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Datasheet for the decision of 15 December 2017

Case Number: T 2331/10 - 3.5.01

Application Number: 07116283.8

Publication Number: 1906353

IPC: G06Q50/00

Language of the proceedings: EN

Title of invention:
Method and apparatus for operating wind turbine generators

Applicant:
GENERAL ELECTRIC COMPANY

Headword:
Operating wind turbines / GENERAL ELECTRIC COMPANY

Relevant legal provisions:
EPC Art. 84, 56

Keyword:
Clarity - main and auxiliary requests (no)
Inventive step - electric power production forecast signal (no - not technical)

Decisions cited:
T 0049/99, T 1227/05, T 0625/11, T 0953/94

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Case Number: T 2331/10 - 3.5.01

D E C I S I O N
of Technical Board of Appeal 3.5.01
of 15 December 2017

Appellant: (Applicant)	GENERAL ELECTRIC COMPANY 1 River Road Schenectady, NY 12345 (US)
Representative:	Bedford, Grant Richard GPO Europe GE International Inc. The Ark 201 Talgarth Road Hammersmith London W6 8BJ (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 29 June 2010 refusing European patent application No. 07116283.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	W. Chandler
Members:	N. Glaser
	Y. Podbielski

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse the European patent application No. 07116283.8 under Article 123(2) EPC for added subject-matter and under Article 56 EPC for lack of inventive step over well-known prior art, for example, D1 (US 2004/230377).

II. In the statement setting out the grounds of appeal, the appellant requested that the decision of the examining division be set aside and that a patent be granted on the basis of the claims filed therewith. The appellant also made an auxiliary request for oral proceedings.

III. The Board arranged for oral proceedings to be held on 15 December 2017. In the communication accompanying the summons to oral proceedings, the Board considered that the new request filed together with the grounds of appeal contravened Articles 123(2), 84 and 56 EPC.

IV. With the reply to the communication, dated 15 November 2017, the appellant filed a new main and auxiliary request to address points 7.1 and 7.2 of the Board's communication and presented arguments why the claims would overcome the objections raised.

V. In a further letter, the appellant informed the Board that he would not be attending oral proceedings and that a written decision should be issued on the basis of the requests filed on 15 November 2017.

VI. Oral proceedings took place on 15 December 2017 in the appellant's absence.

VII. Claim 1 reads as follows :

A wind farm monitoring and forecasting network (100) for monitoring a wind farm (102) having a plurality of wind turbine generators (WTGs) (103), said network (100) comprising:

an electronic data communication device (104) coupled in electronic data communication with the wind farm (102) and for receiving measurement data signals (101,105,107) from monitoring devices of the WTGs (103) and operational data signals (109) derived from an operational database (226);

at least one meteorological data collection assembly (106) operable to generate a plurality of measurement data signals (105) associated with predetermined meteorological measurements of the wind farm (102), the at least one meteorological data collection assembly (106) being coupled in electronic data communication with the electronic data communication device (104);

at least one electric power transmission and distribution substation (108) electrically coupled to the wind farm (102), the network (100) further including a plurality of monitoring devices for measuring a plurality of predetermined parameters associated with a plurality of predetermined portions of the at least one substation (108), the monitoring devices being coupled in electronic data communication with the electronic data communication device (104);
at least one local monitoring station (112) in electronic data communication with the electronic data communication device (104);

a supervisory control and data acquisition system (SCADA) (110) coupled in electronic data communication with the electronic data communication device (104) to receive the operational data signals (109);

a wind production forecasting system (200) coupled in electronic data communication with a data source (120) and the SCADA (110), the wind production forecasting system (200) being operable to generate at least one wind electric power production forecast data signal (202) for transmitting to external electric power dispatchers;

said forecasting system (200) comprising:

at least one meteorological forecast input channel configured to receive at least one wide-area meteorological forecast data signal (126) from the data source (120);

at least one resident narrow-area meteorological forecast module configured to receive said at least one wide-area meteorological forecast data signal, wherein said narrow-area meteorological forecast module is further configured to generate and transmit at least one narrow-area meteorological forecast data signal;

at least one resident electric power generation availability module configured to generate and transmit at least one electric power generation availability data signal (210);

at least one resident electric power production forecast module configured to receive said at least one narrow-area meteorological forecast data signal and said at least one electric power generation

