequency data of the power system. A time dependent modulation function is determined for the upper and lower SoC set-points which avoids unwanted charging and discharging events.

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— *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))*

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14 May 2010

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. H02J3/32

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)
H02J G06F G01R

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	WO 2007/104167 A (ABB RESEARCH LTD [CH]; OHLER CHRISTIAN [CH]; OUDALOV ALEXANDER [CH]; C) 20 September 2007 (2007-09-20) cited in the application sentence 4; claim 1 sentence 5; claim 1 sentence 6; claim 4 page 4, line 8 - line 9 page 7, line 2 page 9, line 8 - line 9 page 9, line 7 - line 9 sentence 18 - sentence 20; claim 1 page 13, line 21 page 13, line 22 page 13, line 23 page 13, line 23 - line 25 page 14, line 8 page 14, line 8 - line 9 ----- -/--	1-4,6-7

[X] Further documents are listed in the continuation of Box C. [X] 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

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"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

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"&" 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 March 2010	25/03/2010

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/056988

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ALEXANDRE OUDALOV ET AL: "Optimizing a Battery Energy Storage System for Primary Frequency Control" IEEE TRANSACTIONS ON POWER SYSTEMS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 22, no. 3, 1 August 2007 (2007-08-01) , pages 1259-1266, XP011189268 ISSN: 0885-8950 abstract page 1265; figure 14	1-2
A	US 2006/276938 A1 (MILLER CRAIG H [US] MILLER CRAIG HOWARD [US]) 7 December 2006 (2006-12-07) figures 11,13 paragraph [0027] paragraph [0112] paragraph [0113]	1-4,6-7
A	MALY D K ET AL: "Optimal battery energy storage system (BESS) charge scheduling with dynamic programming" IEE PROCEEDINGS: SCIENCE, MEASUREMENT AND TECHNOLOGY, IEE, STEVENAGE, HERTS, GB, vol. 142, no. 6, 1 November 1995 (1995-11-01), pages 453-8, XP006004445 ISSN: 1350-2344 abstract page 456, paragraph 4.4 - page 457	1-4,6-7
A	LEE T-Y ET AL: "Effect of the battery energy storage system on the time-of-use rates industrial customers" IEE PROCEEDINGS: GENERATION, TRANSMISSION AND DISTRIBUTION, INSTITUTION OF ELECTRICAL ENGINEERS, GB, vol. 141, no. 5, 1 January 1994 (1994-01-01), pages 521-8, XP006001870 ISSN: 1350-2360 abstract page 523, paragraph 4.1; figure 1	1-4,6-7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2009/056988

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 5
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 5

The claim 5 is not clear and do not allows a meaningful search of its subject-matter. Please, see the written opinion Item VIII.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2) declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2009/056988

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007104167 A	20-09-2007	NONE	
US 2006276938 A1	07-12-2006	US 2007276547 A1	29-11-2007
		WO 2006132760 A2	14-12-2006