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(54) **Title:** SYSTEM AND METHOD FOR EXTENDING THE OPERATING LIFE OF A WIND TURBINE GEAR TRAIN BASED ON ENERGY STORAGE

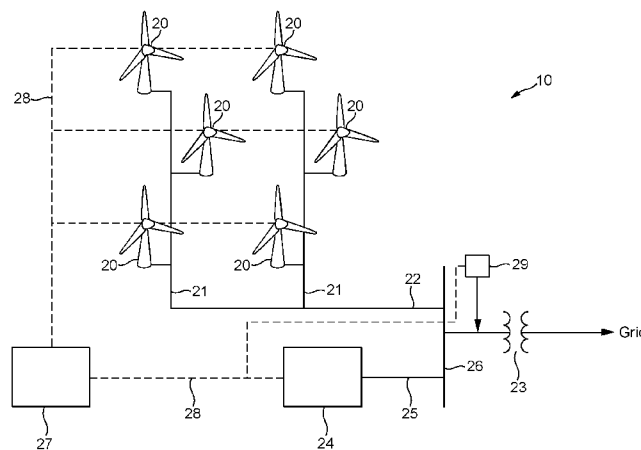


FIG. 2

(57) **Abstract:** A wind park controller and control method for a wind park (10) are described. The wind park comprises a plurality of wind turbines (20) and an Energy Storage System (24) connected to one another by means of a low voltage power network (22, 25), which is in turn coupled to the grid. The controller determines a number of operating parameters of the wind turbine gearbox or drive train, and calculates a gearbox or drive train health metric. This can include a measure of the gearbox lifetime. The controller also determines one or more power characteristics of the wind turbine generator or the point of common coupling (26) to determine a power mismatch indication. Based on the power mismatch indication and said gearbox or drive train health metric, the controller determines a power command for the Energy Storage System and wind turbines based to improve the gearbox health and lifetime.



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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 F03D

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 , 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	us 2011/089693 AI (NASI RI ADEL [US]) 21 April 2011 (2011-04-21) paragraphs [0075] - [0095] , [0185] - [0231] -----	1-20
A	EP 2 072 813 A2 (GEN ELECTRIC [US]) 24 June 2009 (2009-06-24) paragraphs [0007] , [0008] , [0009] , [0012] , [0013] , [0014] , [0015] , [0016] , [2217] -----	1-20
A	US 2003/227172 AI (ERDMAN WILLIAM L [US]) ET AL) 11 December 2003 (2003-12-11) paragraph [0033] -----	1-20
A	EP 2 267 306 A2 (VESTAS WIND SYS AS [DK]) 29 December 2010 (2010-12-29) paragraphs [0019] , [0020] -----	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	"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
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"P" document published prior to the international filing date but later than the priority date claimed	

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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 Beran, Jiri
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>SOEPRIJANTO A ET AL: "Generator Angle Difference Monitoring System to Ensure Power Transmission Steady State Stability Based on Neural Network" , PROCEEDINGS OF 15TH INDONESIAN SCIENTIFIC CONFERENCE IN JAPAN, , 5 August 2006 (2006-08-05) , pages 88-95, XP007921796, the whole document</p> <p align="center">-----</p>	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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