availability data signal, wherein said at least one resident electric power production forecast module is further configured to generate and transmit at least one electric power production forecast data signal (202);

a wind forecasting sub-system (212) coupled in electronic data communication with said at least one operational data interface portal;

an electric power production forecast sub-system (214) comprising at least one operational interface portal (224) and coupled in electronic data communication with said at least one operational data interface portal and said wind forecasting sub-system, the electric power production forecast subsystem (214) being operable to generate narrow area wind turbine specific wind speed data signals (234) from wide-area wind farm specific meteorological forecast wind speed data signals (222) transmitted from the wind forecasting subsystem (212); and

a wind production forecasting (WPF) database (226) coupled in electronic communication with said electric power generator production forecast sub-system.

VIII. The appellant's arguments can be summarised as follows:

(a) The problem overcome by the present invention was to provide optimised energy production from a wind turbine farm that might include many wind turbine generators.

(b) This was achieved by combining a wind farm monitoring and forecasting network (100) with a wind production forecasting system (200). Turbine

specific forecasting was provided by generating *narrow-area* wind turbine specific wind speed data signals from *wide-area* wind farm specific meteorological forecast wind speed data signals which permitted optimisation of individual turbines in the wind farm.

(c) The claims had been amended to recite that the forecast subsystem included a forecasting engine module and that tunable parameters might be based upon recent observations that ignored observations that exceeded a predetermined age.

Reasons for the Decision

1. ***Non-attendance at the oral proceedings***

As announced in its response to the summons and the communication of the Board, the appellant did not attend the oral proceedings. In accordance with Rule 115(2) EPC and Article 15(3) RPBA, oral proceedings were held without the appellant. By deciding not to attend oral proceedings, the appellant has chosen not to take the opportunity to comment on the Board's opinion at the oral proceedings. In the present case, the duly summoned appellant has to be treated as relying only on its written case.

2. The invention

2.1 The invention is a wind farm monitoring and forecasting network (100) for the monitoring of a wind farm having a plurality of wind turbine generators (WTGs). The invention addresses the problem of handling

deficiencies in electric power delivered to a local region where the wind farm is embedded due to variations in the electric power output of such wind farms, page 1, 2nd paragraph.

2.2 The wind farm monitoring and forecasting network (100) is coupled to a production forecasting system (200) which generates an electric power production forecast data signal (202) for the external electric power dispatchers. The forecasting is based on measurement data signals, which are the wind-farm's operating parameters (101, 107) and its meteorological conditions (105). This data is collected by a supervisory control and data acquisition system (SCADA, 110) and is transferred to the wind production forecasting system (200).

2.3 The wind production forecasting system (200) employs a regional weather forecast model (216) to generate wind farm specific meteorological forecast data signals (222). A turbine specific transfer function (232) then converts the wind-farm specific data into turbine-specific data and a power curve model (236) transfers this data into turbine-specific electric power production forecast signals (238). An availability model (240) with turbine-specific algorithms corrects the forecast based on historical performance data of the turbines to generate the production forecast (202).

3. *Article 84 EPC (main request)*

3.1 Claim 1 is not clear and is not supported by the description (Article 84 EPC) for the following reasons.

3.2 Firstly, the claim defines the electronic data communication device (104) "for receiving measurement data

signals (101, 105, 107) from monitoring devices of the WTGs and operational data signals (109) derived from an operational database (226)". The latter refers to wind production forecasting (WPF) database (226) which is part of wind production forecasting system (200).

According to the description, page 5, lines 7 to 21, and Figure 1, operational data signals (109) correspond to the measurement data signals (101, 105, 107) which are received by the electronic data communication device (104) and are retransmitted to SCADA (110). The SCADA system manipulates and stores this data (see page 6, third paragraph, to page 7, first paragraph), before transmitting it in terms of SCADA data signals (122) to wind production forecasting system (200). These SCADA data signals may include specific operational data which may then be stored in operational database (226), but there is no support that operational data is derived from the operational database (226) and sent back to the electronic data communication device (104).

3.3 Secondly, the wind production forecasting system (200), as presently claimed, comprises a "meteorological forecast input channel" which receives wide-area meteorological forecast data, which is received by a "resident narrow-area meteorological forecast module" to generate narrow-area meteorological forecast data. The narrow-area meteorological forecast data and the electric power generation availability of a "resident electric power generation availability module" are received by a "resident electric power production forecast module" which generates the electric power production forecast data signal (202).

3.4 At the same time, the claimed wind production forecasting system (200) comprises a "wind forecasting sub-

system", an "electric power production forecast sub-system" and a "wind production forecasting database" which are coupled to each other, but not to the above-mentioned modules of the same system. These generate narrow-area wind turbine specific wind speed data signals from wide-area wind farm specific meteorological forecast wind speed data signals, but do not contribute to the generation of the electric power production forecast data signal (202).

3.5 Thus, the wind production forecasting system (200) comprises features which do not interact at all and, if so, they operate and exchange data in an unclear manner. It is not clear how the narrow-area meteorological forecast data and the electric power generation availability fit together to generate the final electric power production forecast signal (202). The claimed interaction and data exchange is unclear and also not supported by the description. There is no clear mapping between the claimed features and the description and figures.

3.6 The wind production forecasting system (200), as presently claimed, defines generating "at least one electric power production forecast data signal (202)" which is clearly unspecific for a particular turbine. The appellant's argument that there would be such a turbine specific signal was therefore not convincing.

3.7 Finally, another lack of support results from the definition of the forecasting system (200) in terms of "algorithms" which transmit, receive and process data signals. Such a system is not supported by the description, page 9, 2nd paragraph, to page 12, first paragraph, and page 15, second paragraph, which do not use the term "algorithm" to describe the system (200).

The term "algorithm" is found only on pages 13 and 14, 3rd paragraph, but in combination with a method of operating the wind farm (102) which is different from system (200).

3.8 Accordingly, claim 1 is not clear and is not supported by the description (Article 84 EPC).

4. Article 84 EPC (auxiliary request)

4.1 Claim 1 of the auxiliary request further includes features from claims 2 to 4 of the main request. Therefore the same clarity objections raised against claim 1 of the main request apply to claim 1 of this request.

4.2 The claim defines the "wind forecasting sub-system" as comprising an "availability model including tunable parameters". The term "tunable parameters" is not clear, because any system comprises tunable parameters. This adds a further clarity problem. Moreover, the provision of an availability model is not technical.

4.3 Accordingly, claim 1 of the auxiliary request is not clear and is not supported by the description (Article 84 EPC).

5. Article 56 EPC (main request)

5.1 As far as can be understood from the present wording, at least claim 1 of the main request also does not involve an inventive step (Article 56 EPC).

5.2 A wind farm monitoring and forecasting network (100) are well-known in the art of wind farms, for example D1. The difference resides in the claimed forecasting

production system (200) which converts wide-area forecast data into narrow-area forecast data to achieve a more accurate forecasting model. The distinguishing features refer to the modeling of data, the transformation of data signals by the use of algorithms and data models, which in themselves do not achieve a technical effect and cannot contribute to an inventive step.

5.3 This is part of a non-technical problem which is to produce a more accurate production forecast, which per se is an intellectual activity, following from T 49/99, (cf. decision, paragraphs 7 and 8). The technical part of the solution is self-evident; it is a straightforward implementation of a non-technical modelling and forecasting process using commonplace and well-known computer technology. D1 already discloses, at paragraph 60, the provision of forecasts based on wind speed, direction, and plan output.

5.4 Also, the predicted forecast data signal is not a physical variable of the underlying system, such as was the case in T 1227/05 where the electric voltage of the circuit was simulated. Recent decision T 625/11, following the line of T 1227/05, considered the determination of a "limited value representing a parameter" for the control of a nuclear power plant to confer technical character to the claim. The nature of the parameter was considered to be intrinsically linked to the functioning of the nuclear power plant and therefore technical. The Board is of the opinion that the situation of T 625/11 does not apply in the present case, because the production forecast data signal is not intrinsically linked to the functioning of the wind farm in order to control it.

5.5 The purpose of this forecast data signal appears to be rather to make sales of electric power generation with increased confidence (application, page 16, last paragraph), which is a non-technical objective. The Board is also of the view that there is no control of a "physical process" based on a mathematical model, as stated in T 953/94, because the production forecast is mentioned in the application to be used to facilitate revenue generation.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

T. Buschek W. Chandler

Decision electronically authenticated